
Appendix I

Vegetation and Wildlife

TABLES

Table I-1	Commonly Occurring Fish and Invertebrate Species in Coos Bay
Table I-2	Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route
Table I-3	Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project
Table I-4	Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project
Table I-5	Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project
Table I-6	Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project
Table I-7	Plant Association Groups on the Umpqua, Rogue River-Siskiyou, and Fremont-Winema National Forests
Table I-8	Total Terrestrial Habitat (acres) Affected/Removed by Construction within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Lands Crossed by and Adjacent to the Pacific Connector Pipeline Project
Table I-9	Total Terrestrial Habitat (acres) Within the 30-Foot-Wide Corridor Maintained During the Pacific Connector Pipeline Project Within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Land Crossed by and Adjacent to the Pipeline Project
Table I-10	Numbers of Streams within Four Width Classes that would be Crossed by Dry Open-Cuts and Estimated Durations (Worst Case) for In-stream Sediment

Table I-11 Maximum Distances Downstream to Attain SEV Scores 1 to 8 with TSS Concentrations and Durations due to Wet Open-Cut, Flume, and Dam-and-Pump Crossing Procedures in Each Fish-bearing Watershed to be Crossed by the Pacific Connector Pipeline

Table I-12 Waterbodies with ESA Critical Habitat and Known or Assumed to Support ESA-Listed and Non-Listed Juvenile and Adult Salmonids with Risks of TSS Effects Downstream Generated during Crossing and Risks of TSS Effects Generated by Crossing Nearest Neighbor Waterbodies

Table I-13 Numbers of Migratory Birds Potentially Nesting in Habitats Affected by the Pacific Connector Pipeline in Construction Spreads 1 through 5

EFFECTS OF THE PROJECT ON ESSENTIAL FISH HABITAT

TABLES

TABLE I-1

Commonly Occurring Fish and Invertebrate Species in Coos Bay

Common Name	Scientific Name
Fish Species	
American shad	<i>Alosa sapidissima</i>
Arrow goby	<i>Clevelandia ios</i>
Bay goby	<i>Lepidogobius lepidus</i>
Bay pipefish	<i>Syngnathus griseolineatus</i>
Black rockfish	<i>Sebastes melanops</i>
Bocaccio	<i>Sebastes paucispinis</i>
Brown rockfish	<i>Sebastes auriculatus</i>
Buffalo sculpin	<i>Enophrys bison</i>
Cabezon	<i>Scorpaenichthys marmoratus</i>
Chinook salmon	<i>Oncorhynchus tshawytscha</i>
Coast range sculpin	<i>Cottus aleuticus</i>
Coho salmon	<i>Oncorhynchus kisutch</i>
Copper rockfish	<i>Sebastes caurinus</i>
Crescent gunnel	<i>Pholis laeta</i>
Cutthroat trout	<i>Oncorhynchus clarki clarki</i>
English sole	<i>Parophrys vetulus</i>
Fluffy sculpin	<i>Oligocottus snyderi</i>
Green sturgeon	<i>Acipenser medirostris</i>
High cockscomb	<i>Anoplarchus purpurescens</i>
Jack smelt	<i>Atherinopsis californiensis</i>
Kelp greenling	<i>Hexagrammos decagrammus</i>
Largescale sucker	<i>Catostomus macrocheilus</i>
Lingcod	<i>Ophiodon elongatus</i>
Longnose dace	<i>Rhinichthys cataractae</i>
Northern anchovy	<i>Engraulis mordax</i>
Pacific herring	<i>Clupea harengus pallasii</i>
Pacific lamprey	<i>Entosphenus tridentatus</i>
Pacific sand lance	<i>Ammodytes hexapterus</i>
Pacific sardine	<i>Sardinops sagax</i>
Pacific staghorn sculpin	<i>Leptocottus armatus</i>
Pacific tomcod	<i>Microgadus proximus</i>
Pile perch	<i>Rhacochilus vacca</i>
Pinpoint gunnel	<i>Apodichthys flavidus</i>
Prickly sculpin	<i>Cottus asper</i>
Rainbow (steelhead) trout	<i>Oncorhynchus mykiss</i>
Red Irish lord	<i>Hemilepidotus hemilepidotus</i>
Redside shiner	<i>Richardsonius balteatus</i>
Rex sole	<i>Glyptocephalus zachirus</i>
Rock greenling	<i>Hexagrammos lagocephalus</i>
Rockweed gunnel	<i>Xererpes fucorum</i>
Saddleback gunnel	<i>Pholis ornata</i>
Sand sole	<i>Psettichthys melanostictus</i>
Sand lance	<i>Ammodytes hexapterus</i>
Shiner perch	<i>Cymatogaster aggregata</i>
Silver surf perch	<i>Hyperprosopon allipticum</i>
Speckled dace	<i>Rhinichthys osculus</i>
Speckled sanddab	<i>Citharichthys stigmaeus</i>
Staghorn sculpin	<i>Leptocottus armatus</i>
Starry flounder	<i>Platichthys stellatus</i>
Striped bass	<i>Morone saxatilis</i>
Striped perch	<i>Embiotoca lateralis</i>
Surf smelt	<i>Hypomesus pretiosus</i>

TABLE I-1	
Commonly Occurring Fish and Invertebrate Species in Coos Bay	
Common Name	Scientific Name
Threespine stickleback	<i>Gasterosteus aculeatus</i>
Topsmelt	<i>Atherinops affinis</i>
Tube-snout	<i>Aulorhynchus flavidus</i>
Walleye perch	<i>Hyperprosopon argenteum</i>
White bait smelt	<i>Aliosmerus elongatus</i>
White perch	<i>Phanerodon furcatus</i>
White sturgeon	<i>Acipenser transmontanus acipenser</i>
Invertebrate Species	
Butter clams	<i>Saxidomus gigantea</i>
Cockle clam	<i>Clinocardium nuttallii</i>
Dungeness crab	<i>Cancer magister</i>
Porcelain crab	<i>Petrolisthes cinctipes</i>
Pea crab	<i>Pinnotheres pisum</i>
Green crab	<i>Carcinus maenas</i> (introduced sp.)
Gaper clams	<i>Tresus capax</i>
Ghost shrimp	<i>Neotrypaea californiensis</i>
Olympia oyster	<i>Ostrea lurida</i>
Pacific oyster	<i>Crassostrea gigas</i>
Mussels	<i>Mytilus</i> spp.
Softshell clam	<i>Mya arenaria</i>

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Coast Range Ecoregion, Coos Sub-basin (HUC 17100304), Coos Bay-Frontal Pacific Ocean (HUC 1710030403) Fifth field Watershed 8, Coos County, Oregon												
Estuary Drain (Alt Wet NH (West))	17100304006491 State	0.00	Estuarine Major	Pullback TEWA Adjacent to Pipeline	The Estuary Drain is not crossed by the centerline. TEWA 0.10, which crosses the drain, is required for the HDD of Coos Bay to fabricate the HDD pipe string and to facilitate the HDD pullback operations. The Estuary Drain will be bridged to minimize disturbance	Southern DPS Green Sturgeon, T, CH Oregon Coast ESU Coho, migration, rearing habitat T, CH Southern DPS Eulachon, T	Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey, Eulachon	Various Marine Fish and Shellfish	4 Coastal Pelagic spp., 21 Groundfish spp, 2 Salmonid spp. Pelagic, Groundfish, and Salmonids (see Table 3B- 6)	Coastal Pelagic spp., Groundfish spp, Salmonid spp. Fall Chinook/ Coho Rearing, Migration	Oct 1 to Feb 15 j/	Y
Coos Bay (NE-26) WB-T02-001	17100304006491 State	0.28 to 1.00	Estuarine Major	HDD	HDD feasibility based on geometry, topography, and expected geotechnical conditions along proposed alignment. Primary HDD activities are significantly set back from crossing. The HDD crossing method will not encumber the Federal Navigation crossed along the HDD alignment. The HDD avoids in-water open cut crossing methods. Other trenchless crossing methods (conventional bore and Direct Pipe®) are not feasible based on crossing length.	Southern DPS Green Sturgeon, T, CH Oregon Coast ESU Coho, migration, rearing habitat T, CH Southern DPS Eulachon, T	Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey, Eulachon	Various Marine Fish and Shellfish	4 Coastal Pelagic spp., 21 Groundfish spp, 2 Salmonid spp. Pelagic, Groundfish, and Salmonids (see Table 3B- 6)	Coastal Pelagic spp., Groundfish spp, Salmonid spp. Fall Chinook/ Coho Rearing, Migration	Oct 1 to Feb 15 j/	N
Coos Bay (NE-26) WB-T02-002 W-T02-001D	171003040064961 State	1.46 to 3.02	Estuarine	HDD	HDD feasibility based on geometry, topography, and expected geotechnical conditions along proposed alignment. Primary HDD activities are significantly set back from crossing. The HDD crossing method will not encumber the Federal Navigation crossed along the HDD alignment. The HDD avoids in-water open cut crossing methods. Other trenchless crossing methods (conventional bore and Direct Pipe®) are not feasible based on crossing length.	Southern DPS Green Sturgeon, T, CH Oregon Coast ESU Coho, migration, rearing habitat T, CH Southern DPS Eulachon, T	Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey, Eulachon	Various Marine Fish and Shellfish	4 Coastal Pelagic spp., 21 Groundfish spp, 2 Salmonid spp. Pelagic, Groundfish, and Salmonids (see Table 3B- 6)	Coastal Pelagic spp., Groundfish spp, Salmonid spp. Fall Chinook/ Coho Rearing, Migration	Oct 1 to Feb 15 k/	N
Kentuck Slough EE-SS-9004 (EE-6)		3.02 to 6.39R	Perennial Minor	HDD Pullback TEWA Adjacent riparian zone	Adjacent riparian zone overlaps construction ROW	Oregon Coast ESU Coho, spawning habitat T, CH	Coho, Winter Steelhead	Assumed	Coho	Coho Rearing, Migration	Jul 1 to Sep 15	
Trib to Coos Bay (S1-01/EE-6)	17100304000767 Private	6.39R	Perennial Minor	Dry Open-Cut	Dry open-cut method feasible/practical on small channelized tributary within golf course lacking effect riparian vegetation.	Oregon Coast ESU Coho, assumed habitat T	Coho Assumed, Winter Steelhead	Assumed	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*
Willanch Slough (EE-7) S1-04 (EE-7 MOD))	17100304001393 Private	8.27R	Perennial Intermediate	Dry Open-Cut	Dry open-cut method feasible/practical on small tributary within pasture/hayfield lacking effect riparian vegetation.	Oregon Coast ESU Coho, migration, rearing habitat T, CH	Coho, Winter Steelhead	Assumed	Coho	Coho Rearing, Migration	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Johnston Creek Willanch Creek S1-05 (GDX-29 / EE-8 (MOD))	17100304000413 Private	8.35R	Perennial	Adjacent riparian zone	Adjacent riparian zone overlaps construction ROW	Oregon Coast ESU Coho, spawning habitat T, CH	Coho, Winter Steelhead	Assumed	Coho	Coho Rearing, Migration	Jul 1 to Sep 15	
Trib. to Willanch Slough S - T0 - 1 - 003 (GDX030)	Private	8.46R	Intermittent Intermediate	Dry Open-Cut	Dry open-cut method feasible/practical on small intermittent channelized tributary on edge of pasture.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Cooston Channel (Echo Creek) S-T01-003 (SS-100-002)	17100304005045 Private	10.21R	Intermittent Intermediate	Dry Open-Cut	Dry open-cut method feasible/practical on small headwater tributary, if flowing at the time of construction.	Oregon Coast ESU Coho, spawning habitat T	Winter Steelhead Coho	Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y*
Coos River (BSP-119)	17100304005030 Private	11.13R	Estuarine Major	HDD 10 Level 1 m/	HDD feasible based on geometry, topography, and geotechnical conditions along proposed alignment. Primary HDD activities are significantly set back from crossing. Conventional bore not feasible/practical because of crossing length and high groundwater areas on either side of river. Dry open-cut or diverted open-cut methods not practical/feasible based on flow volumes and tidal influence.	Southern DPS Green Sturgeon, T, CH Oregon Coast ESU Coho, migration, rearing habitat T, CH Southern DPS Eulachon, T	Fall Chinook, Coho, Winter Steelhead, Green Sturgeon, Pacific Lamprey, Eulachon	Various Marine Fish and Shellfish	Chinook, Coho Pelagic, Groundfish, (see Table 3B- 5)	Fall Chinook/ Coho (Rearing, Migration)	Oct 1 to Feb 15 I/	N
Vogel Creek (SS-100-005)	17100304005031 Private	11.55BR	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical during low flow period within fish window. A conventional bore crossing is problematic because of expected high groundwater levels within the Coos River floodplain that would be encountered within the bore pit at design depths.	Oregon Coast ESU Coho, spawning habitat T, CH	Coho, Winter Steelhead	Assumed	Coho	Coho Rearing, Migration	Jul 1 to Sep 15	Y*
Ditch Trib. to Vogel Creek (BR-S- 04)	17100304000790 Private	11.88BR	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent ditched tributary if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Ditch Trib. to Vogel Creek (BR-S- 06)	17100304000798 Private	12.11BR	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2' wide intermittent ditched tributary if flowing at the time of construction.	None	None	Assumed	None	None	Jul 1 to Sep 15	Y*
Trib. to Stock Slough (EE-SS-9026)	17100304015021 Private	13.92BR	Intermittent N/A	Adjacent to centerline within TEWA	Small headwater, interpreted Intermittent, tributary not crossed by centerline on edge of TEWA and can likely be avoided, if present. If present and cannot be avoided, would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jul 1 to Sep 15	N

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to Stock Slough (BR-S-31)	17100304002068 Private	14.72BR	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small non- fish intermittent ditched tributary if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Stock Slough (Laxstrom Gulch) (BR-S-30)	17100304000493 Private	14.82BR	Intermittent	Adjacent riparian zone	Adjacent riparian zone overlaps construction ROW	Oregon Coast ESU Coho, spawning habitat T, CH	Coho, Winter Steelhead,	Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	
Stock Slough (BR-S-36)	17100304000507 Private	15.11BR	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on creek during low flow period within fish window. A conventional bore crossing is problematic because of expected high groundwater levels within the Stock Slough floodplain and Laxstrom Gluch that would be encountered within the bore pit at design depths.	Oregon Coast ESU Coho, spawning habitat T, CH	Coho, Winter Steelhead,	Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y*
Trib. To Stock Slough (Laxstrom Gulch)	17100304000493 Private	15.16BR	Intermittent Minor	Adjacent to centerline within ROW crossed by PAR 15.07	PAR 15.07 uses an existing road with a culverted crossing that does not need to be improved for project use - no impacts	Oregon Coast ESU Coho, spawning habitat T	Coho, Winter Steelhead	Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	N
Stock Slough (EE-SS-9068)	17100304000507 Private	15.32BR	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small waterbody during low flow period within fish window and if flowing at the time of construction. A conventional bore crossing is problematic because of expected high groundwater levels within the Stock Slough floodplain that would be encountered within the bore pit at design depths. A bore crossing is not feasible because of topographic constraints on west side of creek because of grading/excavation requirements for a bore pit.	Oregon Coast ESU Coho, spawning habitat T, CH	Coho, Winter Steelhead,	Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y*
Coast Range Ecoregion, Coquille Sub-basin (HUC 17100305), North Fork Coquille River (HUC 1710030504) Fifth field Watershed 8 Coos County, Oregon												
Steinnon Creek (SS-500-003; BR-S-63)	17100305000361 BLM	20.20BR	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small non- fish tributary. Steep topographic conditions prevent a conventional bore because of bore pit grading/excavation requirements on both sides of the crossing.	None	Unknown	Assumed	None	None	Jul 1 to Sep 15	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Steinnon Creek (BR-S-63)	171003050000361 BLM	24.32BR	Perennial Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical during low flows periods within ODFW in- water work window. Right-of- way has been necked down to 75 feet and TEWAs located in cleared areas to minimize riparian disturbance. A conventional bore (geotechnical conditions unknown) would require additional riparian impacts because TEWAs to accommodate the bore pits would be required closer to the waterbody in forested riparian areas.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey	Assumed	Chinook, Coho	Fall Chinook, Coho Rearing, Migration	Jul 1 to Sep 15	Y-1i
Ditch (DA-10X)	17100305012102 Private	22.72	Intermittent Minor	Dry Open-Cut	Dry-open cut methods feasible/practical on small field drainage ditch if flowing during construction.	None	Unknown	Assumed	None	None	Jul 1 to Sep 15	Y*
North Fork Coquille River (BSP-207)	171003050000339 Private	23.06	Perennial Intermediate	Dry Open-Cut Level 1 m/	Dry open-cut method feasible/practical on 20' wide river during low flow period within fish window. Impacts to riparian vegetation minimized by placement/setbacks of TEWAs on west side of river in field and eastside setback 100 feet from waterbody. ROW also necked down to 75 feet. Topographic conditions on east side of the crossing prevent HDD crossing methods because of elevation differences between entry/exit and necessary workspace grading requirements.	Oregon Coast ESU Coho, spawning, rearing, migration habitat T, CH	Spring Chinook, Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey	Cutthroat Trout, Assumed	Chinook, Coho	Spring and Fall Chinook, Coho Rearing, Migration	Jul 1 to Sep 15	Y-1i
Trib. to Middle Creek S-T02-001 (EE-SS-9073)	17100305012832 Private	25.18	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater, non- fish-bearing tributary if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Middle Creek (BSI- 137)	BLM- Coos Bay District	27.01	Intermittent Intermediate	Dry Open-Cut	Intermittent tributary to be crossed at the same time as the crossing of Middle Creek at MP 27.04 using dry open-cut. Tributary expected to be dry at the time of construction.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Middle Creek (BSI- 135)	BLM- Coos Bay District	27.03	Intermittent Minor	Adjacent to centerline within ROW Level 2	Intermittent tributary not crossed by centerline.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	N

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Middle Creek (BSP-133)	17100305000323 BLM-Coos Bay District	27.04	Perennial Intermediate	Dry Open-Cut Level 2 <u>m</u> /	Dry open-cut methods feasible/practical on creek during low flow period within fish window. A conventional bore crossing is not feasible because of topographic constraints on west side of creek because of grading/excavation requirements for bore pit. An HDD is not feasible because of topographic/geometry conditions.	Oregon Coast ESU Coho, rearing, migration habitat T, CH	Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey	Cutthroat Trout	Chinook, Coho	Fall Chinook, Coho Rearing, Migration	Jul 1 to Sep 15	Y-1i
Coast Range Ecoregion, Coquille Sub-basin (HUC 17100305), East Fork Coquille River (HUC 1710030503) Fifth field Watershed 8, Coos County, Oregon												
Trib. To E. Fork Coquille (BSP-77)	7100305002504 Private	28.86	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <u>n</u> / Level 1	Dry open-cut methods feasible/practical on small incised headwater trib. Dam and pump crossing method most logical dry open-cut method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks including upsetting flume during process. Steep topographic conditions prevent a conventional bore because of bore pit grading/excavation requirements on both sides of the crossing.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Cutthroat Trout	Coho Assumed	Unknown	Jul 1 to Sep 15	Y
Trib. To E. Fork Coquille (BSP-74)	17100305002598 Private	29.30	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small tributary. Steep topographic conditions prevent a conventional bore because of bore pit grading/excavation requirements on west side of the crossing.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Present	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*
Trib. To E. Fork Coquille (BSI-76)	17100305002647 Private	29.47	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) <u>n</u> /	Dry open-cut methods feasible/practical on small 3-4' intermittent tributary if flowing at the time of construction.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Unknown	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
East Fork Coquille River (BSP-71)	17100305000286 Private	29.85	Perennial Intermediate	Dry Open-Cut Level 1 <u>m</u> /	Project alignment was selected based on landowner negotiations and requirement to avoid landowner's air strip. Dry open-cut methods feasible/practical during low flow crossing period during ODFW in-water work window. Conventional bore is not practical because of significant grading/excavation requirements for bore pits. The river is deeply incised below stream banks requiring extensive pits for installation below streambed. Continued bore pit dewatering would be required to keep bore pits dry. A temporary bridge is also necessary to prevent entire spread move around. A crossing bridge will require bank grading for crossing access. An HDD is probable at the approximate crossing location based on the topography, geometry and expected geotechnical conditions. Significant HDD costs, HDD time requirements and the need for a crossing bridge were the determinants for the proposed dry-open cut crossing method.	Oregon Coast ESU Coho, spawning, rearing, migration habitat T, CH	Spring Chinook, Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey	Cutthroat Trout	Chinook, Coho	Spring Chinook Rearing, Migration Fall Chinook Spawning, Rearing, Coho Rearing, Migration	Jul 1 to Sep 15	Y-1i
Trib. to E. Fork Coquille (SS-003-007A)	17100305002813 Private	30.22	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent tributary if flowing at the time of construction	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to E. Fork Coquille (SS-003-007B)	17100305002813 Private	30.29	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent tributary if flowing at the time of construction.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Assumed	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*
Trib. To E. Fork Coquille (BSI-70)	17100305018097 BLM-Coos Bay District	31.64	Intermittent Minor	Dry Open-Cut	Small 1-wide intermittent headwater tributary, dry open- cut methods feasible/practical, if flowing at time of construction.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Elk Creek (BSP-57)	1240218431116 Private	32.40	Perennial Minor	Dry Open-Cut Level 1 <i>m</i> /	Dry open-cut methods feasible/practical on small 8' wide tributary. Steep topographic conditions on north side of stream prevent a conventional bore because of grading/excavation requirements for bore pit. StreamNet data indicates anadromy below crossing (~ 1 mile). Waterbody is within the ¼ mile buffer of MAMU-occupied stand (C3098). Conflicts with ODFW recommended in-water work periods are not expected based on proposed two-year construction schedule. However, proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and installation of flumes or dams/pumps.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Cutthroat Trout, Assumed	Coho Assumed	Unknown	Jul 1 to Sep 15	Y
Trib. To Elk Creek S-T01-008 (BSP-55)	1239513431370 Private	32.50	Perennial Minor	Dry Open-Cut (Streambed-bedrock) <i>n</i> /	Dry open-cut methods feasible/practical on small 3-4' wide tributary. Waterbody is within the ¼ mile buffer of MAMU-occupied stand (C3098). Conflicts with ODFW-recommended in-water work periods are not expected based on proposed two-year construction schedule. However, proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and installation of flumes or dams/pumps.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Assumed	Coho Assumed	Unknown	Jul 1 to Sep 15	Y
Trib. To Elk Creek S-T01-004 (SS-100-030)	7100305021871 Private	32.56	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small/non- fish-bearing intermittent headwater tributary if flowing at time of construction. Topographic conditions on both sides of stream limit a conventional bore because of grading/excavation requirements for bore pits.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. To Elk Creek (BSP-49)	17100305003372 Private	33.00	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 10' wide tributary. Topographic conditions on both sides of stream limit a conventional bore because of grading/excavation requirements for bore pits.	None	None	None	None	None	Jul 1 to Sep 15	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <u>a</u> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <u>b</u> /	Proposed Crossing Method Scour Level <u>c</u> /	Waterbody Crossing Rationale <u>d</u> /	ESA Species Present/Habitat <u>e</u> /	Anadromous Species Present <u>f</u> /	Resident Coldwater Species Present	EFH Species Present <u>g</u> /	EFH Component Present <u>g</u> /	Fishery Construction Window <u>h</u> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. To Elk Creek (BSP-50)	17100305003372 Private	33.02	Perennial Minor	Adjacent to centerline within ROW (Streambed-bedrock) <u>n</u> /	Not crossed by pipeline centerline. Small 2' wide headwater tributary expected to be dry during construction. Trib. would be crossed at the same time as BSP049 at MP 32.99.	None	None	None	None	None	Jul 1 to Sep 15	Y*
South Fork Elk Creek (CSP-5)	17100305000591 Private	34.46	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <u>n</u> / Level 2 <u>m</u> /	Dry open-cut methods feasible/practical on stream. Steep topographic conditions on both sides of stream prevent conventional bore crossing methods because of grading/excavation requirements for bore pits.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y
Trib. To S. Fork Elk Creek (BSI-251)	17100305021783 BLM-Coos Bay District	35.51	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent headwater tributary, if flowing at time of construction. Crossing will occur adjacent to road where existing culvert is in place. This waterbody is located within an occupied MAMU- stand (C3093). Conflicts with ODFW- recommended in-water work periods are not expected based on the proposed two- year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and the installation of flumes or dams/pumps.	None	None	None	None	None	Jul 1 to Sep 15	N (In existing road)

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Coast Range Ecoregion, Coquille Sub-basin (HUC 17100305), Middle Fork Coquille River (HUC 1710030501) Fifth field Watershed 8, Coos County, Oregon												
Trib. to Big Creek (BLM 35.87 (CSP-2))	17100305025781 BLM-Coos Bay District	35.87	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater tributary, if flowing at time of construction. Crossing occurs within Elk Creek Road (BLM 28-11-29-0) and flows through a 12" culvert which will be replaced. Waterbody is within the ¼ mile buffer of MAMU-occupied stand (C3093). Conflicts with ODFW-recommended in-water work periods are not expected based on proposed two year construction schedule. However, proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and to allow the removal of road culvert, installation of flumes or dams/pumps, and replacement of the road culvert	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. To Big Creek (BLM 36.48)	17100305026477 BLM-Coos Bay District	36.48	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater tributary, if flowing at time of construction. This waterbody is located adjacent to an occupied MAMU- stand (C3073). Conflicts with ODFW- recommended in-water work periods are not expected based on the proposed two-year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing to facilitate the crossing and allow the installation/removal of flumes or dams/pumps and to minimize the duration of instream work.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. To Big Creek (GSI-25/BSI-253)	17100305004068 BLM-Coos Bay District	36.54	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent headwater tributary, if flowing at time of construction. No additional workspace required. ODFW fish passage barrier data reports a downstream boulder canyon with a 10-foot falls at upper end (Record ID 52488). StreamNet data indicates anadromy below crossing (~ 0.5 mile) at ODFW barrier 52488. This waterbody is located within an occupied MAMU-stand (C3073). Conflicts with ODFW- recommended in-water work periods are not expected based on the proposed two- year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and the installation of flumes or dams/pumps.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. To Big Creek (BLM 36.85)	17100305025748 BLM-Coos Bay District	36.85	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater tributary, if flowing at time of construction. Crossing occurs within Elk Creek Road (BLM 28-11-29-0) and flows through a 12-18" culvert which will be replaced. This waterbody is located within an occupied MAMU-stand (C3073). Conflicts with ODFW- recommended in-water work periods are not expected based on the proposed two- year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing to facilitate the crossing and allow the installation/removal of flumes or dams/pumps and to minimize the duration of instream work.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. To Big Creek (BSI-252)	17100305004061 BLM-Coos Bay District	36.92	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater tributary, if flowing at time of construction. No additional workspace required. Alignment and trib. crossing along existing road. ODFW fish passage barrier data reports a downstream boulder canyon with a 10 foot falls at upper end (Record ID 52488). StreamNet data indicates anadromy below crossing (~ 1 mile) at ODFW barrier 52488. This waterbody is located within an occupied MAMU-stand (C3073). Conflicts with ODFW- recommended in-water work periods are not expected based on the proposed two- year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and the installation of flumes or dams/pumps.	None	None	Unknown	None	None	Jul 1 to Sep 15	N (In existing road)
Trib. To Big Creek (ESI-19)	17100305026126 BLM-Coos Bay District	37.32	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater tributary, if flowing at time of construction. No additional workspace required. ODFW fish passage barrier data reports a downstream boulder canyon with a 10 foot falls at upper end (Record ID 52488). StreamNet data indicates anadromy below crossing (~ 1 mile) at ODFW barrier 52488. StreamNet data indicates anadromy below crossing (~ 1 mile) at ODFW barrier 52488. This waterbody is located within an occupied MAMU- stand (C3090). Conflicts with ODFW- recommended in-water work periods are not expected based on the proposed two- year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and the installation of flumes or dams/pumps.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. To Big Creek (ESP-20)	17100305000606 BLM-Coos Bay District	37.35	Perennial Intermediate	Dry Open-Cut Level 1 <i>m</i> /	Dry open-cut methods feasible/practical on stream. Dam and pump crossing method most logical dry open- cut method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks including upsetting flume during process. Steep topography on both sides of stream prevents conventional bore crossing methods because of grading/excavation requirements for bore pits. No additional workspace proposed. ODFW fish passage barrier data reports a downstream boulder canyon with a 10 foot falls at upper end (RecordID 52488). StreamNet data indicates anadromy below crossing (~ 1 mile) at ODFW barrier 52488. This waterbody is located within an occupied MAMU- stand (C3090). Conflicts with ODFW-recommended in-water work periods are not expected based on the proposed two- year construction schedule. However, the proposed Year Two daily timing restrictions during construction to minimize impacts to MAMU should be waived during the stream crossing installation to minimize the duration of instream work and the installation of flumes or dams/pumps.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y
Big Creek	17100305000272 BLM	37.41	Perennial Intermediate	Adjacent riparian zone	Adjacent riparian zone overlaps construction ROW	Oregon Coast ESU Coho, assumed habitat T	Winter Steelhead	Assumed	Coho Assumed	Unknown	Jul 1 to Sep 15	

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, i =set inside fish window, N=None
Upper Rock Creek (BSP-41)	17100305000252 Private	44.21	Perennial Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on stream. Dam and pump crossing method most logical dry open- cut method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks including upsetting flume during process. Steep topography on both sides of stream prevents conventional bore crossing methods because of grading/excavation requirements for bore pits. ODFW fish passage barrier data indicated two potential downstream falls may limit passage one report as 6-8 feet (RecordID 52484). StreamNet data indicates anadromy below crossing (~ 6 miles) at ODFW barrier RecordID 52484.	None	None	Cutthroat Trout Assumed	None	None	Jul 1 to Sep 15	Y
Klamath Mountains Ecoregion, Coquille Sub-basin (HUC 17100305), Middle Fork Coquille River (HUC 1710030501) Fifth field Watershed 8, Douglas County, Oregon												
Tributary Trib. to Upper Rock Creek (S3-07 /BW-38)	171003050005585 Private	46.56	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small non- fish-bearing headwater tributary.	None	None	None	None	None	Jul 1 to Sep 15	Y
Ditch (S3-06)	Private	48.21	Intermittent Minor	Dry Open- Cut	Dry open-cut methods feasible/practical on small intermittent road ditch if flowing at time of construction.	None	None	None	None	None	N/A	Y*
Deep Creek (BSP-257)	171003050005863 BLM-Roseburg District	48.27	Perennial Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on broad stream and associated wetlands. ODFW fish passage barrier data (Recordid 56033) reports downstream falls on the Middle Fork Coquille River restrict anadromy at crossing.	None	None	Cutthroat Trout	None	None	Jul 1 to Sep 15	Y-1i
Ditch (BDX-32)	Private	49.94	Intermittent Minor	Adjacent to ROW	Right-of-way was necked-down to avoid the ditch.	None	None	None	None	None	Jul 1 to Sep 15	N
Ditch (BDX-31)	Private	50.02	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent field ditch if flowing at time of construction.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <u>a/</u> and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <u>b/</u>	Proposed Crossing Method Scour Level <u>c/</u>	Waterbody Crossing Rationale <u>d/</u>	ESA Species Present/Habitat <u>e/</u>	Anadromous Species Present <u>f/</u>	Resident Coldwater Species Present	EFH Species Present <u>g/</u>	EFH Component Present <u>g/</u>	Fishery Construction Window <u>h/</u>	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, N=None
Middle Fork Coquille River (BSP-30)	17100305000232 Private	50.28	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <u>n/</u> Level 1 <u>m/</u>	Dry open-cut methods feasible/practical on broad stream during low flows within ODFW in-water work windows. ROW has been necked down to 75 feet and TEWAs located in existing cleared areas to minimize riparian impacts. ODFW fish passage barrier data (Recordid 56033) reports downstream falls on the Middle Fork Coquille River restrict anadromy at crossing. StreamNet data also indicates duplicates this anadromy restriction at this barrier.	None	None	Cutthroat Trout	None	None	Jul 1 to Sep 15	Y-1i
Trib. to Middle Fork Coquille (GDY-36/BSI-66/67)	17100305005874 Private	50.45	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-4' wide intermittent ditched tributary in ag field if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Belieu Creek (BSP-61/GSI- 37)	17100305000706 Private	50.71	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide headwater tributary. Steep topography on west side of crossing prevents conventional bore because of grading/excavation requirements for a bore pit. ODFW fish passage barrier data (RecordID 56033) reports downstream falls on the Middle Fork Coquille River restrict anadromy at the crossing.	None	None	Cutthroat Trout	None	None	Jul 1 to Sep 15	Y
Trib. to Middle Fork Coquille (S1-07/GSI-38)	17100305022784 Private	51.02	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-4' wide intermittent headwater tributary if flowing at time of construction. No additional workspace required.	None	None	None	None	None	Jul 1 to Sep 15	Y
Trib to Jim Belieu Creek (SS-222-006)	Private	51.71	Intermittent Minor	Adjacent to centerline within ROW	Dry open-cut methods feasible/practical on small intermittent field ditch if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Klamath Mountains Ecoregion, South Umpqua (HUC 17100302) Sub-basin, Olalla Creek-Lookingglass Creek (HUC 1710030212) Fifth field Watershed 8, Douglas County, Oregon												
Trib. to Shields Creek (BSI- 202)	17100302001821 Private	55.90	Intermittent Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on intermittent tributary if flowing at time of construction.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Assumed	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*
Trib. to Shields Creek (BSI- 203)	17100302001894 Private	55.94	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 8' wide intermittent tributary if flowing at time of construction.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Shields Creek (Denied Access 13)	17100302044091 Private	56.28	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3-4' wide intermittent tributary if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to Shields Creek (Denied Access 14)	17100302044013 Private	56.34	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3-4' wide intermittent tributary if flowing at time of construction.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Olalla Creek S-T02-002	17100302044083 Private	56.80	Intermittent	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3-4' wide intermittent tributary if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Olalla Creek (BSI-140)	17100302048489 Private	57.11	Intermittent Minor	Dry Open-Cut (Streambed – bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small intermittent tributaries if flowing at time of construction.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Olalla Creek (BSI-140)	17100302048489 Private	57.14	Intermittent Minor	Dry Open-Cut (Streambed – bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small intermittent tributaries if flowing at time of construction.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Olalla Creek (BSI-138)	17100302002187 Private	57.31	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 5' wide intermittent tributary if flowing at time of construction. ROW has been necked down to 75 feet and TEWAs located in existing cleared areas to minimize riparian impacts.	Oregon Coast ESU Coho, assumed habitat T	Unknown	Present	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*
Trib. to Olalla Creek (BSI-147/EE-12)	17100302002221 Private	57.84	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent tributary if flowing at time of construction. ROW has been necked down to 75 feet and TEWAs located in existing cleared areas to minimize riparian impacts.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*
Irrigation Canal (BDX148)	Private	57.97	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent field ditch if flowing at time of construction.	None	None	None	None	None	N/A	Y*
Trib. to Olalla Creek (BSI-151)	17100302002311 Private	58.20	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent tributary if flowing at time of construction. ROW has been necked own to 75 feet and TEWAs located in existing cleared areas to minimize riparian impacts.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Ditch (BDX-157)	Private	58.30 58.51	Intermittent Minor	Adjacent to centerline within ROW and TEWA	Dry open-cut methods feasible/practical on small intermittent field ditch if flowing at time of construction.	None	None	None	None	None	N/A	Y*
Trib. to Olalla Creek (BSP- 159)	17100302002420 Private	58.55	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small 10' wide tributary. ROW has been necked down to 75 feet and TEWA located in existing cleared area to minimize riparian impacts.	None	None	None	None	None	Jul 1 to Sep 15	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, i =set inside fish window, N=None
Olalla Creek (BSP-155)	17100302000047 Private	58.78	Perennial Intermediate	Dry Open-Cut Level 2 <u>m/</u>	Dry open-cut methods feasible/practical on broad stream during low flows within ODFW in-water work windows. (USGS Gage station 1431120 reports Mean of monthly discharge recording period 1956 to 1973 of 2.0, 0.52 & 0.77 cfs, respectively for Jul, Aug & Sep). TEWAs have been located in existing cleared areas to minimize riparian impacts.	Oregon Coast ESU Coho, spawning, rearing, migration habitat T, CH	Coho, Winter Steelhead, Pacific Lamprey	Cutthroat Trout	Coho	Coho Spawning, Rearing,	Jul 1 to Sep 15	Y-1i
Ditch - Trib. to Olalla Creek (BDX-153)	17100302002576 Private	59.02	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent field ditch if flowing at time of construction.	None	None	None	None	None	N/A	Y*
Trib. to Olalla Creek (BSI-132)	17100302002635 Private	59.29	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 9' wide intermittent tributary if flowing at time of construction.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Olalla Creek (BSI-129)	17100302000705 Private	59.65	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent tributary if flowing at time of construction.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Unknown	Coho Assumed	Unknown	Jul 1 to Sep 15	Y*
Trib. to McNabb Creek (NSP-14)	17100302002838 Private	60.13	Perennial Minor	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small 6' wide tributary. Extensive grading/excavation requirements limit feasibility of conventional bore methods.	None	None	None	None	None	None	Y
McNabb Creek (NSP-13)	17100302002924 Private	60.48	Perennial Minor	Dry Open-Cut (Streambed-bedrock) <u>n/</u> Level 1	Dry open-cut methods feasible/practical on tributary. TEWAs located in existing cleared areas to minimize riparian impacts.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout, Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y
Klamath Mountains Ecoregion, South Umpqua (HUC 17100302) Sub-basin, Clark Branch-South Umpqua River (HUC 1710030211) Fifth field Watershed 8, Douglas County, Oregon												
Kent Creek (BSP-240)	17100302000075 Private	63.97	Perennial Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on broad stream during low flows within ODFW in-water work windows. Steep topographic conditions on both sides of the stream prevent conventional bore methods because of extensive grading/excavation requirements for bore pits	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y
Trib. to Kent Creek (BSI-241)	17100302003968 Private	63.97	Intermittent Minor	Adjacent to centerline within ROW Level 1	Not crossed by centerline. Small intermittent tributary expected to be dry during construction and will be restored to approximate original contour and grade during restoration.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	N (can be avoided)

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Rice Creek (S2-04; BSP-227)	17100302000079 Private	65.76	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <i>n</i> / Level 1	Dry open-cut methods feasible/practical during low flows periods within ODFW in- water work windows. Alignment is defined by residential development in immediate area. ROW has been necked down to 75 feet and TEWAs located in cleared areas to minimize riparian disturbances.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y
Trib to Rice Creek BSI-228	17100302044765 Private	65.83	Intermittent	Adjacent riparian zone	Adjacent riparian zone overlaps construction ROW	None	None	None	None	None	Jul 1 to Sep 15	
Trib. to Willis Creek (BSI-230)	17100302004832 Private	66.87	Intermittent N/A	Adjacent to centerline within ROW (Streambed-bedrock) <i>n</i> /	Not crossed by centerline, 2' wide intermittent tributary expected to be dry during summer construction period. Tributary will be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jul 1 to Sep 15	N
Willis Creek (BSP-168)	17100302000083 Private	66.95	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <i>n</i> / Level 1	Dry open-cut methods feasible/practical during low flows periods within ODFW in- water work windows. ROW has been necked down to 75 feet and TEWAs located in cleared areas to minimize riparian disturbances.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y-1i
Trib. to Willis Creek (BSI-169)	17100302048422 Private	67.00	Intermittent Intermediate	Dry Open-Cut (Streambed-bedrock) <i>n</i> /	Dry open-cut methods feasible/practical on small intermittent tributary, if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to South Umpqua River (SS-005-001 (SS-100-011))	17100302049984 Private	69.10	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small intermittent headwater tributary expected to be dry during construction and will be restored to approximate original contour and grade during restoration.	None	None	Unknown	None	None	Jul 1 to Sep 15	N
Trib. to South Umpqua River SS-004-004 SS-100-012)	17100302005610 Private	69.29	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical during low flows periods within ODFW in- water work windows. No TEWAs are proposed to minimize riparian and landowner impacts.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to South Umpqua River (SS-004-005 SS-100-013)	17100302000727 Private	69.35	Perennial Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical during low flows periods within ODFW in- water work windows. No TEWAs are proposed to minimize landowner impacts.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to South Umpqua River (SS-004-006 SS-100-014)	17100302005693 Private	69.57	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on 2'to 3' foot wide headwater tributary which is expected to be dry at the time of construction. If flowing, crossing would be completed during low flows periods within ODFW in- water work windows.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to South Umpqua River (SS-999-001)	17100302046930 Private	70.79	Intermittent	Adjacent riparian zone	Adjacent riparian zone overlaps construction ROW	None	None	None	None	None	Jul 1 to Sep 15	
Trib. to South Umpqua River (SS-005-006/SS-100-015)	17100302006216 Private	71.08	Intermittent N/A	Adjacent In TEWA 71.01- N	Tributary is within required laydown area for the Direct Pipe crossing of the South Umpqua River.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
South Umpqua River (BSP- 26)	17100302000086 Private	71.27	Perennial Major	Direct Pipe Level 2 m/	The Direct Pipe crossing method has been evaluated and determined to be feasible at the proposed crossing location. The proposed alignment has been rerouted to facilitate the crossings of I-5, South Umpqua River, Dole Road, and the railroad using a single Direct Pipe crossing. Because of subsurface geotechnical conditions the HDD crossing method has been determined to be infeasible. This crossing method/location avoids the need to use a diverted open cut to cross the South Umpqua River on the 2009 FEIS route or an open cut crossing on Reroute 67.6.	Oregon Coast ESU Coho, migration habitat T, CH	Spring Chinook, Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey	Present, unspecified	Chinook, Coho	Spring Chinook-Migration Fall Chinook Spawning, Rearing, Migration	Jul 1 to Aug 31	N
Trib. to South Umpqua River (SS-005-007)	17100302035572 Private	71.34	Intermittent N/A	Adjacent to potential Roth Pipe Yard	Ditch is avoided.	None	None	None	None	None	Jul 1 to Sep 15	N
Trib. to South Umpqua River (SS-005-08 SS-100-16)	17100302006366 Private	71.35 71.57	Intermittent N/A	Direct Pipe	Crossed by the Direct Pipe installation associated with the South Umpqua River and I-5 Crossing	None	None	None	None	None	Jul 1 to Sep 15	N
Trib. to South Umpqua River (SS-100-017)	17100302047304 Private	71.69	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small intermittent headwater tributary expected to be dry during construction and will be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jul 1 to Sep 15	N
Trib. to South Umpqua River (SS-005-009 SS-100-019)	17100302006590 Private	73.04	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on 2'to 3' foot wide headwater tributary which is expected to be dry at the time of construction. If flowing, crossing would be completed during low flows periods within ODFW in- water work windows.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, N=None
Trib. to South Umpqua River (SS-005-013 SS-100-020)	17100302050160 Private	73.51	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on 2'to 3' foot wide headwater tributary which is expected to be dry at the time of construction. If flowing, crossing would be completed during low flows periods within ODFW in- water work windows.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to South Umpqua River (SS-005-011 & -12 SS-100- 021)	17100302049674 Private	73.56	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on 2'to 3' foot wide headwater tributary which is expected to be dry at the time of construction. If flowing, crossing would be completed during low flows periods within ODFW in- water work windows.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib. to Richardson Creek S-T-03-002	Private	73.70	Intermittent	Adjacent to centerline within ROW	Ditch is avoided by centerline	None	None	Unknown	None	None	Jul 1 to Sep 15	Y*
Trib to Richardson Creek (SS-005-010)	Private	73.73	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2' to 3' foot wide headwater tributary that is expected to be dry at the time of the crossing. If flowing, crossing would be completed during low flow periods within ODFW in-water work window.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y
Klamath Mountains Ecoregion, South Umpqua (HUC 17100302) Sub-basin, Myrtle Creek (HUC 1710030210) Fifth field Watershed 8, Douglas County, Oregon												
Rock Creek (EE-SS-9032)	17100302007335 Private	75.33	Perennial Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on non- fish-beargin stream within steep incised drainage. Dam and pump would be the most logical method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks, including upsetting flume during process. Topographic conditions on both sides of stream prevent a conventional bore because of grading/excavation requirements for bore pits.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Unknown	Coho Assumed	Unknown	Jul 1 to Sep 15	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to Rock Creek (EE-SS-9033)	17100302001061 Private	75.34	Perennial Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on non-fish-bearing stream within steep incised drainage. Dam and pump would be the most logical method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks, including upsetting flume during process. Topographic conditions on both sides of stream prevent a conventional bore because of grading/excavation requirements for bore pits.	Oregon Coast ESU Coho, assumed habitat T	Assumed	Unknown	Coho Assumed	Unknown	Jul 1 to Sep 15	Y
Bilger Creek S-T02-004 (BSP-1)	17100302000605 Private	76.38	Perennial Minor	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on small 6' wide tributary. ROW necked down and TEWAs set in existing cleared areas to minimize riparian impacts. ODFW fish passage barrier data indicate two potential downstream barriers (RecordID 2571 & 2603).	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y
Little Lick (BSP-6)	17100302001073 Private	77.71	Perennial Minor	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on small 7' wide tributary. No additional workspace required. Steep topographic conditions make a conventional bore impractical because of extensive grading/excavation requirements as well as subsequent riparian disturbance.	None	None	Unknown	None	None	Jul 1 to Sep 15	Y
Trib. to Little Lick Creek (BSI-8)	17100302008039 Private	77.93	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical intermittent tributary if flowing at time of construction. The tributary within the TEWA would be matted and silt fenced installed as necessary to minimize disturbance and the potential for sedimentation.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Little Lick Creek (BSI-10)	17100302008047 Private	78.02	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical small 2' wide intermittent tributary if flowing at time of construction. The tributary within the TEWA would be matted and silt fenced installed as necessary to minimize disturbance and the potential for sedimentation.	None	None	None	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
North Myrtle Creek (NSP-37)	17100302000541 Private	79.12	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) n/ Level 2 m/	Dry open-cut methods feasible/practical during low flow periods within ODFW in- water work window. (USGS Gage Station 14311000 records mean monthly flow as 5.8, 3.5 & 5.1 cfs respectively for Jul, Aug & Sep). ROW necked down to 75' to minimize riparian impacts.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout, Assumed	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y
Trib. to North Myrtle Creek (NSP-38)	17100302008397 Private	79.15	Perennial Minor	Dry Open-Cut (Streambed-bedrock) n/	Dry open-cut methods feasible/practical on small 8.0' wide trib. if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y
Trib. to N. Myrtle Creek (EE-SS-9038)	17100302045565 Private	79.17	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small interpreted non-fish-bearing tributary if present and flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to N. Myrtle Creek (EE-SS-9039)	17100302045117 Private	79.19	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small interpreted non-fish-bearing tributary if present and flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
South Myrtle Creek S-T02-003 (BSP-172)	7100302000521 Private	81.19	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) n/ Level 2 m/	Dry open-cut methods feasible/practical during low flow periods within ODFW in- water work window. (USGS Gage Station 14310700 records mean monthly flow as 5.6, 3.2 & 5.0 cfs, respectively for Jul, Aug & Sep). ROW necked down to 75' and TEWAs placed in existing cleared areas where feasible to minimize riparian impacts. Conventional bore not feasible/practical because of grading/excavation requirements on north side of stream.	Oregon Coast ESU Coho, spawning, rearing, migration habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y-1i
Trib. to S. Myrtle Creek (BSP-259)	17100302008796 Private	81.38	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2.0' wide trib. if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y
Trib. to S. Myrtle Creek (SS-100-023)	17100302008772 Private	81.45	Intermittent N/A	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent tributary expected to be dry during construction and will be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jul 1 to Sep 15	N
Trib. to S. Myrtle Creek (EE-SS-9074)	17100302008917 Private	81.93	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small interpreted non-fish-bearing tributary if present and flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Klamath Mountains Ecoregion, South Umpqua (HUC 17100302) Sub-basin, Days Creek-South Umpqua River (HUC 1710030205) Fifth field Watershed 8, Douglas County, Oregon												
Wood Creek (BSP-226)	17100302001104 Private	84.17	Perennial Minor	Dry Open-Cut (Streambed-bedrock) <i>n</i> / Level 1 <i>m</i> /	Dry open-cut methods feasible/practical on small 8' wide stream. Steep topographic conditions on either side of waterbody prevent conventional bore. Dam and pump crossing method most logical dry open-cut method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks including upsetting flume during process. StreamNet data indicates anadromy below crossing (~ 1 mile).	None	None	Present	None	None	Jul 1 to Sep 15	Y
Trib. to Wood Creek (EE-SS-9040)	17100302009813 Private	85.38	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on an interpreted non-fish-bearing intermittent tributary if present and flowing at time of construction. The crossing occurs along a sidehill alignment.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Wood Creek (EE-SS-9041)	17100302009881 Private	85.69	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on an interpreted non-fish-bearing intermittent tributary if flowing at time of construction.	None	Unknown	Present	None	None	Jul 1 to Sep 15	Y*
Trib. to Wood Creek (EE-SS-9042)	17100302001103 Private	85.71	Perennial Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on an interpreted non-fish-bearing intermittent tributary if flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Wood Creek (EE-SS-9043)	17100302036325 Private	85.88	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on an interpreted non-fish-bearing intermittent tributary if present and flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Wood Creek (EE-SS-9044)	17100302036276 Private	86.07	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on an interpreted non-fish-bearing intermittent tributary if present and flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Wood Creek (EE-SS-9045)	17100302036276 Private	86.10	Intermittent N/A	Adjacent to centerline within ROW	Dry open-cut methods feasible/practical on an interpreted non-fish-bearing intermittent tributary if present and flowing at time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window1i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to Fate Creek (BSI-236)	17100302036007 Private	88.20	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) <i>n</i> /	Dry open-cut methods feasible/practical on small intermittent road ditched tributary if flowing at time of construction. Appropriate BMPs would be installed to minimize disturbance/ sedimentation if flowing at the time of construction. Crossing is also co-located with Fate Creek Rd.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to Fate Creek (BSI-238 (MOD))	17100302036007 Private	88.23	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on a small non-fish-bearing intermittent tributary if present and flowing at time of construction. Crossing is also co-located with Fate Creek Rd.	None	None	None	None	None	Jul 1 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Fate Creek (BSP-232)	17100302001124 Private	88.48	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) n/ Level 1 m/	Dry open-cut methods feasible/practical on 12' wide stream. Stream flow expected to be insignificant during low flow periods within ODFW in- water work period. TEWAs placed in existing cleared areas and alignment selected to minimize riparian impacts. ODFW fish passage barrier data indicates that immediately downstream of crossing (RecordID 2602): "Gabion below forms pool and creates a probable impassable juvenile barrier. Adults may pass at higher flows. Additional STEP work above culvert" A conventional bore is probable based on topography and geometry but geotechnical investigations have not been completed to confirm. A bridge is required at the crossing which would require bank grading for access. Significant costs, time requirements and the need for a bridge were the determinants for the proposed dry open-cut crossing method. Significant cultural resource sites occur in the area and a dry open-cut crossing will minimize excavation/grading disturbance compared to conventional bore. Dry open-cut methods feasible/practical on stream during low flow periods within ODFW in-water work window. (USGS Gage Station 14308700 records mean monthly flow as 2.2, 1.0 & 1.5 cfs, respectively for Jul, Aug & Sep). The ROW has been necked down to 75' and TEWAs located in previously disturbed areas to minimize riparian impacts.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, i =set inside fish window, N=None
Days Creek (BSP-233)	17100302000511 Private	88.60	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <i>n</i> / Level 1 <i>m</i> /	A conventional bore is probable based on topography and geometry but geotechnical investigations have not been completed to confirm. A bridge is required at the crossing which would require bank grading for access. Significant costs, time requirements and the need for a bridge were the determinants for the proposed dry open-cut crossing method. Significant cultural resource sites occur in the area and a dry open-cut crossing will minimize excavation/grading disturbance compared to conventional bore.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead,	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y-1i
Cascades Ecoregion, South Umpqua (HUC 17100302) Sub-basin, Days Creek-South Umpqua River (HUC 1710030205) Fifth field Watershed 8, 9, Douglas County, Oregon												
Saint John Creek (ASP-303)	17100302011280 Private	92.62	Perennial Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical during low flow periods within ODFW in- water work window. Steep topographic conditions on either side of creek prevent conventional bore. Dam and pump crossing method most logical dry open-cut method based on topographic conditions to eliminate issues/risk of threading pipe string under flume within the incised valley.	Oregon Coast ESU Coho, spawning, rearing habitat T, CH	Coho, Winter Steelhead	Cutthroat Trout	Coho	Coho Spawning, Rearing	Jul 1 to Sep 15	Y-1i
H3-01	Private	94.60	Pond	Not Crossed Pond adjacent to Milo Yard	N/A – pond avoided by potential yard footprint.	None	None	Unknown	None	None	None	N –to be avoided
H3-02	Private	94.60	Pond	Not Crossed Pond adjacent to Milo Yard	N/A – pond avoided by potential yard footprint.	None	None	Unknown	None	None	None	N –to be avoided

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
H3-03	Private	94.60	Pond	Not Crossed Pond in Milo Yard	N/A – pond within yard, but would be avoided by potential yard activities. Diverted open-cut methods feasible/practical during low flow periods within ODFW in-water work window. (USGS Gage Station 143308600 records mean monthly flow as 168, 91 & 110 cfs, respectively for Jul, Aug & Sep). ROW and TEWAs locations primarily affect shrub vegetation. Temporary bridge required at crossing because the existing bridge at Milo is not expected to handle project weight limits. Heavy equipment access from the south is restricted by topographic constraints therefore temporary bridge at crossing is critical to facilitate construction (i.e., movement of materials and equipment along ROW).	None	None	Unknown	None	None	None	N—to be avoided
South Umpqua River (ASP- 196)	17100302011516 Private	94.73	Perennial Major	Diverted Open-Cut Level 2 <i>m</i> /	Because of geometry and topographic conditions, the only feasible HDD alignment required the alignment to pass immediately adjacent to the north side of the Milo Academy. From the exit point on the east side of the academy the route then needed to circle back to the west passing immediately adjacent to the south side of the academy. The HDD alignment ultimately required the academy to be encircled by the pipeline on three sides. This alignment would extensively encumber the academy and was determined to be impractical. A conventional bore is feasible based on topography and geometry but geotechnical investigations have not been completed to confirm. If subsoils are similar as surface conditions (cobble), a bore would be infeasible. Because a bridge is required at the crossing which would require bank grading for access the diverted open- cut crossing method was selected as most appropriate crossing method based on feasibility/practicality and the method with the least risk.	Oregon Coast ESU Coho, spawning, rearing, migration habitat T, CH	Spring Chinook, Fall Chinook, Coho, Winter Steelhead, Pacific Lamprey	Cutthroat Trout	Chinook, Coho	Spring Chinook Migration Fall Chinook Spawning, Rearing, Migration Coho Rearing, Migration	Jul 1 to Aug 31	Y-1i with mid- stream support

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to South Umpqua River (ASI-193 / ASI-191)	17100302011517 Private	94.85	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent tributary if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to South Umpqua River (ASI-193 / ASI-191)	17100302011517 Private	95.03	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent tributary if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to South Umpqua (ASI-190)	17100302038007 BLM-Roseburg District	98.46	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small 2-4' wide intermittent tributary (ditch) if flowing at the time of construction	None	None	None	None	None	Jul 1 to Sep 15	Y*
Cascades Ecoregion, South Umpqua (HUC 17100302) Sub-basin, Upper Cow Creek (HUC 1710030206) Fifth field Watershed 8, Douglas County, Oregon												
Ditch (Beaver Creek) (CDX- 50)	Forest Service – Umpqua NF	105.41	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-4' wide intermittent roadside ditch within right-of-way if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (CDX-49)	Forest Service – Umpqua NF	106.77	Intermittent N/A	Adjacent to centerline within ROW	N/A - small 1-4' wide intermittent roadside ditch within right-of-way if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Roadside Ditch (CDX-47)	Forest Service – Umpqua NF	108.08	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-3' wide intermittent roadside ditch within right-of-way if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Roadside Ditch (CDX-48)	Forest Service – Umpqua NF	108.40	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-3' wide intermittent roadside ditch within right-of-way if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Trib. to East Fork Cow Creek (GDX-15)	17100302034497 Forest Service – Umpqua NF	109.13	Intermittent N/A	Adjacent to centerline within TEWA	Dry open-cut methods feasible/practical on small headwater wetland/tributary-if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Trib. to East Fork Cow Creek (GSI-16/FS-HF-F)	17100302013838 Forest Service – Umpqua NF	109.33	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide headwater intermittent tributary if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Sep 15	Y*
East Fork Cow Creek (GSP-19/FS-HF-G)	17100302013839 Forest Service – Umpqua NF	109.47	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small headwater stream during low flow periods within ODFW in- water work period. No additional work areas proposed.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y
East Fork Cow Creek (GSP-22/FS-HF-G ASP297)	17100302013839Forest Service – Umpqua NF	109.69	Perennial Intermediate	Adjacent to centerline within TEWA	Not crossed by centerline. Waterbody flows through culvert on road which is encompassed by TEWA 109.68-N. This TEWA was selected for parking/staging as well as for potential mitigation to remove the culvert if the road is not required.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	N

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to East Fork Cow Creek (FS-HF-J/AW298)	17100302013839 Forest Service – Umpqua NF	109.69	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' headwater tributary. ROW necked down to 75' and TEWAs only utilized on north side of creek to minimize riparian impacts. Steep topographic conditions prevent a conventional bore because of extensive grading/excavation requirements.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y
Trib. to East Fork Cow Creek (FS-HF-K/AW-299)	17100302012765 Forest Service – Umpqua NF	109.78	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2-4' headwater tributary. ROW necked down to 75' and no TEWAs utilized to minimize riparian impacts.	None	Unknown	Unknown	None	None	Jul 1 to Sep 15	Y
Cascades Ecoregion, Upper Rogue (HUC 17100307) Sub-basin, Trail Creek (HUC 1710030706) Fifth field Watershed 8, Jackson County, Oregon												
Pond Trib. to W. Fork Trail Creek (EW-69)	Forest Service – Umpqua NF	110.57	Intermittent Pond	Within Peavine Quarry TEWA 110.73	Small ponded area within Peavine Quarry and TEWA; drainage expected to be dry during construction.	None	None	None	None	None	N/A	N
Trib. to W. Fork Trail Creek (ESI-68) (EW-68)	17100307018629 Forest Service – Umpqua NF	110.57	Intermittent Minor	Within Pevine Quarry Adjacent to centerline within TEWA 110.73	Small 1-2' wide ephemeral drainage located Peavine Quarry within TEWA; drainage to be avoided by construction; drainage expected to be dry during construction.	None	None	None	None	None	N/A	N –to be avoided
Cascades Ecoregion, South Umpqua Sub-basin (HUC 17100302), Upper Cow Creek (HUC 1710030206) Fifth field Watershed 8, Jackson County, Oregon												
Trib. to E. Fork Cow Creek (FS-HF-N /ESI-68)	17100302034587 Forest Service – Umpqua NF	110.96	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2-4' headwater tributary. Right-of- way necked down to 75' and no TEWAs utilized to minimize riparian impacts.	None	None	None	None	None	Jul 1 to Sep 15	Y*
Klamath Mountains Ecoregion, Upper Rogue (HUC 17100307) Sub-basin, Trail Creek (HUC 1710030706) Fifth field Watershed 8, Jackson County, Oregon												
Trib. to West Fork Trail Creek (SS-100-032)	17100307015563 Private	118.80	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater tributary if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
West Fork Trail Creek (ASP-202)	17100307000492 Private	118.89	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) n/ Level 2 m/	Dry open-cut methods practical/feasible during low flow periods during ODFW in- water work window. ROW necked down to 75' and TEWAs located in previously disturbed areas to minimize riparian impacts.	SONCC Coho, spawning, rearing habitat T, CH	Coho, Summer Steelhead, Winter Steelhead	Trout, unspecified	Coho	Coho Spawning, Rearing	Jun 15 to Sep 15	Y
Trib. to Trail Creek (S1-06 (DA-16 (MOD)))	17100307002143 Private	119.84	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater tributary if flowing at the time of construction (Denied Access).	None	None	None	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, i =set inside fish window, N=None
Canyon Creek (NSP-11)	17100307000501 BLM-Medford District	120.45	Perennial Minor	Dry Open-Cut (Streambed-bedrock) n/ Level 1	Dry open-cut methods feasible/practical on small 7' wide tributary during low flow periods within ODFW in-water work window. Only UCSAs utilized at crossing to minimize impacts to riparian areas.	SONCC Coho, spawning, rearing habitat T, CH	Coho, Summer Steelhead	Trout, unspecified	Coho	Coho Spawning, Rearing	Jun 15 to Sep 15	Y
Trib. to Trail Creek (ASI-205)	17100307009101 Private	120.90	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 6' wide intermittent headwater tributary if flowing at the time of construction. No additional workspace required.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Trail Creek (ASI-206)	17100307002356 Private	121.57	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on 12' wide intermittent tributary if flowing at the time of construction. No additional workspace required.	SONCC Coho, spawning, rearing habitat T, CH	Coho	Unknown	Coho	Coho Spawning, Rearing	Jun 15 to Sep 15	Y*
Klamath Mountains Ecoregion, Upper Rogue (HUC 17100307) Sub-basin, Shady Cove-Rogue River (HUC 1710030707) Fifth field Watershed 8, Jackson County, Oregon												
Trib. to Cricket Creek (ESI- 71)	Private	121.87	Intermittent N/A	Adjacent to centerline within ROW	Small 1' wide ephemeral stream expected to be dry during construction when the Rogue River HDD pullback would cross this tributary. Rollers would be used to span tributary with HDD pullback string.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Cricket Creek (ESI- 73)	Private	121.91	Intermittent N/A	Adjacent to centerline within ROW	Within TEWA associated with HDD pull back.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Cricket Creek (ESI- 72)	17100307002397 Private	121.96	Intermittent N/A	Adjacent to centerline within ROW	Small 2' wide ephemeral stream expected to be dry during construction when the Rogue River HDD pullback would occur, however this drainage would be avoided by construction activities.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Cricket Creek (ESI- 74)	17100307019333 Private	122.04	Intermittent N/A	Adjacent to centerline within ROW	Small 2' wide ephemeral stream expected to be dry during construction when the Rogue River HDD pullback would occur, however this drainage would be avoided by construction activities.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Cricket Creek (ESI-70)	17100307002397 Private	122.07	Intermittent N/A	Adjacent to centerline within ROW	Small 2' wide ephemeral stream expected to be dry during construction when the Rogue River HDD pullback would occur.	None	None	None	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <u>a/</u> and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <u>b/</u>	Proposed Crossing Method Scour Level <u>c/</u>	Waterbody Crossing Rationale <u>d/</u>	ESA Species Present/Habitat <u>e/</u>	Anadromous Species Present <u>f/</u>	Resident Coldwater Species Present	EFH Species Present <u>g/</u>	EFH Component Present <u>g/</u>	Fishery Construction Window <u>h/</u>	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Rogue River (ASP-235)	17100307000156 Private	122.65	Perennial Major	HDD Level 2 <u>m/</u>	HDD feasible based on geometry, topography and geotechnical conditions along proposed alignment. Primary HDD activities are significantly set back from crossing and would not be visible from the highway or the river. Conventional bore not feasible/practical because highway and topographic constraints on the west side of the crossing. Dry open-cut or diverted open-cut methods not practical/feasible based on flow and channel characteristics (USGS Gage Station 14339000 records mean monthly flow as 2,170, 2,160 and 1,710 respectively for Jul, Aug & Sep).	SONCC Coho, rearing, migration habitat T, CH	Spring Chinook, Fall Chinook, Coho, Summer Steelhead, Winter Steelhead, Pacific Lamprey	Trout, unspecified	Chinook, Coho	Spring, Fall Chinook and Coho Rearing Migration	Jun 15 to Aug 31	N
Trib. to Indian Creek (ASI-223)	17100307014756 Private	125.91	Intermittent Major	Dry Open-Cut	Dry open-cut methods feasible/practical on small <5' wide intermittent headwater tributary if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Indian Creek (ASI-222)	17100307016576 Private	125.98	Intermittent Major	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1' wide intermittent headwater tributary if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Indian Creek (RS-4)	17100307008662 BLM-Medford District	126.53	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1' wide intermittent headwater tributary if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Indian Creek (ASI-221)	17100307008662 BLM-Medford District	126.56	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 5' wide intermittent headwater tributary if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Ditch (ADX-287)	17100307015921 Private	127.21	Intermittent N/A	Adjacent to ROW & TEWA	NA – avoided.	None	None	None	None	None	Jun 15 to Sep 15	N - avoided
Ditch (ADX-285)	17100307015921 Private	127.33	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent stream if flowing during construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Deer Creek (ASP-307)	17100307006079 Private	128.49	Perennial Intermediate	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical during low flow periods within ODFW in-water work window. No additional workspace required. Coho spawn 950 feet below crossing.	None	Unknown	Unknown	None	None	Jun 15 to Sep 15	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Indian Creek (AW-278)	17100307003031 Private	128.61	Perennial Minor	Dry Open-Cut Level 1 <u>m/</u>	Dry open-cut methods feasible/practical small < 10' wide stream low flow periods within ODFW in-water work window. Stream located in heavily grazed irrigated pasture and riparian vegetation consists of emergent pasture species. Coho spawn 600 feet below crossing.	SONCC Coho assumed habitat T	Assumed	Present, unspecified	Coho Assumed	Unknown	Jun 15 to Sep 15	Y
Trib. To Indian Creek (ASP- 310)	17100307017016 Private	128.68	Perennial Minor	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical small 5' wide ditch tributary located in heavily grazed irrigated pasture. Coho spawn 600 feet below crossing.	None	Unknown	Unknown	None	None	Jun 15 to Sep 15	Y
Trib. To Indian Creek (ASI- 400)	BLM-Medford District	129.13	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3-4' wide intermittent headwater trib. if flowing at the time of construction.	None	Unknown	Unknown	None	None	Jun 15 to Sep 15	Y*
Trib. To Indian Creek (ASI- 306)	BLM-Medford District	129.21	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small headwater tributary expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	Unknown	Unknown	None	None	Jun 15 to Sep 15	N
Trib. to Indian Creek (ASI- 277)	71003070174 44Private	129.46	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3-4' wide intermittent headwater trib. if flowing at the time of construction.	None	Unknown	Unknown	None	None	Jun 15 to Sep 15	Y*
Klamath Mountains Ecoregion, Upper Rogue (HUC 17100307) Sub-basin, Big Butte Creek (HUC 1710030704) Fifth field Watershed 8, Jackson County, Oregon												
Trib. to Neil Creek (SS- 201-014a (AW-244))	17100307010117 Private	130.81	Intermittent Minor	Adjacent to centerline within ROW	Not crossed by centerline. Small tributary expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Neil Creek (SS- 201-14b (AW-244))	17100307010117 Private	130.83	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) <u>n/</u>	Dry open-cut methods feasible/practical on small < 10' wide intermittent headwater trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Neil Creek (ASI- 251)	17100307018233 BLM-Medford District	131.37	Intermittent N/A	Adjacent to within TEWA	Small tributary expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jun 15 to Sep 15	N - avoided
Irrigation Ditch (Trib. to Neil Creek) (S2-02/(ADX- 253))	Private	132.03	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent non-fish- bearing ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set inside fish window, N=None
Neil Creek (ASP-252)	17100307006088 Private	132.12	Perennial Minor	Dry Open-Cut (Streambed-bedrock) n/ Level 1	Dry open-cut methods feasible/practical during low flow within ODFW in-water work window. ROW narrowed to 75 feet and TEWAs placed in pasture to minimize riparian impacts.	SONCC Coho, spawning, rearing habitat T, CH	Coho, Summer Steelhead	Trout, unspecified	Coho	Coho Spawning, Rearing	Jun 15 to Sep 15	Y
Ditch (EDX-75)	Private	132.26	Intermittent Minor	Dry Open-Cut (Streambed – bedrock) f/	Dry open-cut methods feasible/practical on small 1-2' wide intermittent non-fish- bearing ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Trib. to Quartz Creek (S5-01/ ASI-265)	17100307000857 Private	132.75	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) n/	Dry open-cut methods feasible/practical on small intermittent stream/wetland, if flowing at the time of construction. ROW necked down to 75' and	None	None	None	None	None	Jun 15 to Sep 15	Y*
Quartz Creek (S5-02 / AW- 264)	17100307000857 Private	132.77	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) n/	Dry open-cut methods feasible/practical on small 2' wide intermittent stream if flowing at the time of construction.	SONCC Coho, spawning, rearing habitat T, CH	Coho, Summer Steelhead	Trout, unspecified	Coho	Coho Spawning, Rearing	Jun 15 to Sep 15	Y*
Trib. to Quartz Creek (ASP- 241)	BLM-Medford District	133.35	Perennial Intermediate	Dry Open-Cut	Tributary, which originates from seepage from the Medford Aqueduct, will likely be crossed with the bore of the Medford Aqueduct.	None	Unknown	Unknown	None	None	Jun 15 to Sep 15	Y*
Medford Aqueduct - Ditch 3 (ASP-240)	17100307006008 BLM-Medford District	133.38	Perennial Intermediate	Conventional Bore	Proposed conventional bore feasible/practical based on flow volume, channel geometry and potential risk in disturbing man-made aqueduct. Dry open cut feasible	None	None	None	None	None	N/A	Y
Klamath Mountains Ecoregion, Upper Rogue (HUC 17100307) Sub-basin, Little Butte Creek (HUC 1710030708) Fifth field Watershed 8, Jackson County, Oregon												
Whiskey Creek (ASI-207)	17100307000892 Private	137.48	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 10' wide intermittent headwater stream if flowing at the time of construction. ROW necked down to 75' and TEWAs set back to minimize riparian impacts.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. To Whiskey Creek SS-200-006	17100307016378 Private	137.50	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small braided intermittent headwater stream if flowing at the time of construction. ROW necked down to 75' and TEWAs set back to minimize riparian impacts	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. To Whiskey Creek SS-200-008	Private	137.60	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2' wide intermittent stream if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (ASI-208)	17100307012488 Private	138.26	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 10' wide intermittent headwater stream if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set inside fish window, N=None
Trib. to Lick Creek (SS-GM- 9)	17100307020234 Private	138.36	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent non-fish- bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (SS-GM- 10)	17100307003986 Private	138.44	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent non-fish- bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (ASI-210)	17100307003986 Private	138.50	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small <10' wide intermittent headwater stream if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (SS-GM- 11)	17100307000884 Private	138.55	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent non-fish- bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (SS-GM- 12)	Private	138.57	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small headwater tributary expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jun 15 to Sep 15	N
Trib. to Lick Creek (ASI-211)	17100307008460 Private	138.71	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 7' wide intermittent headwater stream if flowing at the time of construction. No additional workspace required.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (SS-GM- 13)	Private	138.74	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small incised intermittent non-fish- bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek S-T04-002A (SS-GM-14)	17100307008463 Private	139.07	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent non-fish-bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Ditch S-T04-002A	Private	139.10	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small non- fish-bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek S-T04-006 (SS-GM-15)	Private	139.21	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent non-fish-bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek S-T04-007 (SS-GM-16)	Private	139.28	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent non-fish-bearing ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek S-T04-008 (ASI-217)	Private	139.42	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater stream if flowing at the time of construction. No additional workspace required.	None	None	None	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a</i> / and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b</i> /	Proposed Crossing Method Scour Level <i>c</i> /	Waterbody Crossing Rationale <i>d</i> /	ESA Species Present/Habitat <i>e</i> /	Anadromous Species Present <i>f</i> /	Resident Coldwater Species Present	EFH Species Present <i>g</i> /	EFH Component Present <i>g</i> /	Fishery Construction Window <i>h</i> /	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to Lick Creek (ASI-226)	17100307019116 Private	139.59	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) <i>n</i> /	Dry open-cut methods feasible/practical on small 7' wide intermittent headwater stream if flowing at the time of construction. ROW necked down to 75 feet and TEWAs located in existing disturbed pasture to minimize riparian impacts.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (ASI-227)	Private	139.63	Intermittent Intermediate	Dry Open-Cut (Streambed-bedrock) <i>n</i> /	Dry open-cut methods feasible/practical on small 1-2' wide intermittent headwater stream if flowing at the time of construction. ROW necked down to 75 feet and no TEWAs utilized to minimize riparian impacts.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (ASI-228)	Private	139.68	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent headwater drainage if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek SS-GM- 43 (AW-230))	Private	139.75	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent headwater drainage if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (SS-GM- 19)	Private	139.91	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small headwater tributary expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Lick Creek (ASI-233)	17100307000130 BLM-Medford District	140.27	Intermittent Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on intermittent drainage if flowing at the time of construction. Dam and pump crossing method most logical dry open- cut method based on topographic conditions to eliminate difficulties of threading pipe string under flume with associated safety risks including upsetting flume during process. ROW necked down to 75' and TEWAs set back to minimize riparian impacts. StreamNet data indicates anadromy below crossing (~ 2 miles)	None	None	Trout, unspecified	None	None	Jun 15 to Sep 15	Y*
Ditch Trib. to Lick Creek (ADX- 234)	17100307001378 BLM-Medford District	140.32	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent road ditch if flowing at the time of construction.	None	None	Unknown	None	None	Jun 15 to Sep 15	Y*
Trib. to Lick Creek (ASI-189)	17100307009921 Private	140.58	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) <i>n</i> /	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater trib. if flowing at the time of construction. No additional workspace required.	None	None	None	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set inside fish window, N=None
Ditch Trib. to Lick Creek (ADX- 186)	17100307001383 BLM-Medford District	140.94	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Star Lake Reservoir (Edge- 1)	17100307005853 Private	141.01	Perennial N/A	Adjacent to TEWA 140.98 Water Source	N/A – water source.	None	None	None	None	None	N/A	N
Trib. to Salt Creek (ASI-187)	17100307014303 BLM-Medford District	141.18	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) n/	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater trib. if flowing at the time of construction. No additional workspace required.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Salt Creek (ASI-188)	17100307004291 BLM-Medford District	141.48	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) n/	Dry open-cut methods feasible/practical on small intermittent headwater trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Salt Creek (RS-17)	17100307004291 BLM-Medford District	141.49	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent headwater trib., if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Salt Creek (ESI-30)	17100307014306 Private	141.95	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 6' wide intermittent headwater trib. if flowing at the time of construction. No additional workspace required.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Ditch (EDX-32)	Private	142.28	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Salt Creek (ESI-31)	17100307018645 Private	142.32 142.35	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent headwater trib. if flowing at the time of construction. Altered trib. part of pasture irrigation system.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Salt Creek (ESP-34)	17100307000121 Private	142.57	Perennial Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on creek during low flow period within ODFW in- water work window. ROW necked down to 75' and TEWAs located in existing disturbed pasture to minimize riparian impacts. Bore not practical because both bore pits would be located in wetland likely requiring significant dewatering efforts to access bore pits.	SONCC Coho, spawning, rearing habitat T, CH	Coho, Summer Steelhead, Winter Steelhead	Trout, unspecified	Coho	Coho Spawning, Rearing	Jun 15 to Sep 15	Y
Pasture Ditch (EDX-36)	Private	142.65	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to Salt Creek (ESI-37)	17100307014301 Private	143.12	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent headwater trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Long Branch Creek (ESI-38)	17100307009770 Private	143.51	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2' wide intermittent headwater trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Long Branch Creek (ESI-39)	17100307011758 Private	143.74	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Stock Pond (EL-41)	Private	143.76	Stock Pond N/A	Adjacent to centerline within ROW	Man-made pond expected to be dry at the time of construction and the pond will be reestablished after construction	None	None	None	None	None	N/A	N
Trib. to Long Branch Creek (ESI-38)	17100307009083 Private	143.76	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Intermittent drainage on very edge of TEWA; likely can be avoided during construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Trib. to Long Branch Creek (ESI-40)	17100307009083 Private	143.77	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Long Branch Creek (ESI-38)	17100307000921 Private	144.11	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2' wide intermittent headwater trib. if flowing at the time of construction.	SONCC Coho, assumed habitat T	Summer Steelhead	Present	Coho Assumed	Unknown	Jun 15 to Sep 15	Y*
Hanley North Canal Irrigation Ditch (EDX-42)	17100307006072 Private	144.14	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch if flowing at the time of construction.	None	None	Unknown	None	None	N/A	Y*
Trib. to S. Fork Long Branch (GSP-5/ESP-48)	17100307004586 Private	144.70	Perennial Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jun 15 to Sep 15	Y
South Fork Long Branch Cr (GSI-6/ESP-59)	17100307004616 Private	145.27	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent headwater trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jun 15 to Sep 15	Y*
Irrigation Ditch (NDX-107)	17100307001458 Private	145.32	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch if flowing at the time of construction.	None	None	Unknown	None	None	N/A	Y*
Irrigation Ditch (NDX-56)	Private	145.37	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch if flowing at the time of construction.	None	None	Unknown	None	None	N/A	Y*
Trib. to S. Fork Long Branch (ESI-61)	17100307004636 Private	145.54	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Irrigation Ditch (EDX-64)	Private	145.57	Intermittent Minor	Dry Open-Cut (Bored)	Dry open-cut methods feasible/practical on small 1-2' wide intermittent ditch road if flowing at the time of construction. This ditch may likely be bored with Highway 140.	None	None	Unknown	None	None	N/A	Y*
North Fork Little Butte Creek (ESP-66)	17100307000113 Private	145.69	Perennial Intermediate	Dry Open-Cut Level 2 m/	Dry open-cut methods feasible/practical on stream during ODFW in-water work window. USGS Gage Station 1434300 reports that mean monthly flow are 89, 111, 105 and 67 for Jun, Jul, Aug and Sep, respectively. Flows in Jul and Aug are highest yearly flow periods for creek. TEWA set back and located primarily in previously disturbed (pastures) areas to minimize riparian impacts.	SONCC Coho, spawning, rearing Habitat T, CH	Fall Chinook, Coho, Summer Steelhead, Winter Steelhead	Trout, unspecified	Coho	Fall Chinook Spawning, Coho Spawning, Rearing	Jun 15 to Sep 15	Y-1i with mid- stream support
Trib. to N. Fork Little Butte Creek (ESI-56)	17100307004681 Private	146.05	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib, if flowing at the time of construction. No additional workspace required.	SONCC Coho assumed habitat T	Assumed	Unknown	Coho Assumed	Unknown	Jun 15 to Sep 15	Y*
Trib. to N. Fork Little Butte Creek (ESI-55)	17100307004702 Private	146.38	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 2' wide intermittent trib. if flowing at the time of construction.	None	None	None	None	None	Jun 15 to Sep 15	Y*
Hanley South Canal Irrigation Ditch (EDX-51)	17100307001489 Private	146.80	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Cascades Ecoregion, Upper Rogue (HUC 17100307) Sub-basin, Little Butte Creek (HUC 1710030708) Fifth field Watershed 8, 9, Jackson County, Oregon												
South Fork Little Butte Creek (ASP-165)	17100307000108 Forest Service- Rogue River- Siskiyou NF	162.45	Perennial Intermediate	Dry Open-Cut Level 1	Dry-open cut feasible and practical on creek. ODFW fish passage barrier data (RecordID 51163) indicates that downstream irrigation diversion dam/barrier (~ 0.5 miles) is unladdered and impassible. USGS Gage Station 14339500 – located below diversion reports monthly mean flow of 14, 12 and 11 cfs, respectively for Jul, Aug & Sep. ROW necked down to 75 feet and TEWAs set back to minimize riparian impacts.	None	None	Trout, unspecified	None	None	Jun 15 to Sep 15	Y-1i with mid- stream support
Daley Creek (ESI-76/ ESI-84)	17100307000107 Forest Service- Rogue River- Siskiyou NF	166.21	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small headwater intermittent trib. if flowing at the time of construction.	None	None	Trout, Unspecified	None	None	Jun 15 to Sep 15	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Eastern Cascades Slopes and Foothills Ecoregion, Upper Klamath River (HUC 18010206) Sub-basin, Spencer Creek (HUC 1801020601) Fifth field Watershed 8, 9, Klamath County, Oregon												
Spencer Creek (WWW-001- 013/ EW-85)	18010206000968 Forest Service-Winema NF	171.07	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small < 10' wide stream with associated wetland. ROW necked down 75 feet and TEWAs set back or located to the edge of existing road disturbance to minimize riparian and wetland impacts. Conventional bore not practical because of topographic conditions and grading/excavation requirements on the south side of creek.	None	None	Unknown	None	None	Aug 1 to Sep 30	Y
Trib. to Spencer Creek SS-201-001 (GSP-7)	18010206005900 Forest Service-Winema NF	171.57	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small < 2' wide intermittent trib/wetland. if flowing at the time of construction.	None	None	Unknown	None	None	Aug 1 to Sep 30	Y*
Trib. to Spencer Creek (ESI-106a)	18010206000678 Forest Service-Winema NF	173.74	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small < 5' wide ephemeral trib. if flowing at the time of construction.	None	None	Unknown	None	None	Aug 1 to Sep 30	Y
Trib. to Spencer Creek (ESI-69)	18010206000677 BLM-Lakeview District	176.54	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small < 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Aug 1 to Sep 30	Y*
Trib. to Spencer Creek (GSI-10)	18010206000677 BLM-Lakeview District	176.56	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small headwater tributary expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	Unknown	None	None	Aug 1 to Sep 30	Y*
Clover Creek (SS-502-EW- 103/ EW-103)	18010206000330 Private	177.76	Intermittent Minor	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on small < 10' wide intermittent trib. if flowing at the time of construction. No additional workspace required.	None	None	Redband Trout	None	None	Aug 1 to Sep 30	Y*
Clover Creek (GSI-11)	18010206000330 Private	177.76	Intermittent Minor	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on small 1-2 ' wide intermittent tributary if flowing at the time of construction. No additional workspace required.	None	None	Redband Trout	None	None	Aug 1 to Sep 30	Y*
Eastern Cascades Slopes and Foothills Ecoregion, Upper Klamath River (HUC 18010206) Sub-basin, John C Boyle Reservoir-Klamath River (HUC 1801020602) Fifth field Watershed 8, Klamath County, Oregon												
Trib. to Klamath River (ESI-97)	18010206002774 Private	186.61	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent trib. if flowing at the time of construction. Intermittent stream feeds stock pond.	None	None	Unknown	None	None	Jul 1 to Jan 31	Y*
Trib. to Klamath River (ESI-99)	18010206000682 Private	186.65	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Jan 31	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, N=None
Trib. to Klamath River S-T03-001 (ESI-100)	18010206000682 Private	186.74	Intermittent Minor	Dry Open-Cut	Small 2' wide intermittent tributary that runs adjacent to centerline within ROW. Tributary expected to be dry during construction and would be restored to approximate original contour and grade during restoration.	None	None	Unknown	None	None	Jul 1 to Jan 31	Y*
Eastern Cascades Slopes and Foothills Ecoregion, Lost (HUC 18010204) Sub-basin, Lake Ewauna-Upper Klamath River (HUC 1801020412) Fifth field Watershed 8, Klamath County, Oregon												
Trib. To Klamath River (SS-001-001/SS-100-025)	18010204003103 Private	188.90	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	None	None	None	Jul 1 to Jan 31	Y*
Irrigation Ditch (S2-07 (ADX-63 (MOD)))	18010204003315 Private	192.67	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	Unknown	None	None	N/A	Y*
Irrigation Canal (NDX-66)	180102040033481 Private	192.81	Intermittent N/A	Adjacent to centerline within TEWA	N/A - not within right-of-way.	None	None	None	None	None	N/A	Y*
Ditch (ADX-67)	18010204003314 Private	192.99	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (ADX-69)	Private	193.07	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (ADX-72)	Private	193.25	Intermittent N/A	Adjacent to centerline within TEWA	N/A - not within right-of-way.	None	None	None	None	None	N/A	Y*
Ditch (ADX-73)	Private	193.47	Intermittent N/A	Adjacent to centerline within TEWA	N/A - not within right-of-way.	None	None	None	None	None	N/A	Y*
Irrigation Ditch SS-201-003 (WW-001-010/(ADX-78))	18010204003303 Private	194.64	Intermittent Major	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (ADX-83)	Private	195.12	Intermittent N/A	Adjacent to centerline within ROW	N/A - not within right-of-way.	None	None	None	None	None	N/A	Y*
Ditch (ADX-84)	Private	195.18	Intermittent N/A	Adjacent to centerline within TEWA	N/A – on edge of TEWA/will be avoided.	None	None	None	None	None	N/A	Y*
Ditch (ADX-86)	Private	195.24	Intermittent N/A	Adjacent to centerline within TEWA	N/A – on Edge of TEWA and will be avoided.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (NDX-82)	Private	195.28	Intermittent N/A	Adjacent to centerline within TEWA	N/A - not within right-of-way.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Drainage Ditch (ADX-87)	Private	195.32	Intermittent N/A	Adjacent to centerline within TEWA	N/A - not within right-of-way.	None	None	None	None	None	N/A	Y*
Ditch (ADX-19)	Private	195.46	Intermittent N/A	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (ADX-22)	Private	195.46	Intermittent N/A	Adjacent to centerline within TEWA	N/A – on edge of TEWA and will be avoided.	None	None	None	None	None	N/A	Y*
Wetland Ditch (ADX-20)	Private	195.47	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Small field ditch expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	N/A	Y*
Ditch (GDX-4)	Private	195.67	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (GDX-3)	Private	195.73	Intermittent Intermediated	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (GDX-2)	Private	195.91	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-30)	Private	196.53	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Drainage Ditch (ADX-31)	Private	196.53	Intermittent Minor	Adjacent to centerline within ROW & TEWA	Not crossed by centerline. Small field ditch expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	N/A	Y*
Irrigation Canal (ADX-32)	18010204000790 Private	196.64	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-36)	Private	196.76	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 1-2' wide intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-38)	18010204003183 Private	196.78	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Weyerhaeuser Pond (AL-34)	Private	196.78	Industrial Pond N/A	Adjacent to centerline within ROW	Pond will not be disturbed by construction activities. The pond may be used for water source or discharge.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-39)	18010204003183 Private	196.89	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-40)	Private	197.08	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (DX-GM-1)	Private	197.22	Intermittent Minor	Adjacent to centerline within ROW	Not crossed by centerline. Small field ditch expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (DX-GM-3)	Private	197.28	Intermittent Minor	Adjacent to centerline within ROW	Not crossed by centerline. Small field ditch expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	None	None	None	N/A	Y*
Klamath River (ASP-151)	18010204002564 State	199.38	Perennial Major	HDD Level 1	HDD feasible/practical based on river crossing width (~ 1000') flow volumes, topography, geotechnical and geometry conditions. Dry open-cut infeasible because of width and flow volume. USGS Gage Station 11507501 records mean monthly discharge of 1,190, 1,060, 1,120 cfs respectively for Jul, Aug, Sep.	Lost River Sucker E, CH Shortnose Sucker E, CH	Pacific Lamprey	Redband Trout, Endemic Klamath Fish Species	None	None	N/A Jul 1 to Jan 31	N
Irrigation Canal (ADX-293)	Private	200.41	Intermittent N/A	Adjacent to centerline within ROW	Not crossed by centerline. Irrigation ditch expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration	None	None	None	None	None	N/A	Y*
Irrigation Canal (No. 1 Drain) (ADX-294)	18010204003246 BOR	200.54	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (ADX-94)	18010204003251 Private	201.49	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch SS-201-007 (ADX-96) (C-4-E Lateral)	1217823421646 BOR	201.63	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored	Unknown	None	None	None	None	N/A	Y
Roadside Ditch (ADX-99)	Private	203.97	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Irrigation Canal (C-4 Lateral) (ADX-100)	18010204001225 BOR	204.12	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Canal (C-4-F Lateral) (ADX-101)	18010204001222 BOR	204.33	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Ditch (ADX-103)	Private	204.50	Intermittent N/A	Adjacent to centerline within TEWA	On edge of TEWA and will be avoided.	None	None	None	None	None	N/A	Y*
Ditch No. 3 Drain (ADX-105)	18010204003757 BOR	204.74	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Canal (ADX-106)	Private	204.91	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch (C-4-C Lateral) (ADX-109)	18010204001218 BOR	205.50	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Eastern Cascades Slopes and Foothills Ecoregion, Lost (HUC 18010204) Sub-basin, Mills Creek-Lost River (HUC 1801020409) Fifth field Watershed 8, Klamath County, Oregon												
Ditch (ADX-110)	Private	205.94	Intermittent Minor	Bore	Likely bored with BOR C Canal (ADX-111); potentially a dry- open cut crossing if flowing at the time of construction to facilitate bore of C canal.	Unknown	None	None	None	None	N/A	Y
Canal (C Canal) (ADX-111)	18010204004021 BOR	205.96	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Wetland Ditch (ADX-112)	18010204009070 Private	205.97	Intermittent Intermediate	Bore	To be bored with C Canal.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (D-2 Lateral) (ADX-113)	BOR	206.51	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Roadside Drainage Ditch (5-A Drain) (ADX-115)	18010204004039 BOR	207.26	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Lateral (C-4-7 Lateral) (ADX-116)	18010204001229 BOR	207.40	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Drain 5-A Drain (ADX-117)	18010204001237 BOR	207.42	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Drain (5-A Drain) (ADX-118)	18010204001237 BOR	207.60	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Drain (5-A Drain) (ADX-119)	18010204001237 BOR	207.99	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (ADX-120)	Private	208.07	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (ADX-121)	Private	208.07	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	Unknown	None	None	None	None	N/A	Y
Drainage Ditch Irrigation Drain (5-A Drain) (ADX-123)	18010204001237 BOR	208.18	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set inside fish window, N=None
Ditch (ADX-124)	Private	208.23	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (ADX-125)	Private	208.28	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-126)	Private	208.29	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Roadside Drainage Ditch (ADX-128)	Private	208.78	Intermittent Intermediate	Bored	Bored with Railroad and Highway 39.	Unknown	None	None	None	None	N/A	N
Roadside Drainage Ditch (ADX-129)	Private	208.85	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Drain 5-K Drain (ADX-130)	18010204001229 BOR	209.02	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Roadside Drainage Ditch (ADX-131)	Private	209.05	Intermittent Intermediate	Bore	Bored with Reclamation's 5-K Drain.	Unknown	None	None	None	None	N/A	Y*
Roadside Drainage Ditch (ADX-133)	Private	209.15	Intermittent Minor	Bore	Bored with Reclamation's C-9 Lateral.	Unknown	None	None	None	None	N/A	Y*
Irrigation C-9 Lateral (ADX- 134)	BOR	209.15	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (ADX-135)	Private	209.16	Intermittent Minor	Bore	Bored with Reclamation's C-9 Lateral.	Unknown	None	None	None	None	N/A	Y
Roadside Ditch (ADX-142)	Private	210.16	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (No. 5 Drain) (Trib. to Lost River) (ADX-143/ SS-003-001)	18010204004367 BOR	210.26	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch 5-H Drain (Trib. to Lost River) (ADX-260)	18010204015577 BOR	210.85	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y
Irrigation Ditch (ADX-261)	Private	210.87	Intermittent Intermediate	Dry Open-Cut	Likely to be bored with Reclamation's 5-H Drain.	None	None	None	None	None	N/A	Y*
Ditch (NDX-29/SS-003-002)	Private	211.32	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Ditch SS-003-003 (NDX-30)	Private	211.34	Intermittent N/A	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i =set required inside fish window, i =set inside fish window, N=None
Ditch (NDX-92)	Private	211.52	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (SS-003-004 (NDX-93))	Private	211.53 211.68	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Lost River (NSP001)	18010204004545 State	212.07	Perennial Major	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical during low flow periods during ODFW in- water work window. An HDD and conventional bore are likely probable at the approximate crossing location based on the topography, geometry and expected geotechnical conditions. Landowner restricted access for geotechnical investigations. Significant costs, time requirements were the determinants for the proposed dry open-cut method.	Lost River Sucker E Shortnose Sucker E	None	Redband Trout, Endemic Klamath Fish Species	None	None	Jul 1 to Mar 31	Y-1i with mid-stream support
Irrigation Ditch (ADX-318 EDX-55/EDX-90))	18010204004940 Private	213.23	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent irrigation ditch if flowing at the time of construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX 318)	18010204004940 Private	213.45	Intermittent N/A	Adjacent to ROW	On edge of TEWA – should be avoided during construction.	None	None	None	None	None	N/A	Y*
Irrigation Ditch (ADX-274)	BOR	213.85	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y*
G Canal (G Canal) (ADX-275)	18010204001228 BOR	213.87	Intermittent Intermediate	Bore	Bureau of Reclamation facility to be bored.	Unknown	None	None	None	None	N/A	Y*
Pond (Edge-2)	Private	214.28	Intermittent Pond	Adjacent to centerline within ROW & TEWA	N/A – standing water in feedlot.	None	None	None	None	None	N/A	Y*
Unnamed Creek (ASI-51)	18010204004618 Private	216.10	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on small 6-12' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Unnamed Creek (ASI-52)	18010204004618 Private	216.11	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 3' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Unnamed Creek (ASI-50)	18010204004617 Private	216.30	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Unnamed Creek (ASI-49)	18010204004627 Private	216.44	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 6' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to D Canal (ASI-136)	18010204001993 Private	218.09	Intermittent Intermediate	Dry Open-Cut	Dry open-cut methods feasible/practical on intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to D Canal (ASI-137)	18010204004701 Private	218.46	Intermittent Minor	Dry Open-Cut (Streambed-bedrock) n/	Dry open-cut methods feasible/practical on small 3' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to D Canal (ASI-291)	18010204004701 Private	219.69	Intermittent Minor	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on small 1' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Excavated Pond (NL-116)	18010204001267 Private	219.70	Excavated Pond N/A	Off ROW – Temp Extra Workspace	Pond will not be disturbed by construction activities. The pond may be used for a water source for dust control.	None	None	None	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal (SS-502-012)	Private	220.72	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-013	18010204004906 Private	221.15	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-013b	18010204004906 Private	221.15	Intermittent Minor	Adjacent to centerline within ROW	Not crossed by centerline. Small intermittent stream expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-014	18010204004906 Private	221.30	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502.016	Private	221.72	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 6' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-003b	Private	222.79	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-003a	Private	222.80	Intermittent Minor	Adjacent to centerline within ROW	ot crossed by centerline. Small intermittent stream expected to be dry at the time of construction and would be restored to approximate original contour and grade during restoration.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-004	18010204004894 Private	222.99	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 5' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502.005	Private	223.08	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code a/ and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size b/	Proposed Crossing Method Scour Level c/	Waterbody Crossing Rationale d/	ESA Species Present/Habitat e/	Anadromous Species Present f/	Resident Coldwater Species Present	EFH Species Present g/	EFH Component Present g/	Fishery Construction Window h/	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, i = 1 pass required inside fish window, i =set inside fish window, N=None
Trib. to V Canal SS-502-006	Private	223.12	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502.023	Private	223.39	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-011	Private	223.54	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 7' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-009a	Private	224.03	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 5' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-009	Private	224.04	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-008	Private	224.17	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-007	Private	224.21	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 5' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-021	Private	224.44	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal (SS-502-025 (ASI-140))	18010204001318 Private	225.96	Intermittent Intermediate	Dry Open-Cut Level 1	Dry open-cut methods feasible/practical on intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-024	18010204004977 Private	225.99	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-020	Private	227.14	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Trib. to V Canal SS-502-017	Private	227.57	Intermittent Minor	Dry Open-Cut	Dry open-cut methods feasible/practical on small 4' wide intermittent trib. if flowing at the time of construction.	None	None	Unknown	None	None	Jul 1 to Mar 31	Y *
Agricultural Pond (AL-288)	Private	228.13	Excavated pond N/A	Off ROW Within TEWA	Pond will not be disturbed by construction activities. The pond may be used for a water source for dust control.	None	None	None	None	None	Jul 1 to Mar 31	Y *

TABLE I-2

Fish Utilization, EFH in, and Crossing Techniques and In-Water Work Windows for Waterbodies Crossed by the Proposed Route (revised April 2018)

Waterbodies Crossed and Waterbody ID	NHD Waterbody Reach Code <i>a/</i> and Jurisdiction	Approximate Pipeline Milepost (MP)	Waterbody Type Size <i>b/</i>	Proposed Crossing Method Scour Level <i>c/</i>	Waterbody Crossing Rationale <i>d/</i>	ESA Species Present/Habitat <i>e/</i>	Anadromous Species Present <i>f/</i>	Resident Coldwater Species Present	EFH Species Present <i>g/</i>	EFH Component Present <i>g/</i>	Fishery Construction Window <i>h/</i>	Equipment Bridges Y=Yes, Y* = Yes if flowing at time of construction, 1o= 1 pass required outside fish window, 1i = 1 pass required inside fish window, i =set inside fish window, N=None
<p><i>a/</i> FERC waterbody definitions: Minor = less than or equal to 10 feet wide Intermediate = greater than 10 feet wide but less than or equal to 100 feet wide Major = greater than 100 feet wide</p> <p><i>b/</i> Level 1 and 2 waterbodies have been identified; all others are Level 0. According to GeoEngineers 2013 Channel Migration and Scour Analysis for the PCGP Project, channel migration is defined as the lateral movement, over time, of an entire channel segment perpendicular to the direction of stream flow; channel avulsion is the sudden abandonment of an active channel for a newly created or previously abandoned channel located on the floodplain; channel widening is defined as erosion and subsequent recession of one or both stream banks that widens the channel without changing the channel location; streambed scour is erosion of the streambed resulting in the development of deep pools and/or the systematic lowering of the channel floor elevation. Level 0 = streams not likely subject to migration, avulsion and/or scour Level 1 = streams with a moderate potential for migration, avulsion and/or scour Level 2 = streams with a high potential for migration, avulsion and/or scour</p> <p><i>c/</i> Dry open-cut crossing methods include Flume or Dam and Pump procedures. Dam and Pump methods would be utilized where streambed blasting is anticipated to eliminate blasting around the flume. The Dam and Pump crossing method is the preferred crossing procedure in steep incised drainage valleys where worker safety may be compromised when placing ("threading") the pipe string under the flume pipe and where there is a risk of upsetting the flume during this operation. The Dam and Pump crossing method is also the preferred crossing method on small streams under low flow conditions during the ODFW recommended in-water work period. PCGP requests permission for temporary/short-term fish passage restriction when completing Dam and Pump crossings within the ODFW recommended in-water work period.</p> <p><i>d/</i> FWS, NMFS, and StreamNet. T = Threatened, E = Endangered, CH = Critical Habitat</p> <p><i>e/</i> ODFW, 2012 (Oregon Department of Fish and Wildlife. 2012. Fish Distribution Data, 1:24,000 Scale. Oregon Department of Fish and Wildlife Natural Resources Information Management Program. Online: https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=fishdistdata).</p> <p><i>f/</i> PFMC, 1999; ODFW, 2012.</p> <p><i>g/</i> PCGP understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.</p> <p><i>h/</i> USGS Hydrologic Unit Codes.</p> <p><i>i/</i> Key Watershed.</p> <p><i>j/</i> ODFW's recommended in-water work window is from October 1 through February 15. Because PCGP's Coos Bay HDD footprint overlaps with the LNG Terminal facilities, the HDD needs to be completed prior to construction of the LNG terminal to prevent construction conflicts and delays; therefore PCGP may complete the HDD outside the ODFW recommended in-water work window.</p> <p><i>k/</i> ODFW's recommended in-water work window is from October 1 through February 15. Because of the extensive wetland located on the east side of Coos Bay within Kentuck Slough, PCGP plans to schedule the HDD outside the in-water work window to minimize surface impacts within the saturated floodplain wetland.</p> <p><i>l/</i> ODFW's recommended in-water work window is from October 1 through February 15. Because of the extensive wetland location on the south side of the Coos River, PCGP has scheduled the HDD during the dry season outside the in-water work window between August 1 and September 30 to minimize surface impacts within the saturated floodplain wetland.</p> <p><i>m/</i> These sites were field reviewed and analyzed for potential migration, avulsion and/or scour (see GeoEngineers 2013 Channel Migration and Scour Analysis).</p> <p><i>n/</i> Streambed bedrock based on PCGP's Wetland and Waterbody delineation surveys. Streambed bedrock may require special construction techniques to ensure pipeline design depth. Special construction techniques may include rock hammering, drilling and hammering, or blasting. The need for blasting would be determined by the contractor and would only be initiated after ODFW blasting permits are obtained.</p>												

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Mammals											
Preble's shrew <i>Sorex preblei</i>	SOC				Near streams in arid to semi-arid shrub/grassland and high elevation coniferous forests. Also in openings in coniferous forests and sagebrush; frequents sagebrush thickets and willow or aspen stands in moist parts of the Great Basin.	Klamath			No documented occurrences within project area; known to occur in northern portion of Klamath County.	MIIH	Modification of habitat, potential for injury, death, and disturbance.
Hoary bat <i>Lasiurus cinereus</i>		S			Usually associated with montane boreal forests, although during spring and autumn migrations, species has been located in arid shrub-steppe. Forages over water, roads, and forest openings.	Coos Douglas Jackson Klamath	CB-D	UMP-D RRS-D FW-D	CB (2008) 0.4mi E of MP 13.4BR; RRS (2008) 0.08mi S of MP 161.7; RRS (2009) 0.9mi N of MP 161.36; RRS (2008) 370ft S of MP 161.75;	MIIH	Modification of habitat, potential for injury, death, and disturbance.
Pallid bat <i>Antrozous pallidus pacificus</i>	SOC	S	SEN	SEN	Arid regions, open forest types, desert vegetation types. Uses cliff faces, caves, mines, bridges, tree cavities, or buildings for roosts.	Coos Douglas Jackson Klamath	CB-S LV-D MD-D RO-D	UMP-D RRS-D FW-D	PV (H, 1983) 1.0mi NE of MP 56.0; PV (H-1983, 1994) 0.9mi N and 2.7mi N of MP 64.75; PV (1994) 0.9mi N of MP 67.2; PV (1994) 1.0mi NE of MP 68.0; UMP (H-1923) 1.6mi S of MP 110.1	MIIH	Modification of foraging habitat and disturbance to foraging bats; potential for injury or death if roosting in fell tree or snag, or in rock outcrops removed for pipe.
Pacific Townsend's big-eared bat <i>Corynorhinus (Plecotus) townsendii townsendii</i>	SOC	SC	SEN	SEN	Forested regions of the Cascade Mountains. Roosts in buildings, caves, mines, buildings, and bridges.	Coos Douglas Jackson Klamath	CB-D LV-D MD-D RO-D	UMP-D RRS-D -W-D	CB (1999) 3mi E of MP 32.7; Ben Irving Reservoir/RB (H-1993) 1.2mi S of MP 57.13; PV (H-1983) hibernaculum / Tenmile Mountain Cave approximately 0.9mi NW of MP 58.13; PV (1994) 0.1 mi N of MP 68.99; MD (1976) historic breeding site in large basalt cave 2.5mi NE of MP 126.3; MD (2000) breeding site 1.9mi E of MP 133.05; MD (1972) 0.12mi N of MP 153.2; MD (1996) 1.5me W of Rogue Aggregates Pipeyard; RRS (1974) 0.76mi N of MP 154.2; RRS (1972) 1.1mi N of MP 157.5; RRS (2008) 0.9mi N of MP 161.	MIIH	Potential disturbance to roosting or foraging bats.
Silver-haired bat <i>Lasionycteris noctivagans</i>	SOC	S			Forested areas, especially older Douglas-fir (<i>Pseudotsuga menziesii</i>)/western hemlock (<i>Tsuga heterophylla</i>) forests. Also in ponderosa pine (<i>Pinus ponderosa</i>) forests. Forages over ponds and streams in the woods, finds a day roost under a flap of loose bark.	Coos Douglas Jackson Klamath		UMP-D RRS-D F-W-D	PV (2002) 0.3mi N of MP 38.5; RRS (2009) 0.27mi S of Rock Source Rum Rye (MP 160.41); RRS (2008) 0.07mi S of MP 161.75; RRS (2009) 2.1mi NE of MP 158.6; RRS (2009) 0.9mi N of MP 161.36; RRS (2009) 0.5mi W of TEWA 161.40; RRS (2008) 370ft S of MP 161.75; F-W (2002) 1.6mi NE of MP 170.0; F-W (2002) 1.5mi NE of MP 173.W	MIIH	Disturbance, modification of habitat.
California myotis <i>Myotis californicus</i>		S			Occupy a variety of habitats including shrub-steppe, shrub desert, juniper, sagebrush, ponderosa pine forest, and Douglas fir forest.	Coos Douglas Jackson Klamath	MD-D	UMP-D RRS-D F-W-D	MD (T39S, R5E, Historical), MD (T33S, R1W, 1993); RRS (2008) 400ft S of MP 161.7; RRS (2009) 0.27mi S of Rock Source Rum Rye (MP 160.41); RRS (2007) 2.1mi NE of MP 158.6; RRS (2009) 0.9mi N of MP 161.36;	MIIH	Modification of habitat, potential for injury, death, and disturbance.
Western small-footed myotis <i>Myotis ciliolabrum</i>	SOC				Cliffs and rocky canyons in arid grasslands and desert scrub, also in ponderosa pine and mixed conifer forests. Roosts and retreats in rock crevices, under boulders, and beneath bark. Hibernates in mines and caves.	Douglas Klamath				MIIH	Disturbance, modification of habitat.
Long-eared myotis <i>Myotis evotis</i>	SOC				Forested habitats, especially forested edges including juniper woodlands, open areas in ponderosa pine woodlands, Douglas-fir, spruce, true fir, and subalpine forests as well as willow and alder forests along streams. Arid shrublands with roosting sites.	Coos Douglas Jackson Klamath				MIIH	Disturbance, modification of habitat.
Fringed myotis <i>Myotis thysanodes</i>	SOC	S	SEN	SEN	Wide range of habitats, prefers forested or riparian areas. Within flying distance of forested areas. Roosts in decadent trees and snags, sometimes buildings.	Coos Douglas Jackson Klamath	CB-D LV-D MD-D RO-D	UMP-D RRS-D F-W-D	CB (2004) 1.7 miles SW of MP 33.77; PV (2002) 0.3mi NE of MP 38.54; PV (H-1983) 2.7mi S of MP 48.1; MD (H-1976) 1.4mi W of MP 127.3; RRS (2010) 0.27mi S and 1.7mi SE of Rock Source Rum Rye (MP 160.41); RRS (2009) 2.1mi NE of MP 158.6; RRS (2009) 0.9mi N of MP 161.36; F-W (2010) 1.8mi NE of MP 158.1; F-W (2010) 0.8mi N of MP 161.3; RRS (2009) 0.5mi W of TEWA 161.40; RRS (2008) 370ft S of MP 161.75; F-W (2002) 1.6mi NE of MP 170.0; PV (2002) 1.2mi NE of MP 173.1.W	MIIH	Modification of foraging habitat, disturbance to foraging bats; potential for injury or death if roosting in fell tree or snag.

TABLE I-3

Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/				Expected Habitat	County	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forest Service	Within Vicinity of Project Area c/		
Long-legged myotis <i>Myotis volans</i>	SOC	S			Coniferous forests, including Douglas-fir, true fir, Sitka spruce (<i>Picea sitchensis</i>), lodgepole pine (<i>Pinus contorta</i>), and ponderosa pine forests. Roosts in cliff faces, abandoned buildings, caves, mines.	Coos Douglas Jackson Klamath	CB-D RO-D	UMP-D RRS-D F-W-D	PV (2002) 0.3mi NE of MP 23.05; PV (2004) 3.3mi W of MP 33.77; CB (2004) 1.7mi SW of MP 33.77; PV (2002) 0.3mi NE of MP 38.5; PV (1993) 1.3mi NE of MP 55.92; RO (1994) 1.4mi S of MP 58.4; PV (1994) 0.75mi NE of MP 67.4; RRS NF (2009) 0.7mi S of Rock Source Rum Rye MP 160.41; RRS (2009) 2.1mi NE of MP 158.6; RRS (2006) 0.9mi N of MP 161.36; F-W (2002) 1.6mi NE of MP 170.0; F-W (2002) 1.5mi NE of MP 173.	MIIH	Disturbance, modification of habitat.
Yuma myotis <i>Myotis yumanensis</i>	SOC				Riparian, desert scrub, moist woodlands, open forests. Frequents woodlands in western Oregon.	Coos Douglas Jackson Klamath	CB-D RO-D	UMP-D RRS-D F-W-D	CB (2003) 0.2mi SW of MP 20.3BR; CB (1998) 0.5mi NE of MP 29.89; PV (1983) 0.5mi N of MP 31.3; PV/CB (1997) 1.7mi SW of MP 35.8; CB (1997) 2.8mi SW of 35.8; PV (2002) 0.3mi N of MP 38.5; CB (1998) 2.15mi SW of MP 43.94; RO (1994) 2.2mi S of MP 57.43; PV (1994) 1.0mi NE of MP 67.5; PV (2003) 100ft N of MP 145.85; RRS NF (2009) 0.7mi S of Rock Source Rum Rye MP 160.41; RRS (2009) 2.1mi NE of MP 158.6; RRS (2009) 0.9mi N of MP 161.36; RRS (2009) 0.5mi W of TEWA 161.40; RRS (2009) 370ft S of MP 161.75; F-W (2002) 1.6mi NE of MP 170.0; F-W (2002) 1.5mi NE of MP 173.	MIIH	Disturbance, modification of habitat.
Spotted bat <i>Euderma maculatum</i>	SOC	S	SEN	SEN	Wide variety of habitat types ranging from ponderosa pine forests to desert water holes. Nests in cliff crevices.	Klamath	LV-S		No documented occurrences within 3mi of project area.	NI	Very rare vagrant in Oregon, does not occur in Project vicinity.
Pygmy rabbit <i>Brachylagus idahoensis</i>	SOC	S	SEN	SEN	Tall dense clumps of sagebrush, also in greasewood. Deep, friable soils for burrows.	Klamath	LV-D	F-W-S	Klamath Falls (H-1972) ~3mi N of MP 200; PV (2002) 2.6mi NE of MP 224.	MIIH	Modification of habitat, disturbance, potential for injury or death from vehicle collision or burrow collapse and crushing.
Gold Beach pocket gopher <i>Thomomys mazama helleri</i>	SOC		STR		Open grassy meadows, wet pastures in mountain forests.	Coos	CB-S		No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Pistol River pocket gopher <i>Thomomys umbrinusdetumidus</i>	SOC				Moist meadows, pastures, grasslands, riparian areas. Requires deep soils.	Curry			No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
White footed vole <i>Arborimus albipes</i>	SOC				Riparian areas, coniferous forests, small clearings.	Coos Douglas Jackson			No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Oregon red tree vole (not the north Oregon coast DPS) <i>Arborimus longicaudus</i>		S		S&M-C	Dense, moist, coniferous and mixed hardwood-coniferous forests with Douglas-fir component.	Coos Douglas Jackson	CB-D RO-D MD-D	UMP-D RRS-D	Observed in Coos Bay BLM, Roseburg BLM, Medford BLM, and Umpqua NF within ROW and 500ft of ROW; see Survey and Manage stand-alone report (appendix F.5 of this EIS).	MIIH	Modification of habitat, disturbance, potential for injury or death if in fell tree or snag. However, remaining sites would provide a reasonable assurance of species persistence.
Gray wolf <i>Canis lupus</i>	E				Habitat generalist.	Jackson Klamath	MD-D	RRS-D F-W-D	Rogue pack area of known wolf activity, south of Crater Lake: 7.1-9.0 miles NE of MP 131.76; Keno use area: SW of Pipeline but overlaps MP 173.93-176.41.	NLAA	Potential disturbance.
Kit Fox <i>Vulpes macrotis</i>		T	SEN		Open desert, shrub or shrub-grassland, salt bush, greasewood, sagebrush in Great Basin.	Klamath	LV-D		Historic (1972) and outside of expected range (eastern Klamath County); MP 193.35 – MP 198.70.	NI	Does not occur in Project vicinity.
Ringtail <i>Bassariscus astutus</i>		S			Woodlands containing tanoak (<i>Notholithocarpus densiflorus</i>) near rocky areas and rivers. In coniferous forests, especially riparian areas.	Coos Douglas Jackson Klamath	RO-D	UMP-D RRS-D F-W-D	RO (1995) 0.83mi SW of MP 46.8; PV (1986) 0.5mi N of MP 73.75.	MIIH	Disturbance, modification of habitat.

TABLE I-3 Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning	
	Federal	State	BLM	Forest Service		County	BLM	Forest Service			Within Vicinity of Project Area c/
Pacific marten (Coastal DPS) <i>Martes caurina</i>	PT		SEN	SEN	Forested habitats, wander through openings. Prefer mature forests with closed canopies, sometimes in openings	Coos			PRV (2011) 0.24mi S of TEWA 3.09-W; CB (H-1991) 0.6mi NE of MP 24.98; PV (1991) 1.4mi NE of MP 26.04; PV (1991) within ROW at MP 29.9; RRS (1978) 2.0mi NE of MP 167.15; RRS (1980) 0.5mi SW of MP 167.15; F-W (1991) 2.0mi NE of MP 168.3; F-W (1997) 0.9mi NE of MP 169.08; F-W (1991) 1.5mi NE of MP 170.94; BLM (1999) 1.2mi	NLAA MIIH	Potential disturbance and modification of habitat; there is a relatively low potential for the Coastal DPS individuals to occur based on historical accounts and the current low estimated number of individuals south of the Umpqua River.
American marten <i>Martes americana</i>		S			Structurally complex late-seral forests as well as lower productivity forests with high shrub densities, including areas associated with serpentine soils.	Douglas Jackson Klamath	CB-D MD-D RO-S	RRS-D	SW of MP 171.2; LV (1999) 2.6mi SW of MP 173.07; LV (1999) 2.6mi SW of MP 174.65; LV (2000) 1.5mi SW of MP 174.65; LV (1999) 2.5mi SW of MP 176.5.		
Pacific fisher <i>Pekania pennanti</i> (West Coast DPS)	PT	SC	SEN	SEN	Mature, closed canopy coniferous forests with some deciduous component. Frequently along riparian corridors. Sometimes in clearcuts.	Coos Douglas Jackson Klamath	CB-D MD-D RO-S LV-D	RRS-D UMP-D F-W-D	CB (1991) 1.4mi E of MP 10.37; F-W (2016) 0.3mi S of MP 171.4; F-W (2012) 1.7mi NE of TEWA 168.85 (water source); Buck Lake (1978) 0.4mi SW of MP 172.58; LV (2015) 0.37mi SW of MP 173.4.	LAA/NJ/MIIH	Construction of the Project would result in removal of suitable habitat, as well as disruption if individuals are present.
North American wolverine <i>Gulo gulo luscus</i>	PT	T	SEN	SEN	Alpine, tundra, conifer forests, grassland, and shrubland/chaparral.	Douglas Jackson Klamath		UMP-S RRS-S F-W-S	No documentation. Potential disperser, Oregon at southern periphery of range.	NE	Does not occur in Project vicinity.
California wolverine <i>Gulo gulo luteus</i>		T			Likely extirpated, subalpine and alpine habitats; dens in caves and rock crevices.	Douglas Jackson Klamath				NI	Does not occur in Project vicinity.
Columbian white-tailed deer <i>Odocoileus virginianus leucurus</i>		SC	SEN		Restricted to a few islands in the Columbia River and white-oak (<i>Quercus garryana</i>) woodlands near Roseburg.	Douglas	RO-D		Historical locations N/S of MP 66.9.	NI	Does not occur in Project vicinity.
Sierra Nevada red fox <i>Vulpes vulpes nescator</i>		S		SEN	Open conifer woodlands and mountain meadows near treeline.	Douglas Jackson Klamath		RRS-D UMP-D	No documented occurrences within 3 mi of Project area.	NI	Does not occur in Project vicinity.
Sea Otter <i>Enhydra lutris</i>	T	T			Marine mammal in coastal waters/shallows with kelp beds and abundant shellfish.	Coos	CB-S			NE	Assumed to be extirpated from the Oregon coast.
Blue whale <i>Balaenoptera musculus</i>	E	E			Worldwide in coastal waters and offshore.	Coos				NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Fin whale <i>Balaenoptera physalus</i>	E	E			Found in waters of all major oceans; concentrates in mixing zones between coastal and oceanic waters associated with the continental shelf.	Coos				NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Gray whale <i>Eschrichtius robustus</i>	E (Western North Pacific Stock)	E (Eastern North Pacific stock)			Found mainly in shallow coastal waters in the North Pacific Ocean.	Coos				NLAA/MIIH	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Humpback whale <i>Megaptera novaeangliae</i>	E	E			Feeds in cold, productive, shallow coastal waters. Calving grounds are commonly in shallow waters near offshore reef systems, islands, or continental shores. During migration, humpbacks stay near the surface of the ocean.	Coos				NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status <u>a/</u>				Expected Habitat	Documented or Suspected Occurrence <u>b/</u>				Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area <u>c/</u>		
Killer whale <i>Orchinus orca</i>	E				Found in all oceans, in both open seas and coastal waters. The Southern Resident stock tends to spend more time in deeper water or waters where there is more salmon abundance.	Coos				NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Eastern North Pacific Southern Resident stock											
North Pacific right whale <i>Eubalaena glacialis</i>	E				Primarily occur in coastal or shelf waters, although movements over deep waters are known.					NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Sei whale <i>Balaenoptera borealis</i>	E	E			Sei whales are found a great distance from shore in temperate waters and do not appear to approach coastal areas.	Coos				NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Sperm whale <i>Physeter macrocephalus</i>	E	E			Primarily inhabit deep water.	Coos				NLAA	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Steller sea lion <i>Eumatopias jubatus</i>				SEN	Marine habitats include coastal waters near shore and over the continental slope; sometimes rivers are ascended in pursuit of prey. The most commonly used terrestrial habitat types are rookeries and haulouts. Rookeries are areas where adults congregate for breeding and pupping. These habitats generally occur on beaches of remote islands with difficult access for humans and other mammalian predators.	Coos	CB-S			MIIH	With avoidance and minimization, potential injury and/or mortality due to ship strikes, potential adverse effects from vessel underwater noise, ship spill and/or release of LNG at sea are expected to be minimal.
Eastern DPS											
Birds											
Marbled murrelet <i>Brachyramphus marmoratus</i>	T/CH	T			Nesting sites almost exclusively within old-growth coniferous forests, usually Douglas-fir stands in Oregon. Uncommon to rare year-round resident on the Oregon coast.	Coos Douglas	CB-D MD-S RO-D	RRS-D	Occupied stands, federally-designated critical habitat, and documented birds within project area.	LAA	Disturbance, loss of habitat, and habitat fragmentation.
Short-tailed albatross <i>Phoebastria (Diomedea) albatrus</i>	E	E			Nests on flat or sloped sites with sparse or full vegetation on isolated windswept offshore islands with limited human access.				Off the Oregon coast in the vicinity of Coos Bay.	NLAA	Does not breed in project vicinity; individuals expected to avoid LNG marine traffic.
Pacific Coast Population											
Western snowy plover <i>Charadrius nivosus nivosus</i>	T/CH (Pacific Coast Population)	T		SEN (Outside Pacific Coast Population)	Winters along the coast beaches, mudflats, marsh edges; nests on sand spits near river outlets and on level sandy beaches.	Coos Douglas Klamath	LV-D		Coos Bay and Estuary vicinity; largest and most consistent nesting area in the vicinity of Oregon Dunes National Recreational Area 2.2mi SW/S of TEWA 0.10 (HDD pullback); historic nest 785 feet W of MP 1.1 on spoils pile (1990). Project is 2.6 mi NE of Critical Habitat.	NLAA/MIIH	With avoidance and minimization, potential increase in predation and disturbance would be minimal.
Red-necked grebe <i>Podiceps grisegena</i>		SC		SEN	Breeds in lakes and ponds, mostly in forested areas. Winter habitat consists of estuaries and protected waters along the coast.	Coos Douglas Jackson Klamath	LV-S	UMP-D F-W-D	MD (T38S,R4E; Historical) Modoc Point BBS (16.3 mi)	MIIH	Disturbance and modification of foraging habitat.
Horned grebe <i>Podiceps auritus</i>				SEN	Open water surrounded with emergent vegetation.	Coos Douglas Jackson Klamath	LV-D	UMP-D	On Merril BBS (centerline), Ingalls BBS (41.9 mi), Dorris BBS (3.5 mi), Macdoel BBS (10.9 mi), Iron Gate BBS (19.7 mi), Modoc Point BBS (16.3 mi).	MIIH	Loss and modification of habitat, disturbance.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
American white pelican <i>Pelecanus erythrorhynchos</i>		S	SEN	SEN	Inland lakes and marshes during breeding season. Nests on predator-free islands. May occur on most bodies of water during nonbreeding.	Jackson Klamath	LV-D	F-W-D	F-W (1990s) 0.75-2.0 miles of TEWA 168.85. Klamath Lake (Historical). On Iron Gate BBS (19.7), Clear Lake Reservoir BBS (20.4 mi.) Modoc Point BBS (16.3 miles), Bly BBS (31 miles), Merrill BBS (on ROW), Dorris BBS (3.5 miles), MacDoel BBS (10.9 miles), Clear Lake Reservoir BBS (20.4 miles) Documented in BCR-5 and BCR- 9.	MIIH	Disturbance.
California Brown Pelican <i>Pelecanus occidentalis californicus</i>		E	SEN	SEN	Marine nearshore habitats in bays, sounds, and estuarine tidal river mouths.	Coos Douglas	CB-D		Coos Bay and Estuary below RM 6 to open ocean – feeding and roosting. Coos Bay Estuary (Coos Bay CBC; 1997-2016).	MIIH	In-water work period will avoid and minimize potential effects; potential disturbance not likely to exceed existing disturbance.
Least bittern <i>Ixobrychus exilis</i>			STR	STR	Breeds in freshwater cattail (<i>Typha</i> spp.) and bulrush marshes east of the Cascades.	Klamath	LV-D	F-W-S	No documented occurrences within 3mi of project area.	MIIH	Disturbance.
Snowy egret <i>Egretta thula</i>		S	SEN		Marshy areas, especially in Coos Bay in the winter. Cattail and bulrush marshes in breeding seasons.	Klamath	LV-D		On Clear Lake Reservoir BBS (20.4 mi), Dorris BBS (3.5 mi)	MIIH	Potential disturbance and habitat loss.
White-faced ibis <i>Plegadis chihi</i>	SOC				Breeds in interior freshwater marshes. Nests among emergent hardstem bulrush. Feeds in marshes, meadows, edges of bonds, pastures, and irrigated alfalfa fields.	Klamath			On Clear Lake Reservoir BBS (20.4 mi), Modoc Point BBS (16.3 mi), Merrill BBS (on ROW), Chinchalo BBS (37.6 mi), Dorris BBS (3.5 mi), MacDoel BBS (10.9 mi).	MIIH	Potential disturbance.
Greater sandhill crane <i>Grus canadensis tabida</i>		S			Nests in marshes and wet meadows or in drier grasslands and pastures.	Jackson Klamath		RRS-D	Several documentations RRS (1990s) <1.0mi N/S of route from 156.6-161.0; RRS (1992) pair 0.4mi NW of TEWA 161.40. Documented in BCR-5 and BCR- 9 (Modoc, Bly, Merrill, Chinchalo, Ingalls, Dorris, MacDoel, Clear Lake Reservoir BBS) and during CBC counts.RR	MIIH	Potential disturbance.
Canadian sandhill crane <i>Grus canadensis rowani</i>			STR		Spring and fall migrant in western (Willamette Valley) Oregon, utilizes Sauvie Island and Ridgefield NWR, WA.	Jackson	LV-D	RRS-D F-W-D	RRS and F-W: several documented < 1.0 mile S of Pipeline between MP 156.5-174.9; several documentations north of TEWA 168.5.	MIIH	Potential disturbance.
Trumpeter swan <i>Cygnus buccinator</i>		S	STR		Nests on the shores of large inland lakes and marshes. Species has a limited range within Oregon.	Klamath	LV-S		No documented occurrences within 3mi of project area.	NI	Does not occur in Project vicinity.
Tule goose <i>Anser albifrons elgasi</i>			SEN	SEN	Breeds along tundra wetlands. Winters in agricultural fields, marshes, bays, and lakes	Klamath	LV-S		No documented occurrences within 3mi of project area.	NI	Does not occur in Project vicinity.
Aleutian Canada (cackling) goose <i>Branta hutchinsii leucopareia</i>			SEN		Migrates along the entire Oregon coast to California wintering grounds, also winters in Oregon. Forages in pastures. During migration, may be seen in the Willamette Valley or Goat Rock (Oregon Islands National Wildlife Refuge). Some winter exclusively in the Semidi Islands, near Pacific City. In the spring, several thousand congregate in the Langlois area of southern coastal Oregon.	Coos	CB-D		Coos Bay (1993) 3mi SW of MP 1.0.	MIIH	Disturbance and potential effects to coastal wintering grounds.
Dusky Canada goose <i>Branta canadensis occidentalis</i>			SEN		Breeds in freshwater marshes with tall shrub cover. Terrestrial habitats include cropland, hedgerow and grasslands.	Coos Douglas	CB-S		No documented occurrences within 3mi of project area. Primary wintering grounds are within Willamette Valley Refuges, and range does not extend south into the Project area.	NI	Does not occur in Project vicinity.
Harlequin duck <i>Histrionicus histrionicus</i>	SOC	S	SEN	SEN	Breeds along low-gradient, fast-flowing reaches of mountain streams in forested areas. Uses swift waters and rapids during other seasons.	Coos Douglas Klamath	CB-S RO-D	UMP-D RRS-D	Coos Bay and Coquille Valley CBC (1997-2016).	MIIH	Modification of habitat and disturbance.
Bufflehead <i>Bucephala albeola</i>			SEN	SEN	Near mountain lakes surrounded by open woodlands containing snags. Nests in aspen (<i>Populus tremuloides</i>), ponderosa pine, or Douglas-fir.	Coos Douglas Jackson Klamath		F-W-D UMP-D	On Dorris BBS (3.5 mi), Clear Lake Reservoir BBS (20.4 mi), Crowder Flat BBS (31.7 mi), Modoc Point BBS (16.3 mi), Lapham Reservoir BBS 25 mi), and CBC counts (1997-2016).	MIIH	Disturbance.
Yellow rail <i>Coturnicops noveboracensis</i>	SOC	SC	SEN	SEN	Freshwater and coastal estuary marshes. Requires areas with shallow water and vegetative cover.	Klamath	LV-D	F-W-D UMP-S	Documented in BCR 9 on Chinchalo BBS (37.6 mi).	NI	Does not currently occur in Project vicinity.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Black oystercatcher <i>Haematopus bachmani</i>	SOC	S			Intertidal environment. Nests either on offshore islands or rocky shorelines and cliffs.	Coos			Coos Bay and Coquille Valley CBC (1997-2016)	MIIH	Potential for displacement if species is present.
Upland sandpiper <i>Bartramia longicauda</i>	SOC		SEN	SEN	Nests in dry or wet meadows and grasslands, often with a fringe of trees in the middle of sagebrush or lodgepole pine communities.	Coos Klamath		F-W-S	North Spit (vagrant).	MIIH	Modification of habitat and disturbance.
Long-billed curlew <i>Numenius americanus</i>		S			Nests in open grasslands, prairies, and meadows, often near scattered shrubs and usually near water or wet meadows.	Klamath			On Chinchalo BBS (37.6 mi), Ingalls BBS (41.9 mi), Dorris BBS (3.5 mi), Mcdoel BBS (10.9 mi), Merrill BBS (centerline) and CBC (1997-2016).	MIIH	Modification of habitat and disturbance.
Franklin's gull <i>Larus pipixcan</i>			SEN		Seacoasts, bays, estuaries, lakes, marshes, and irrigated croplands.	Klamath	LV-D		On Dorris BBS (3.5 mi), Mcdoel BBS (10.9 mi), Modoc Point BBS (16.3 mi).	MIIH	Potential disturbance.
Black tern <i>Chlidonias niger</i>	SOC				Nests in or on emergent vegetation in alkaline lakes and freshwater marshes or in marshy areas along rivers or ponds. Forages near nest.	Jackson Klamath			On Mcdoel BBS (10.9 mi), Clear Lake Reservoir BBS (20.4 mi), Crowder Flat BBS (31.7 mil.), Modoc Point BBS (16.3 mi).	MIIH	Potential disturbance.
Rhinoceros auklet <i>Cerorhinca monocerata</i>			STR		Offshore islands and coast headlands with well-developed soils. Forages ocean-wide.	Coos Douglas			Coos Bay and Coquille Valley CBC (1997-2016)	MIIH	Disturbance.
Tufted puffin <i>Fratercula cirrhata</i>		SC	SEN		Burrows on slopes or turf-covered headlands of offshore islands and coastal bluffs. May nest in rock crevices. Forages in the marine environment.	Coos			On Coos Bay CBC (1997-2016).	MIIH	Disturbance.
White-tailed kite <i>Elanus leucurus</i>			SEN	SEN	Lower-elevation grasslands, agricultural areas, meadows, oak and riparian woodlands, marshes, and wetlands. Requires trees or tall shrubs for nesting.	Coos Douglas Jackson	CB-D MD-D RO-D	RRS-S	On Umpqua BBS (18.4 mi), Emigrant Lake BBS (7.7 mi) and several CBC (1997-2016).	MIIH	Disturbance.
Bald eagle <i>Haliaeetus leucocephalus</i>	BGEPA		SEN	SEN	Nests and roosts along coasts, rivers, bays, and lakes with large trees (e.g., pine, spruce, cottonwood [<i>Populus</i> spp.], oak).	Coos Douglas Jackson Klamath	CB-D LV-D MD-D RO-D	UMP-D RRS-D F-W-D	Documented in BCR-5 and BCR-9 and during CBC count; Occupied/historic nest sites occur within 3 miles of Project on BLM, Forest Service, and Private; the majority occur <3mi of MPs 186-198 near Klamath River. Nest (PRV, 2007) 0.48mi W of MP 10.15R; Nest (PRV, 2013) 0.6 mi SW of Winchester Pipe Yard; Nest (MD, 2013) ~1mi S of MP 123.2/<0.5mi from EAR 123.8 and improvements; Nest (RRS, 2007) 0.4-0.6mi E of TEWA 161.40; Nest (F-W, 2014) 0.9mi W of TEWA 168.85; Nest (F-W, 2016) 1 mi S of MP 171.6; Nest(s) (PRV, 2003) 1.25mi N/W of MP 189.3; Nest(s) (PRV, 2007) 0.7/1.0mi NW/N of TEWA 184.30; Nest (PRV, 2000) ~ 1mi NE of Rogue Aggregates Pipe Yard; Nest (LV, 2016) 0.5mi SW of MP 178.6; Nest (LV, 2016) ~ 1.0mi S of TEWA 184.30. WRRWRRW	MIIH	Disturbance, loss or modification of habitat.
Northern goshawk <i>Accipiter gentilis atricapillus</i>	SOC	S			Coniferous forests, sometimes in aspen groves on desert mountain ranges. Prefers large patches of late-successional forests with large trees and canopy closure.	Coos Douglas Jackson Klamath	RO-D MD-D LV-D	UMP-D RRS-D F-W-D	Documented in BCR-5 and BCR-9 and during CBC; Nest locations: RO (2007) 2.4mi SW of MP 82; MD (2001) 2.3mi E of MP 114.3; MD (2001) 2.3mi NE of MP 115.5; MD (2008) 0.75mi W of MP 121.25; RRS (2015) 0.26mi NE of MP 164.5; F-W (1992) 3mi NE of MP 168; F-W (1995) 0.57mi NE of MP 168.4; F-W (2006, 1994) 1.5mi and 2mi SW of MP 169.7; F-W (1996) 0.5mi SW of MP 170.36; LV (1998) 2.9mi SW of MP 170; F-W (1992, 1995) 1.4mi N of MP 172.6; F-W (1996) 2.5mi NE of MP 173; LV (1996-2004) 1.2- 1.7mi SW of MP 178.4; LV (2007) 1.2mi SW of MP 178.5; LV (2001) 1.7mi SW of MP 178.7; LV (1994) 1.5mi SW of MP 179.WWWWWWWWWWW	MIIH	Modification of habitat and disturbance. Injury or mortality if nest tree is felled.
Swainson's hawk <i>Buteo swainsoni</i>		S			Grasslands, sagebrush flats, juniper woodlands, larger meadows, and grasslands with forested mountains. Requires trees for nesting.	Jackson		F-W-D	BCR-9 on Ingalls BBS (41.9 mi), Dorris BBS (3.5 mi), Mcdoel BBS (10.9 mi), Medicine Mountain BBS (28.5 mi), Iron Gate BBS (19.7).	MIIH	Minor potential for disturbance if present.
Merlin <i>Falco columbarius</i>			STR	STR	Nests in open coniferous woodlands, forests, and savannahs. Forages over a variety of habitats such as marshes, prairies, and woodland openings. Usually found close to water.	Coos Jackson Klamath	RO-D CB-S	F-W-D RRS-D UMP-D	Documented during several CBC (1997-2016).	MIIH	Modification of habitat and disturbance.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
American peregrine falcon <i>Falco peregrinus anatum</i>		S	SEN	SEN	Typically nests on cliffs overlooking fairly open areas with an ample food supply, such as along coasts, lakes, and marshes, but may nest on buildings or in stick nests constructed by other raptors.	Coos Douglas Jackson Klamath	CB-D LV-D MD-D RO-D	RRS-D UMP-D F-W-D	Documented in BCR-5 and BCR-9 and during CBC (1997-2016); Nest sites: PV (2013) 0.2mi N of MP 1.2 (North Bend Bridge); PV (2013) 2.5mi NE of MP 29.7; CB/PV (2013) 1.0mi N of MP 35.2; CB (2013) 2.9mi NE of MP 46; UMP (2003) 0.1mi SW of MP 112.64; PV (2003) 2.2mi SW of MP 119.54; PV (2003) 1.8mi N of MP 152.15. Several documentations within Coos Bay area – foraging, flying, roosting.	MIIH	Disturbance.
Arctic peregrine falcon <i>Falco peregrinus tundrius</i>			SEN		Migratory habitat on coast – cliffs or bluffs near large bodies of water or open fields for hunting.	Coos Douglas			Documented on the North Spit and in the Klamath Basin.	MIIH	Disturbance.
Greater sage-grouse <i>Centrocercus urophasianus</i>	SOC	S	SEN	SEN	Big sagebrush, preferring areas where big sagebrush cover is 15-50%. Leks in open areas.	Klamath	LV-D	F-W-D	Clear Lake Reservoir BBS (20.4 mi).	MIIH	Modification of habitat and disturbance.
Mountain quail <i>Oreortyx pictus</i>	SOC				High elevation; prefers open forests and woodlands with ample undergrowth of brushy vegetation. Also inhabits thickets of chaparral and riparian woodland, meadow edges in forests, and brushy regrowth.	Coos Douglas Jackson Klamath	CB-D LV-D		Documented in BCR-5 and BCR- 9 and during CBC (1997-2016). PV (1993) 1.5 miles E of MP13.61; PV (1997) 1.8 miles NE of MP 28.86; CB (1998) 2.0. 2.1, 2.4 miles NE of MP 28.86; CB (1999) 1.1 miles NE of MP 32.35; CB (1996) 0.03 mi W of MP 37.16; MD (1994) 2.0mi SW of MP 121.85; LV (2005) 1.0, 1.1 miles SW of MP 172.53; LV (2000) 1.5mi SW of MP 175.89; LV (2000) 0.7mi SW of MP 177.61; PV (2005) 0.3mi SW of MP 182.52; PV (2000) 2.4mi S of MP 184.3; PV (2003) 1.8mi SW of MP 192.59; LV (2002) 2.9mi S of MP 192.59.	MIIH	Modification of habitat and disturbance.
Band-tailed pigeon <i>Columba fasciata</i>	SOC				Coniferous or mixed-deciduous forests. Forests and woodlands containing oaks. In western Oregon, uses dense coniferous forests.	Coos Douglas Jackson	CB-D		Documented in BCR-5 and BCR- 9 and during CBC (1997-2016); PV (1997) 1.8 miles NE of MP 28.86; CB (1998) 2.0, 2.1, 2.2, 2.5 miles NE of MP 28.86; CB (1994) 1.6 miles SW of MP 33.77; CB (1995) 2.9 mile NE of MP 34.45; CB (1993) 2.09mi NE of MP 39.56.	MIIH	Modification of habitat and disturbance.
Northern spotted owl <i>Strix occidentalis caurina</i>	T/CH	T			Closely associated with old-growth coniferous forests or mature forests with old-growth characteristics such as standing snags, closed canopy, and downed logs.	Coos Douglas Jackson Klamath	CB-D LV-D MD-D RO-D	RRS-D UMP-D F-W-D	Multiple locations along route within 3 mi of route. Designated critical habitat within project area.	LAA	Disturbance, habitat loss or modification, and habitat fragmentation.
Flammulated owl <i>Otus flammeolus</i>		S			Open forests with ponderosa pine. Roosts in large trees adjacent to grasslands.	Douglas Jackson Klamath	MD-D	F-W-D	MD (2002) 1.9mi W of MP 121; MD (2003) 0.6mi NE of MP 124.32; MD (1996) 1.7mi NE of MP 140.45; PV (1994) 2.6mi E of MP 141.89; MD (1997) 0.25mi S of TEWA 153.24-W; F-W (2007) single documented near MP 169.4 and 0.3mi NE of MP 169.2.	MIIH	Modification of habitat, disturbance, and potential for injury or death if roosting or nesting in fell tree or snag.
Western burrowing owl <i>Athene cunicularia hypugea</i>	SOC				Open deserts, grasslands, fields, pastures, and sagebrush steppe.	Douglas Jackson Klamath			Burrows at North Bend Airport (2011); burrows on north spit (1996). Documented at Medford CBC (1997-2016).	MIIH	Disturbance.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	County	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forest Service	Within Vicinity of Project Area c/		
Great gray owl <i>Strix nebulosa</i>		S		S&M-C	Forages over open areas. Found in mixed coniferous, ponderosa pine, and lodgepole pine forests. Often in old-growth forests on north-facing slopes.	Douglas Jackson Klamath	RO-D MD-D	UMP-D RRS-D F-W-D	Documented in BCR-5 and BCR-9 and during CBC count; Nest locations: RO (2008) 0.37mi N of MP 85.9; RO (2003) 1.7mi NE of MP 87.7; RO (2007) 0.22mi W of MP 90.05; MD (2008) 0.07mi E of MP 115.75; MD (2008) 0.04mi W of MP 119.39; MD (2008) 0.13mi E of MP 133.28; MD (2007) 0.29mi SW of MP 133.5; MD (2007) 0.65mi W of MP 133.8 and MD (1999) 0.78mi NE of MP 136.65; MD (1999) 0.83mi SW of MP 137.1; MD (2005) 2.7mi SW of MP 116.3; MD (2000) 0.53mi SW of MP 133.85; MD (1996, 2000) 0.86mi E of MP 134.43; MD (2008) 0.83mi SW of MP 136.4; MD (2003) 0.45mi NE of MP 136.5; MD (2000) 0.83mi SW of MP 137.1; PV (1998) 0.24mi SW of MP 137.05; MD (2001) 1.2mi NE of MP 137.27; MD (2005) 1.0mi NE of MP 138.5; MD (2001) 1.8mi N of MP 153; MD (1997) 1.9mi SW of MP 154.8; RRS (1998) 2.3mi SW of MP 154.8; RRS (2008) 0.13mi N of MP 156.22; RRS (2008) 0.23mi E of MP 162.6; RRS (2007) 0.18mi NE of MP 164.5; see Survey and Manage stand-alone report (appendix F.5 of this EIS).RRRRRRW	MIIH	Disturbance, loss or modification of habitat, and potential for injury or death if roosting or nesting in fell tree or snag. However, remaining sites would provide a reasonable assurance of species persistence.
Black Swift <i>Cypseloides niger</i>		S	SEN	SEN	Nests next to or behind waterfalls, wet cliffs, sea caves; nests in small colonies.	Coos Douglas Coos	CB-D	UMP-D	No documented occurrences within 3mi of project area.	NI	No suitable habitat in Project area.
Acorn woodpecker <i>Melanerpes formicivorus</i>	SOC	S			White oak communities; other coniferous and broad-leaved trees usually present.	Douglas Jackson Klamath			On Umpqua BBS (18.4 mi), Days Creek BBS (3.7 mi), Darby BBS (centerline), Emigrant Lake BBS (7.7 mi), Sams Valley BBS (centerline), Prospect BBS (centerline), MacDoel BBS (10.9 mi) and CBC (1997-2016).	MIIH	Disturbance.
White-headed woodpecker <i>Picoides albolarvatus</i>	SOC	SC	SEN	SEN	Ponderosa pine or pine-mixed conifer forests. Requires large trees for foraging and snags for nesting.	Douglas Jackson Klamath	LV-D MD-D	UMP-D RRS-D F-W-D	F-W (1995) 1.5mi NW of TEWA 168.85; LV (1999) 2.1mi SW of MP 174.65. Modoc Point BBS (16.3 mi), Bly BBS (31 mi), Lapham Reservoir BBS (25 mi), Picture Flat BBS (39 mi), Chinchalo BBS (37.6 mi).	MIIH	Modification of habitat, disturbance, and potential for injury or death if roosting/nesting in fell tree or snag.
Lewis' woodpecker <i>Melanerpes lewis</i>	SOC	SC	SEN	SEN	Open forests at lower elevations. Nests in white oak woodlands, ponderosa pine woodlands, mixed oak-pine woodlands, and cottonwood riparian woodlands in eastern Oregon.	Douglas Jackson Klamath	MD-D RO-D	UMP-D RRS-D F-W-D	PV (T36S,R2E,S7; 1995): 1.1mi SW of MP 142.54, Modoc Point BBS (16.3 mi), Lapham Reservoir BBS (25 mi), Merrill BBS (centerline), MacDoel BBS (10.9 mi), Clear Lake Reservoir BBS (20.4 mi).	MIIH	Modification of habitat, disturbance, and potential for injury or death if roosting/nesting in fell tree or snag.
Olive-sided flycatcher <i>Contopus cooperi</i>	SOC	S (West Cascade s and Coast Range)S C (East Cascade s)			Coniferous forests with uneven canopy. Prefers open forests but occupies a variety of forest types.	Coos Douglas Jackson Klamath	LV-D		PV (1997) 1.8 miles NE of MP 28.86; CB (1998) 2.0, 2.4, 2.5 miles NE of MP 28.86; PV (1992) 3.0 miles W of MP 33.77; LV (1994) 1.9mi SW of MP 174.65; LV (1994) 2.8mi SW of MP 174.65.	MIIH	Potential disturbance and habitat modification.
Willow flycatcher <i>Empidonax traillii adastus</i>	SOC	S			Willows at the edges of streams flowing through meadows and marshes. Also breeds in thickets along edges of forest clearings and brushy vegetation near water.	Jackson Klamath	LV-D		PV (1997) 1.8 miles NE of MP 28.86; CB (1998) 2.2, 2.4 miles NE of MP 28.86; LV (1994) 2.5mi SW of MP 174.65; LV (1994) 2.0, 2.1mi SW of MP 174.65.	MIIH	Potential disturbance and habitat modification.
Streaked horned lark <i>Eremophila alpestris strigata</i>	T/CH	SC			Expanses of thinly vegetated land, including fields, prairies, dunes, upper beaches, airports, and similar areas with low/sparse grassy vegetation.	Coos Douglas Jackson Coos	CB-D MD-D			NE	Project is outside known range, no suitable habitat is present.
Purple martin <i>Progne subis</i>	SOC	SC	SEN	SEN	Nests in tree cavities and nest boxes with open areas for foraging. May use open forests.	Douglas Jackson Klamath	CB-D MD-S RO-D	UMP-S RRS-S F-W-S	Haynes Inlet and Coos Bay (arrive in April), Catching Slough (nest boxes; 1985), Days Creek BBS (3.7 mi), Glasgow BBS (centerline), Selma BBS (32.8 mi), Modoc Point BBS (16.3 mi), Clear Lake Reservoir BBS (20.4 mi).	MIIH	Modification of habitat, disturbance, and potential for injury or death if roosting/nesting in fell tree or snag.
Northern waterthrush <i>Parkesia noveboracensis</i>			SEN	SEN	Nests in cool, wooded swamps, ponds, slow-moving rivers; thickets of bogs, and rivers bordered with willow.	Jackson		RRS-S	No documented occurrences within 3mi of project area.	NI	Extremely rare in Oregon, limited habitat in survey area.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Yellow-breasted chat <i>Icteria virens auricollis</i>	SOC	SC			Brushy areas in riparian woodlands. Also uses tangles of brush in deciduous or mixed deciduous-coniferous woodlands.	Coos Douglas Jackson Klamath			On Modoc Point BBS (16.3 mi E) and Iron Gate BBS (19.7 mi S).	MIIH	Potential for disturbance if species is present.
Grasshopper sparrow <i>Ammodramus savannarum</i>		S	SEN	SEN	Short grasslands with few scattered shrubs, prefers bunchgrass grasslands on the north slopes of hills with scattered shrubs or uses cultivated grasslands and pastures.	Douglas Jackson	MD-D		Merrill BBS (centerline), MacDoel BBS (10.9 mi).	MIIH	Potential disturbance and habitat modification.
Oregon vesper sparrow <i>Poocetes gramineus affinis</i> ³	SOC	S	SEN		Grassy foothills west of Cascades in the Umpqua and Rogue river valleys.	Coos Douglas Jackson	CB-D RO-D MD-D		Documented in BCR-5 and BCR-9 and during CBC (1997-2016).	MIIH	Disturbance and potential for loss of ground nests.
Tricolored blackbird <i>Agelaius tricolor</i>	SOC		SEN	SEN	Breeds in freshwater marshes with emergent vegetation or thickets of shrubs. May breed in Himalayan blackberry (<i>Rubus armeniacus</i>) near wetlands.	Jackson Klamath	MD-D LV-D	RRS-S F-W-D	ST (1980): 1.0mi SE of MP 196.17, PV (2000): 1.8mi W of MP 229.39, Modoc Point BBS (16.3 mi), Merrill BBS (centerline), Ingalls BBS (41.9 mi), Dorris BBS (3.5 mi), MacDoel BBS (10.9 mi), Hackamore BBS (34.7 mi), Iron Gate Reservoir BBS (19.7 mi) and during CBC (1997-2016).	MIIH	Disturbance.
Common nighthawk <i>Chordeiles minor</i>		S			Uses gravel bars and other sparsely-vegetated grasslands or forest clearings for nesting.	Coos Douglas Jackson Klamath			Documented in BCR 5 and BCR9	MIIH	Disturbance.
Reptiles											
Green sea turtle <i>Chelonia mydas</i>	T	E			Oceanic beaches for nesting, convergence zones in the open ocean, and benthic feeding grounds in coastal areas. Occasional sightings off the coasts of Washington and Oregon; most commonly occur from San Diego to the south.					NLAA	With avoidance and minimization, potential for injury or mortality due to ship-strikes and potential adverse effects from a carrier spill is low.
Leatherback sea turtle <i>Dermochelys coriacea</i>	E	E			Open ocean and coastal waters; widespread.					NLAA	With avoidance and minimization, potential for injury or mortality due to ship-strikes and potential adverse effects from a carrier spill is low.
Loggerhead sea turtle <i>Caretta caretta</i>	E	T			Oceanic beaches for nesting, open ocean, and nearshore coastal areas. Occasional sightings off the coasts of Washington and Oregon; most occur off the California coast.					NLAA	With avoidance and minimization, potential for injury or mortality due to ship-strikes and potential adverse effects from a carrier spill is low.
Olive ridley sea turtle <i>Lepidochelys olivacea</i>	T	T			Primarily open ocean, but known to inhabit coastal areas, including bays and estuaries. Primarily tropical species but occasionally occurring off the Oregon and Washington coasts.					NLAA	With avoidance and minimization, potential for injury or mortality due to ship-strikes and potential adverse effects from a carrier spill is low.

TABLE I-3

Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning	
	Federal	State	BLM	Forest Service		County	BLM	Forest Service			
Western pond turtle <i>Actinemys marmorata</i> (formerly Northwestern/North Pacific/Pacific Pond Turtle, <i>Emys/Actinemys marmorata</i>)	SOC	SC	SEN	SEN	Rivers, creeks, small lakes, ponds, marshes, irrigation ditches, and reservoirs. Nests on sandy banks near water.	Coos Douglas Jackson Klamath	CB-D LV-D MD-D RO-D	F-W-D RRS-D UMP-D	(1993) 0.8mi W of MP 26.64; PRV (1993) 0.27mi E of MP 26.35; Middle Fork Coquille River (1994) 0.3mi NW and 0.4mi SE of MP 49.97; PV (1993) 1.4mi NE of MP 55.92; Olalla Creek (1995) 0.2mi NW of MP 59.5; Ben Irving Reservoir/RO (2000) 0.7mi SE of MP 54.7; South Umpqua River (1995); East Willis Creek (1995): 1.2mi SW of MP 67.47; South Umpqua River (1998) 0.2mi S of MP 68.99 and 0.7mi SE of MP 70.43; South Umpqua River (2000) 0.15mi E MP 94.45; Pond off S. Umpqua River (2000) 0.2mi S of Hult Chip Yard 1; Pond and upland habitat (2000) near Winchester Pipeyard; Drew Creek (2013) 3.5mi E of MP 99.6; UMP (2013) Drew Creek 2.2mi E of Rock Source 102.30; UMP (1993) 1.8mi NE of MP 105.24; UMP (1989) 1.5mi SW of MP 109.68; UMP (2000) 0.2mi SW of MP 110.1; MD (2006) 2mi NE of MP 114.1 (confluence of Wall Creek and Dead Horse Creek); MD (2000) 0.33mi W of MP 118.4; Rogue River/PV MP 122.67; Indian Creek (2006) 2mi SW of MP 125.25; MD (2010) 2.8mi SW of MP 128.5; BLM (1993) 2.7mi SW of MP 148.2; Klamath River (2009) at MP 199.1.	MIIH	Modification of habitat, disturbance, potential for injury or death.
Northern sagebrush lizard <i>Sceloporus graciosus graciosus</i>	SOC				Sagebrush habitats; also in chaparral, juniper woodlands, and coniferous forests.	Klamath			No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
California mountain kingsnake <i>Lampropeltis zonata</i>	SOC	S			Pine forests, oak woodland, and chaparral valleys. In, under, or near rotting logs in open wooded areas near streams.	Coos Douglas Jackson	MD-D		MD (1997) 0.7mi E of MP 140.75; MD (1991) 0.45mi E of MP 141.65.	MIIH	Potential disturbance and habitat modification.
Amphibians											
Oregon slender salamander <i>Batrachoseps wrighti</i> ³	SOC	S		SEN	Under bark or moss in mature and second-growth Douglas-fir forests. Also under rocks or logs in stands of moist hardwood forests within coniferous forests.	Douglas Klamath			No documented occurrences within 3mi of project area.	NI	Outside of known range.
Shasta salamander <i>Hydromantes shastae</i>				S&M-A	Found mainly in limestone outcrops. Often occurs in cool, wet ravines and valleys in both forested and non-forested areas; usually in moist limestone fissures or caves. Eggs are laid in late summer in a cluster of 9-12 eggs. No aquatic larval stage.				No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Del Norte salamander <i>Plethodon elongatus</i>	SOC	S		S&M-D	Moist, rocky areas within forests. Occasionally in decaying logs and under forest floor litter.	Coos Douglas Jackson	MD-D		No documented occurrences within 3mi of project area.	NI	Outside of known range.
Larch Mountain salamander <i>Plethodon larselli</i>	SOC	SC	SEN	SEN S&M-A	Most often inhabits steep forested or non-forested slopes associated with rocky substrates where spaces exist between the rock and soil. Breeds mainly in the fall, eggs are laid in late winter-early spring and hatch in about four months. Average clutch size of seven.				No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Siskiyou Mountains salamander <i>Plethodon stormi</i>	SOC	SC	-SEN	SEN S&M- C (2003-A)	Loose rock rubble or talus on north-facing slopes or in dense wooded areas.	Jackson	MD-D	RRS-D	No documented occurrences within 3mi of project area.	NI	Outside of known range.
Van Dyke's salamander <i>Plethodon vandykei</i>				S&M-A	Streams and seeps; also upland forest, talus, lakeshores, and cave entrances. Abundant in old forest stands with complex structure and moderate to high levels of woody debris and colluvial rock.				No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Southern torrent salamander <i>Rhyacotriton variegatus</i>	SOC	S			Shallow, cold waters of perennial, high-gradient streams within humid coniferous forests. Adults occupy splash zones or areas with overflowing water. Larvae found in cobble or gravel beds flushed with water.	Coos Douglas	CB-D	UMP-D	PV (1995) 1.8mi W of MP 18.2BR; CB (1992) 2.5mi SW of MP 27.5; CB (1998) 0.8mi NE of MP 30.17; CB (1998) 0.48mi NE of MP 39.65; UMP (1997) 1.5mi SW of MP 108.3.	MIIH	Modification of habitat and potential for injury or death.

TABLE I-3 Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning	
	Federal	State	BLM	Forest Service		County	BLM	Forest Service			Within Vicinity of Project Area c/
Clouded salamander <i>Aneides ferreus</i>		S			Forest dweller found in moist areas, under logs and other debris.	Coos Douglas Jackson Klamath	CB-D MD-D	UMP-D	CB (2003) 2.8 miles NE of MP 32.35; CB (1994) 1.9 miles SW of MP 33.77; CB (2000) 3.4 mi SW of MP 35.8; CB (1998) 2.3mi SW of 35.8; CB (1996) 1.3mi SW of MP 40.33; CB (1992) 1.7mi NE of MP 41.55; UMP (1997) 1.2mi E of MP 100; UMP (1994) 2.7mi W of MP 103.12; MD (1995) 2.5mi SW of MP 137.8; UMP (1997) several documentations <1.0mi SW of MPs 108-109.7	MIIH	Modification of habitat and potential for injury or death.
Black salamander <i>Aneides flavipunctatus</i>			SEN	SEN	Near streams, in talus slopes or under rocks and logs. Inhabits open woodlands, and mixed coniferous and mixed-coniferous-deciduous forests.	Jackson	MD-D	RRS-D	No documented occurrences within 3mi of project area.	NI	Outside of known range.
California slender salamander <i>Batrachoseps attenuatus</i>		SV	SEN	SEN	Lower-elevation forests along the southern coast, including hardwood, redwood, and other coniferous forests. Also in open areas with scattered trees. Under rocks, logs, or other objects on the ground.	Coos Jackson	CB-D	RRS-D	No documented occurrences within 3mi of project area.	NI	Outside of known range.
Western toad <i>Bufo boreas</i>		S			Wide variety of habitats (desert, chaparral grassland, woodland, and forest) from sea level to above timberline.	Coos Douglas Jackson Klamath	MD-D LV-D	F-W-D	Trail Creek/PV (1982) 0.2mi NE of MP 120.6; MD (1996) 2.9 mi SW of MP 121.25; F-W (1995) Spencer Creek 0.1mi downstream; F-W (1995) 1.4mi NE of MP 171.44; PV (1994) 1.4mi NE of MP 173.6; LV/PV (1994) 1.0mi NE of MP 178.52.	MIIH	Modification of habitat and potential for injury or death.
Tailed frog <i>Ascaphus truei</i>	SOC	S			Cold, fast-flowing permanent streams, usually in forests. Sometimes in streams flowing through non-forested regions.	Coos Douglas Jackson Klamath	CB-D	UMP-D	CB (1994) 1.7mi SW of MP 33.77; CB (1994) 1.4mi SW of MP 33.77; PV (1993) 0.29 mile NE of MP 34.45; CB (1997) 2.8mi SW of 35.8; PV (2001) 2.7mi SW of 35.8; CB (1998, 2000): 2.9mi SW of 35.8; PV (2001): 2 mi S of MP 40.33; CB (1994) 0.31mi NW of MP 44.60; CB (1995): 0.5mi S of MP 45.39; UMP (2000) Drew Creek 0.2mi E of MP 108.2.	MIIH	Modification of habitat and potential for injury or death.
Foothill yellow-legged frog <i>Rana boylei</i>	SOC	SC	SEN	SEN	Permanent streams in a variety of habitat types such as grassland, chaparral, coniferous or deciduous forests, and woodlands. Missing from much of their historic habitat.	Coos Douglas Jackson Klamath	CB-D MD-D RO-D	RRS-D UMP-D	CB (1995) 1.8mi SW of MP 40.33; South Myrtle Creek (2001) SE of MP 71.4; PV (2001) 1.1mi S of MP 74.2; Coffee Creek/PV (1998) 1.9mi NE of MP 94.78; UMP/PV ~3mi NE of MP 98.1; Drew Creek (2005) 3.3mi E of MP 101.8; UMP (2006/2008) Calahan and Elk Creeks >1.7mi E of MPs 99.4; Trail Creek/PV (2003) 1.1mi E of MP 118.3; Indian Creek/MD 1.4mi SW of MP 127.31; PV/drainage ditch (1999) 2mi S of Winchester Pipe Yard; North Umpqua River (2011) 1.5mi E of Winchester Pipe Yard; RRS (1991) 0.5mi E of MP 162.6.	MIIH	Modification of habitat and potential for injury or death.
Cascades frog <i>Rana cascadae</i>	SOC	S			Lakes, ponds, and small streams that run through meadows. Ranges from 2,600 feet to treeline.	Douglas Jackson Klamath	RO-D MD-D LV-D	UMP-D RRS-D F-W-D	RO (2013) 1.3mi N of MP 51.3; MD (1996): 2.7mi SW of MP 121.25; UMP (1997) 1.3mi NE of MP 97.6; RRS (1990) 0.2mi SW of MP 158.7; RRS (1992) 1.5mi NE of MP 162.5; RRS (2007) 1.2mi E of MP 162.8 in medium creek; F-W (1995) 1.5mi NW of TEWA 168.85; LV (2002) 3mi S of MP 170.3; PV (1994): 1.3mi SW of MP 177.39.	MIIH	Modification of habitat and potential for injury or death.
Northern leopard frog <i>Lithobates pipiens</i>			SEN	SEN	Marshes, wet meadows, vegetated irrigation canals, ponds, and reservoirs. Prefers quiet or slow flowing waters.	Jackson Klamath	LV-S	F-W-S	No documented occurrences within 3mi of project area.	NI	Outside of known range.
Northern red-legged frog <i>Rana aurora aurora</i>	SOC	S		SEN	Streams, ponds, and marshes in wooded areas.	Coos Douglas Jackson Klamath	CB-D	UMP-D	Willanch Creek (2009) crossed by Pipeline at MP 8.27R; Wren Smith Creek (2010) 1.4mi E of MP 17.5BR; Several locations <3mi between MPs 16.6BR-MP 60; CB (1992) 0.2mi SE of MP 21.6BR; PRV (1995) 0.2mi W of MP 23.2BR; CB (1993) 0.5mi E of Weaver Road Quarry Site 1 MP 47.00; 1.8 mi NE of MP 19.88; CB (1992) 2.0mi NE of MP 24.34; Middle Creek (2010) 0.2mi NE and 2.6mi SW of MP 27.6; CB (1992) 2.7 miles SW of MP 28.05; Steel Creek (2010) 1mi N of MP 31.3; Estes Creek (2010) 2.4mi N of MP 50.2; Little Muley Ceek (2010) 1.6mi N of MP 53.9; UMP (2001) Calahan Creek 1.5mi E of MP 102; UMP (2000) Drew Creek 0.2mi E of MP 108; PV (1991) 2.1mi NE of MP 105.63; UMP (1997) 0.25mi downstream of MP 109.8; UMP (1991) 2.6mi NE of MP 111.83.	MIIH	Modification of habitat and potential for injury or death.

TABLE I-3

Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/				Expected Habitat	County	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forest Service	Within Vicinity of Project Area c/		
Oregon spotted frog <i>Rana pretiosa</i>	T/CH	SC			Inhabits emergent wetland habitats in forested landscapes. Almost always found in or near a perennial body of water that includes zones of shallow water and abundant emergent or floating aquatic plants. Higher elevations from the crest and east slope of Cascade Mountains.	Jackson Klamath	MD-D LV-S	F-W-D	Extant population at Buck Lake and downstream in Spencer Creek; South of MP 171.06 to MP 174.69 and separated by Clover Creek Road.	NLAA	Suspended sediment from Project crossing at Spencer Creek is not expected to remain in the water column 6,400 feet downstream at Buck Lake where species occurs, and because Spencer Creek downstream of Buck Lake is separated from the right-of-way by Clover Creek Road. Conservation measures would limit potential effects due to acoustic shock, introduction of non-native species and/or disease, fuel and chemical spills, and herbicides.
Columbia spotted frog <i>Rana luteiventris</i>	SOC		SEN	SEN	Rarely far from permanent quiet water; usually at grassy/sedgy margins of streams, lakes, ponds, springs, and marshes; may disperse into forest, grassland, during wet weather.	Klamath	LV-D	F-W-S	No documented occurrences within 3mi of project area.	NI	Outside of known range.
Invertebrates g/											
Oregon shoulderband <i>Helminthoglypta hertleini</i>			SEN	SEN S&M- B (2003 – off)	Rocky areas, including talus deposits and outcrops generally within 98 feet of herbaceous vegetation and deciduous leaf litter; woody debris used as refugia.	Douglas Jackson	CB-S MD-D RO-D	RRS-S UMP-D	RO (2007) 60' NW of MP 64.59; RO (2007) 60' NW of ROW near MP 64.89, 2 observations within ROW near MP 75.92R; PRV (2006/2007) 2 observations within ROW/TEWA near MP 75.85; RO (2007) 175ft SW of MP 76; several documentation >500ft (MPs 58.53, 59.70, SW of 60.35).	MIIH	Disturbance and potential modification of habitat.
Klamath shoulderband <i>Helminthoglypta talmadgei</i>				S&M-A (2003 – D)	Stable talus and rockslides in limestone substrates, specially near springs or streams. Trees and bushes appear to be important for shading and food, though deep shade is not necessary.				No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Oregon megomphix <i>Megomphix hemphilli</i>				S&M-A (2003 – off)	Species occurs at low to moderate elevations. Found within and under the mat of decaying leaves under big leaf maples (<i>Acer macrophyllum</i>), hazel bushes (<i>Corylus</i> spp.), and sword ferns (<i>Polystichum munitum</i>). Also found in leaf mold.	Coos, Douglas			No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Chace (Siskiyou) sideband <i>Monadenia chaceana</i>			STR	STR S&M-B	Late-successional forest and open talus or rocky areas; associated with large woody debris in mesic, forested habitats; otherwise, moist, shaded rock surfaces.	Douglas Jackson	MD-D RO-D	UMP-D F-W-D RRS-D	RO (2006): 2.8mi SW of MP 81.31; MD (2007) 135ft E of MP 148.9; MD (2007) UCSA 149.31- N near MP 149.09; MD (2007) 14ft N of MP 150.94; MD (2008) 460ft N of MP 151.25; MD (2008) 260-445ft N/S of MP 153.2; RRS (2007) in ROW at MP 156.49; RRS (1999) 0.6mi N of MP 161.45; RRS (2007) 66ft E of MP 163.45; RRS (2007) within ROW at MP 165.55; RRS (2007) 82 to 144ft N/S of ROW between MP 165.63-165.75; RRS (2007) 80ft N of MP 167.54; RRS (2007) in ROW at MP 166.99; F-W (2007) in ROW at MP 171.06; see Survey and Manage stand-alone report for additional information..	MIIH	Modification of habitat and potential for injury or death. However, remaining sites would provide a reasonable assurance of species persistence.
Church sideband <i>Monadenia churchi</i>				S&M-F (2003 – off)					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Klamath sideband <i>Monadenia fidelis klamathica</i>				S&M-B (2003-off)					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Dalles sideband <i>Monadenia fidelis minor</i>				SEN S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Yellow-based sindeband <i>Monadenia fidelis ochromphalus</i>				S&M-B (2003 – off)					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Shasta sideband <i>Monadenia troglodytes troglodytes</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.

TABLE I-3

Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/				Expected Habitat	County	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forest Service	Within Vicinity of Project Area c/		
Wintu sideband <i>Monadenia troglodytes wintu</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Green sideband <i>Monadenia fidelis flava</i>			SEN	SEN	Generally inhabits deciduous stands (including alder [<i>Alnus</i> spp.]) and brush in wet, relatively undisturbed forest; low elevation; low coastal scrub.	Coos	CB-D RO-D	RRS-D	No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Traveling sideband <i>Monadenia fidelis celeuthia</i>			SEN	SEN	Dry basal talus and rock outcrops; oak/maple overstory; along spring run in rock and moist vegetation and moss; mixed conifer-hardwood forest.	Jackson Klamath	MD-D RO-D	F-W-D RRS-D UMP-D	RO (2015) 65ft E of TEWA 91.70- W; UMP (2015) 104ft S of MP 104.92; UMP (2015) 66' N of MP 113.17; MD (2015) 60ft W of TEWA 116.06-W; MD (2007) adjacent to UCSA 116.31-W; MD (2012) 255ft SW of MP 116.63; MD (2007) in ROW near MP 116.69; MD (2012) 158ft NE of MP 116.94; MD (2007) in ROW near MP 119.44; MD (2007) 71ft S of MP 153.2; RRS (2007) 55ft N of MP 154.91; RRS (2015) 123ft W of MP 155.75; RRS (2007) in ROW near MP 156.48; RRS (2007) 116ft S of MP 157.14; RRS (2007) in UCSA 158.79-N; RRS (2015) 80ft E of MP 159.3; RRS (2010) 102ft S of MP 161.35; RRS (2015) 89ft W of MP 162.45; RRS (2007) in UCSA 164.34-N near MP 164.53; RRS (2007) 88ft S of MP 167.1; F-W (2010) in ROW at MP 173.38; F-W (2010) in ROW near MP 175.3; LV (2010) in ROW at MP 176.42 and MP 176.85.	MIIH	Modification of habitat and potential for injury or death.
Modoc Rim sideband <i>Monadenia fidelis ssp. nov.</i>			SEN	SEN	Talus and wetted rocky areas on lakeshore; mixed pine-Douglas fir forest or open grasslands; associated with seeps and springs in talus deposits.	Klamath	LV-D	F-W-D RRS-D	No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Chelan mountainsnail <i>Oreohelix n.p. 1</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Crater Lake tightcoil <i>Pristiloma crateris</i>			SEN	STR S&M-A	Mature conifer forests; perennially wet areas among rushes, mosses, and other surface vegetation or under rocks and woody debris within 30 feet of open water in wetlands, springs, seeps, and riparian areas.	Douglas Jackson	MD-S RO-D	F-W-D UMP-D	No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Broadwhorl tightcoil <i>Pristiloma johnsoni</i>			STR	STR	Moist with coastal influence; abundant ground cover; conifer or hardwood overstory.	Douglas?	CB-S RO-D	RRS-S UMP-S	No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Klamath tail-dropper <i>Prophysaon sp. nov.</i>			STR	STR	Moist open areas (floodplains and spring margins) in ponderosa pine forest; elevation varies.	Douglas Jackson Klamath	CB-S RO-S	UMP-S RRS-D F-W-D	RRS (2003) 1.1 mi N of MP 157.0; RRS (2003) 4.1 mi S of MP 160.01; RRS (2007) 116ft W of MP 163.42.	NI	Not documented in Project vicinity.
Shasta chaparral <i>Trilobopsis roperi</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Tehama chaparral <i>Trilobopsis tehmana</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Hoko vertigo <i>Vertigo sp. nov.</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Klamath duskysnail <i>Colligyus sp. nov. 5</i>				STR	Lives on the undersides and sides of boulders and cobbles in a large lake, near spring influence. Macrophytes are generally absent.	Klamath		F-W-D	Upper Klamath Lake and Lost River	MIIH	Modification of habitat and potential for injury or death.

TABLE I-3

Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/				Expected Habitat	County	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forest Service	Within Vicinity of Project Area c/		
Siskiyou hesperian <i>Vespericola sierranas</i>			SEN	SEN	Terrestrial, usually found in perennially moist habitat such as springs, seeps and deep leaf litter along stream banks and under debris and rock. Prefers moist valley, ravine, gorge, or talus sites in areas not subject to flooding.	Jackson	MD-D RO-D	F-W-D RRS-D UMP-D	RO (2007) in UCSA 79.16-N near MP 79.75; UMP (2010) in ROW near MP 110.18; MD (2007) in UCSA 119.20-N near MP 119.47; UMP (2010) in ROW at MP 110.18; MD (2007) in ROW near MP 127.86; MD (2015) in ROW near MP 128.78; MD (2007) 62ft SW of TEWA 128.85-W; MD (2007) 350ft S of MP 129.26; MD (2007) in ROW near MP 136.85/EAR 136.84 road improvement [2 other sites within 100 feet of ROW – MP 136.9-137.1]; MD (2012) 2 live < 500ft from ROW near MP 148.74; MD (2007) in UCSA 149.31-N; MD (2007) 70ft E of MP 151.53; MD (2011) 100ft N of MP 153.46; RRS (2007) in ROW at MP 153.9; RRS (2007, 2012) 30ft N and S of MP 154.03; RRS (2007) adj to UCSA 154.13-W near MP 154.5; RRS (2012) 44ft S of MP 154.5; RRS (2014) in UCSA 154.82-W near MP 154.84; RRS (2014) 107ft S of MP 154.88; RRS (2015) adj to TEWA 155.62- NW near MP 155.7; RRS (2007) in ROW near MP 156.49; RRS (2007) in UCSA 156.82-N near MP 156.9; RRS (2014) 75ft S of MP 156.91; RRS (2014) 82ft S of MP 156.97; RRS (2008) 130ft S of MP 157.13; RRS (2015) 66'NW of MP 155.77RRS (2015) 75ft SE of MP 155.83; RRS (2015) 83ft SW of MP 155.87; RRS (2015) 68ft N of MP 156.23; RRS (2007) in ROW near MP 156.48; RRS (2015) 45ft E of TEWA 158.73-N; RRS (2007) 58ft E of MP 159.35; RRS (2015) 96ft N of MP 160; RRS (2015) 88ft N of MP 160.57; RRS (2010) 112ft S of MP 161.35; RRS (2007) in ROW near MP 162.29; RRS (2014) in UCSA 164.23-W near MP 164.29; RRS (2007) in UCSA 164.34-N near MP 164.54; RRS (2007) in ROW at MP 164.71; F-W (2014) 71ft and 250ft S of MP 168.77; F-W (2014) adj to TEWA 168.85-N;	MIIH	Modification of habitat and potential for injury or death.
Pressley Hesperian <i>Vespericola pressleyi</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Shasta heesperian <i>Vespericola shasta</i>				S&M-A					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Evening fieldslug <i>Deroceras hesperium</i>				S&M-B	Associated with wet meadows in forested habitats in a variety of low vegetation, litter, debris, and rocks.		LV-D	UMP-D F-W-D	F-W (2010) near MP 171.1.see Survey and Manage stand-alone report for additional information.	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
Keeled jumping-slug <i>Hemphillia burringtoni</i>				S&M-A (2003 – E)					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Warty jumping-slug <i>Hemphillia glandulosa</i>				S&M-C (2003 – off/OR					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Malone jumping slug <i>Hemphillia malonei</i>				S&M-C (2003 – off/OR					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Panther jumping slug <i>Hemphillia pantherina</i>				S&M-B					No documented occurrences within 500ft of project area.	NI	Not documented in Project vicinity.
Oregon cave amphipod <i>Stygobromus oregonensis (1)</i>				STR	In small cave near Roseburg, possibly extirpated.	Douglas		UMP-S	No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Franklin's bumblebee <i>Bombus franklini</i>	SOC		SEN	SEN	Grasslands associated with lakes, rivers, streams and seeps; 1400-4000 feet. Requires adequate supply of floral resources for continuous blooming throughout the flight season. Generalist forager. Eusocial bumblebee with a flight season from mid-May to the end of September.	Douglas Jackson	MD-S RO-S	RRS-D	No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.

TABLE I-3											
Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	County	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forest Service	Within Vicinity of Project Area c/		
Western bumblebee <i>Bombus occidentalis</i>			SEN	SEN	Prairie habitat in Oregon. Generalist pollinator; visits a wide range of plants. Queen emerges in late winter or early spring and starts new colony laying 8-16 eggs in first batch.	Coos Douglas Jackson Klamath	CB-S LV-D MD-D RO-D	F-W-D RRS-S UMP-D	F-W (2009) 4.3 mi NE of MP 168.	MIIH	Loss or modification of habitat.
Siskiyou short-horned grasshopper <i>Chloealtis aspasma</i>	SOC		SEN	SEN	Grassland/herbaceous habitats; associated with elderberry (<i>Sambucus</i> spp.).	Jackson	MD-D	RRS-S UMP-S	MD (2008) 0.6mi S of MP 153.35; MD (H-1973): 0.06mi S of MP 153.5.	MIIH	Modification of habitat and potential for injury or death.
Siskiyou carabid gazelle beetle <i>Nebria gebleri siskiyouensis</i>	SOC				Unknown	Jackson			No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Hairy necked tiger beetle <i>Cicindela hirticollis couleensis</i>			STR	STR	Unknown	Coos	CB-D		No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Siuslaw sand tiger beetle <i>Cicindela hirticollis siuslawensis</i>			SEN	SEN	Moist sand near the ocean, swales behind dunes, and upper beaches beyond high tides.	Coos	CB-D		None reported within 3mi of Pipeline project; Oregon Dunes (2009) 8.7mi N of MP 3.6.	NI	No suitable habitat in survey area or within 5 mi.
Cooley's lace bug <i>Acalypta cooleyi</i>			STR		Unknown.	Jackson	MD-D		No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Hairy shore bug <i>Saldula villosa</i>			SEN		Salt marsh species; may undergo submersion.	Coos	CB-D		No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
California shield-backed bug <i>Vanduzeeina borealis californica</i>				STR	Tall grass prairies. Found in medium to high elevation natural balds and meadows.	Coos Douglas Klamath	CB-S LV-S RO-S	RRS-S UMP-S	No documented occurrences within 3mi of project area.	NI	No suitable habitat in Project area.
Leona's little blue butterfly <i>Philotiella leona</i>				SEN	Mazama ash and pumice fields east of Crater Lake with sub-surface moisture and spurry buckwheat (<i>Eriogonum spergulinum reddingianum</i>) caterpillar host plant.	Klamath		F-W-D	No documented occurrences within 3mi of project area.	NI	Does not occur in Project vicinity.
Gray-blue butterfly <i>Plebejus podarce klamathensis</i>			SEN	SEN	Subalpine meadows and marshy slopes with deep grasses and dense stands of false hellebore (<i>Veratrum viride</i>), eggs laid on host plant (shooting stars; <i>Dodecatheon</i> spp.).	Douglas Jackson Klamath	MD-D	F-W-D RRS-D UMP-D	None reported within 3mi of project; F-W (2010) 8.5mi N of mp 168.03	MIIH	Modification of habitat and potential for injury or death.
Coastal greenish blue butterfly <i>Plebejus saepiolus littoralis</i>			SEN	SEN	Associated with blooming clover in coastal dune areas along stream edges, bogs, and wet meadows, also drier meadow habitat.	Coos	CB-S	RRS-S	No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Seaside Hoary elfin (previously Hoary elfin) <i>Callophrys polios maritima</i>			STR	STR	Maritime species found in close association with kinnikinnick (<i>Arctostaphylos uva-ursi</i>).	Coos	CB-S	RRS-S	None reported within 3mi of Pipeline project; Moon Prairie, MD, (2012) 5 mi SW of MP 164.2	NI	Does not occur in Project vicinity.
Johnson's hairstreak <i>Callophrys johnsoni (Mitoura johnsoni)</i>			SEN	SEN	Old-growth coniferous forests with red fir (<i>Abies magnifica</i>), western hemlock or grey pine (<i>Pinus sabiniana</i>) on which its parasitic host grows.	Coos Douglas Jackson Klamath	CB-D MD-D RO-D	F-W-D RRS-D UMP-D	No documented occurrences within 3mi of project area.	MIIH	Modification of habitat and potential for injury or death.
Yuma skipper <i>Ochlodes yuma</i>			SEN	SEN	Herbaceous wetland. Desert seeps and along streams, canals etc.	Klamath	LV-D		No documented occurrences within 3mi of project area.	NI	Not documented in Project vicinity.
Mardon skipper butterfly <i>Polites mardon</i>			SEN	SEN	Small (0.5-10 acres) high-elevation (4,500-5,100 feet) grassy meadows within mixed conifer forests.	Jackson Klamath	CB-D MD-D	F-W-S RRS-D UMP-S	Short Creek Prairie – 4 sites, RRS (2006) 0.48mi and 0.8mi S of MP 160.0; RRS (2007) 4.6mi SW of MP 164.22	MIIH	Modification of habitat and potential for injury or death.
Coronis fritillary <i>Speyeria coronis coronis</i>			SEN	SEN	Mountain slopes, foothills, prairie valleys, chaparral, sagebrush, and forest openings; hosts are violets (<i>Viola</i> spp.).	Jackson	MD-D	RRS-S UMP-S	No documented occurrences within 3mi of project area.	MIIH	Modification of habitat and potential for injury or death.

TABLE I-3

Special Status Marine Mammal and Terrestrial Wildlife Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status <u>a/</u>				Expected Habitat	Documented or Suspected Occurrence <u>b/</u>			Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service		
<p>a/ Status Key: Federal Status: T = Threatened, E = Endangered, PT = Proposed Threatened, C = Candidate, SOC = Species of Concern; CH = Critical Habitat, PCH = Proposed Critical Habitat State Status: T = Threatened, E = Endangered, C = Candidate, SC = Sensitive-Critical, S = Sensitive BLM and Forest Service Status: SEN = Sensitive, STR = Strategic, S&M = Survey and Manage, letter after S&M = Survey and Manage Species Category (A – F)</p> <p>b/ Occurrence Key: BLM: CB = Coos Bay District, RO = Roseburg District, MD = Medford District, LV = Lakeview District Forest Service: W = Winema National Forest, RR = Rogue River National Forest, UMP = Umpqua National Forest</p> <p>D = Documented occurrence: A species located on land administered by the BLM or the Forest Service based on historic or current known sites of a species reported by a credible source for which BLM and the Forest Service have knowledge of written, mapped or specimen documentation of the occurrence. S = Suspected occurrence: Species is not documented on land administered by the BLM or the Forest Service, but may occur on the unit because: 1) BLM District or National Forest is considered to be within the species' range and 2) appropriate habitat is present or 3) known occurrence of the species (historic or current) in vicinity such that the species could occur on BLM or FS land.</p> <p>c/ Pacific Connector Pipeline Project: mollusks and red tree vole documented within 500 feet of the proposed pipeline; all other species are documented within 3 mi of the proposed pipeline.</p> <p>d/ Effect of Impact: Species federally listed or proposed for listing: NE = No Effect NLAA = Not Likely to Adversely Affect LAA = Likely to Adversely Affect</p> <p>All other species: NI = No Impact MIIH = May Impact Individuals or Habitat, but is not likely to contribute to a trend toward federal listing or loss of viability of the species</p> <p>e/ Aquatic Invertebrates are included in table I-4 in appendix I.</p> <p>References: Species Status and Range: ODFW 2016; OFWO 2016; FWS 2017a; ORBIC 2017; FWS 2013; Forest Service and BLM 2011; ORBIC 2012, ORBIC 2006a, 2006, 2016; Janes et al. 2005. Expected Habitat: Csuti et al. 2001; NatureServe 2013, 2017; ORBIC 2006a; Gilligan et al. 1994; Kozloff 1976; Forest Service 2006; BLM 2006. Documented Occurrences: BLM 2006, 2010, 2012, 2017; ORBIC 2017; Forest Service 2017; Siskiyou BioSurvey, various dates (summarized in biological survey reports).</p>										

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Nonanadromous Freshwater Fish											
Western Brook Lamprey <i>Lampetra richardsoni</i>		S			Non-parasitic and non-anadromous. Ammocoetes in stream eddies with silt and/or sand substrates. Adults spawn over gravel late April - early June	Coos Douglas Jackson			Most perennial streams west of the Cascades.	MIIH	Potential disturbance or change to habitat.
Great Basin (interior) redband trout <i>Onchorynchus mykiss gibbsi</i>	SOC	S			Occupies remnant streams in seven Pleistocene lake beds in Oregon. Highly fragmented and isolated populations.	Klamath			Spawning occurs in Spencer Creek from mouth to RM 12; most spawning occurs between Roads 100 and 110.	MIIH	Potential disturbance or change to habitat.
Umpqua chub <i>Oregonichthys kalawatseti</i>	SOC	SC	SEN	SEN	Endemic to the mainstem and South Umpqua River, resident species. Occupies habitats with higher current velocities; spawning occurs primarily in rocky areas.	Coos Douglas	MD-D RO-D	UMP-D	Tenmile Creek (1971); endemic to Umpqua and South Umpqua rivers.	MIIH	Potential disturbance or change to habitat.
Millicoma dace <i>Rhinichthys cataractae</i> ssp.	SOC	S	SEN		Endemic to Coos Basin, resident species. Prefers swift current associated with cobble and boulders and probably high velocity waters.	Coos Douglas	CB-D		South Fork Coos River.	MIIH	Potential disturbance or change to habitat.
Klamath largescale sucker <i>Catostomus snyderi</i>	SOC				Limited to Upper Klamath Basin and its tributaries. In rocky pools, runs of creeks, and small rivers (with moderate gradient), lakes and reservoirs. Spawning usually occurs from late March to mid-April, and sometimes earlier in small tributary streams.	Klamath		F-W-D	Upper Klamath Lake and tributaries.	MIIH	Potential disturbance or change to habitat.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Anadromous and Marine Fish											
River lamprey <i>Lampetra ayresii</i>		S			Anadromous species; migrates to sea and returns to freshwater to spawn in the spring. Freshwater habitat includes rivers and creeks, with low to moderate gradients and pools and riffles. Marine habitats are near shore and estuarine habitats include bay/sound and river mouths and tidal rivers.	Coos Douglas			Coastal drainages.	MIIH	Potential disturbance or change to habitat.
Pacific lamprey <i>Entosphenus tridentatus</i>	SOC		SEN	SEN	Anadromous species, spawning habitat is similar to salmonids including cool, flowing water and clean gravel. Rearing areas are slow-moving backwaters with fine sediment. Larvae spend several years in freshwater before transforming and migrating to the ocean.	Coos Douglas Jackson Klamath	CB-D MD-D RO-D	RRS-D UMP-D	Coos Bay and coastal drainages.	MIIH	Potential disturbance or change to habitat.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Chinook salmon <i>Oncorhynchus tshawytscha</i> Oregon Coast ESU Coastal SMU-Spring run		S			Anadromous species that rears in the Pacific Ocean for most of its life and spawns in freshwater streams. Most enter Oregon's coastal rivers April to December, but some start in February. Spawning generally occurs from August to early November for spring Chinook. Preferred spawning and rearing areas have a low gradient (<3%); adults often ascend to higher gradient reaches to find spawning areas. Spawns and rears in a range of sizes of streams and rivers, and often uses estuaries for rearing. Adults require deep pools within proximity to spawning areas where they hold and mature between migration and spawning.	Coos Douglas			Coos Bay, Coos, Coquille, South Umpqua, and Umpqua sub-basins	MIIH	Potential disturbance or change to habitat.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Chinook salmon <i>Oncorhynchus tshawytscha</i> Southern Oregon/ Northern California Coast ESU-Fall run, spring run Rogue SMU-Spring run		S	SEN	SEN	Anadromous species that rears in the Pacific Ocean for most of its life and spawns in freshwater streams. Most enter Oregon's coastal rivers April to December, but some start in February. Spawning generally occurs from October to early March. Preferred spawning and rearing areas have a low gradient (<3%); adults often ascend to higher gradient reaches to find spawning areas. Spawns and rears in a range of sizes of streams and rivers, and often uses estuaries for rearing. Adults require deep pools within proximity to spawning areas where they hold and mature between migration and spawning.	Coos Jackson Douglas	CB-D MD-D	RRS-D	Rogue River and tributaries (spawning and rearing).	MIIH	Potential disturbance or change to habitat.
Chum salmon <i>Oncorhynchus keta</i> Pacific Coast ESU Coastal SMU		SC	SEN		Anadromous species that rears in the Pacific Ocean for most of its life and spawns in freshwater streams in the fall. Utilizes low gradient, gravel-rich, barrier-free freshwater habitats and productive estuaries. Juveniles migrate to estuarine environments after emergence.	Coos Douglas	CB-D RO-D		None.	NI	Does not occur in Project vicinity; presumed extinct.
Steelhead <i>Oncorhynchus mykiss</i> Klamath Mountains Province ESU-Summer run, winter run Rogue SMU-Summer run		S	SEN		Anadromous species; juveniles rear in freshwater streams 1-4 years. Adults live in marine environment prior to spawning in winter or spring. May spawn more than once.	Jackson	CB-D MD-D	RRS-D	Upper Rogue River.	MIIH	Potential disturbance or change to habitat

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>				Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service	Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>		
Steelhead <i>Oncorhynchus mykiss</i> Oregon Coast ESU Coastal SMU-Summer run	SOC	S	SEN	SEN	Anadromous species; juveniles rear in freshwater streams 1-4 years. Adults live in marine environment prior to spawning mostly in winter or spring. May spawn more than once. Juvenile summer and winter rearing and spawning often located in small headwater streams. Juvenile and adult migration corridors, as well as spawning areas are found in tributaries, mainstream reaches, and estuarine zones. Growth and development of adults occurs primarily in near- and off-shore marine waters. Spawning occurs late summer to mid-winter, and juvenile migration occurs in spring.	Coos Douglas	CB-D MD-D RO-D	UMP-D RRS-D	Coos, Coquille, South Umpqua, and Umpqua HUs.	MIIH	Potential disturbance or change to habitat.
Coho salmon <i>Oncorhynchus kisutch</i> Southern Oregon/Northern California Coast ESU Rogue SMU Klamath SMU	T/CH	S			Juvenile summer and winter rearing and spawning often located in small headwater streams. Juvenile and adult migration corridors, as well as spawning areas are found in tributaries, mainstream reaches, and estuarine zones. Growth and development of adults occurs primarily in near- and off-shore marine waters. Spawning occurs late summer to mid-winter, and juvenile migration occurs in spring.	Jackson	CB-D MD-D	RRS-D	Perennial waterbodies within Upper Rogue River sub-basin.	LAA	Potential disturbance or change to habitat.
Coho salmon <i>Oncorhynchus kisutch</i> Oregon Coast ESU Coastal SMU	T/CH	S			Juvenile summer and winter rearing and spawning often located in small headwater streams. Juvenile and adult migration corridors, as well as spawning areas are found in tributaries, mainstream reaches, and estuarine zones. Growth and development of adults occurs primarily in near- and off-shore marine waters. Spawning occurs November to March, and juvenile migration occurs in spring.	Coos Douglas	CB-D RO-D MD-D	UMP-D RRS-D	Perennial waterbodies within Coos, Coquille, and South Umpqua sub-basins.	LAA	Potential disturbance or change to habitat.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Pacific eulachon <i>Thaleichthys pacificus</i> Southern DPS	T/CH				Occur in nearshore ocean waters except for brief spawning runs into their natal streams. Spawning occurs over sand or coarse gravel substrates in the lower reaches of larger rivers, temperatures range from 39 to 50°F.	Coos	CB-D		Pacific Ocean and Coos Bay, no spawning in the estuary or Coos River.	LAA	Potential presence in Coos Bay. Impacts from turbidity and entrainment are possible.
North American green sturgeon <i>Acipenser medirostris</i> Southern DPS	T/CH	SC			Mainly a marine species, but also in fresh water. Migratory species. Southern DPS includes coastal watersheds.	Coos Douglas	CB-D		Pacific Ocean and summer in Coos Bay estuary and freshwater tributaries to head of tide.	LAA	Potential disturbance or change to habitat, potential mortality (subadults).
Coastal cutthroat <i>Oncorhynchus clarki clarki</i>	SOC				Spawn in first and second order tributaries from late winter through spring, may spawn more than once. Young fry move into channel margin and backwater habitats during the first several weeks. During the winter, juvenile cutthroat trout use low velocity pools and side channels with complex habitat created by large wood.	Coos Jackson Douglas		UMP-D RRS-D	Coos Bay, Coos, Coquille, South Umpqua, and Umpqua sub-basins. Rogue River and its tributaries.	MIIH	Potential disturbance, mortality, and loss or modification of habitat.
Basking shark <i>Cetorhinus maximus</i>	SOC				Most commonly observed in coastal temperate waters where flow patterns set up convergence zones that concentrate forage.	Coos			No documentation	NI	Not documented in Project vicinity.
Cowcod <i>Sebastes levis</i>	SOC				Marine environments; 68-1200 feet depths; soft and hard bottoms, canyons.	Coos			No documentation	NI	Not documented in Project vicinity.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Aquatic Invertebrates											
Great Basin ramshorn <i>Helisoma newberryi newberryi</i>			SEN	SEN	Larger lakes, slow rivers, larger spring sources, and spring-fed creeks; burrows in soft mud.	Klamath	LV-D	F-W-D	Upper Klamath Lake and Lost Sub-basin	NI	Not documented in Project vicinity.
Montane peaclam <i>Pisidium ultramontanum</i>			SEN	SEN	Associated with open water lake, river, and stream habitat. Freshwater, herbaceous wetlands, and shallow water; benthic species. Occurs in streams, lakes or pools that are spring-influenced, and prefers sand or gravel substrates. Often occurs on roots of <i>Salicornia</i> species.	Klamath	MD-S	F-W-D	PV (T40S,R11E,S25; no date); approximately 0.2mi S of MP 221.83; Lost Sub-basin.	MIIH	Potential disturbance, mortality, and loss or modification of habitat.
California floater mussel <i>Anodonta californiensis</i>			SEN	SEN	Low elevation lakes and lake-like streams with shallow water. Shallow muddy or sandy habitats in larger rivers, reservoirs, and lakes. Reaches maturity within 4 to 5 years with a lifespan of 10 to 15 years.	Coos Klamath		UMP-S RRS-S F-W-D	MP 17.24-20.96 (Coquille River historic population); Coos, Coquille, and Upper Klamath sub-basins.	MIIH	Potential disturbance, mortality, and loss or modification of habitat.
Western ridged mussel <i>Gonidea angulata</i>			SEN	SEN	Creeks and rivers with varying substrates in Pacific drainages, rarely found in lakes or reservoirs.	Coos Douglas Klamath	CB-S RO-D LV-S	F-W-D RRS-S UMP-S	South Umpqua River, Middle Fork Coquille River, and Lost River near Merrill.	MIIH	Potential disturbance, mortality, and loss or modification of habitat.
Pinto abalone <i>Haliotis kamtschatkana</i>	SOC				Typically in low intertidal zone. Feeds mostly on kelp and drift algae. Spawns April to June.	Coos			Rare in Coos Bay.	MIIH	Potential for disturbance and habitat modification if species is present.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Newcomb's littorine snail <i>Littorina subrotundata</i>	SOC		SEN		Inhabits salt marshes at the edge of bays and estuaries on glasswort/pickleweed; tolerant of fresh and saltwater. Cold, clear, well-oxygenated water on a various types of sand bottoms. Found in upper intertidal zones. Eggs are laid in moist locations in June or July and hatchlings emerge beginning in mid-July through early August.	Coos	CB-D		None reported by ORBIC, 2017.	NI	Not documented in Project vicinity.
Fall Creek pebblesnail <i>Fluminicola sp. nov. 4</i>			STR		Large cold springs and outflows including medium-sized creeks; gravel/cobble substrate.	Jackson Klamath	MD-D		Upper Klamath Sub-basin.	NI	Not documented in Project vicinity.
Keene Creek pebblesnail <i>Fluminicola sp. nov. 19</i>			STR	STR	Small to medium sized springs and spring-influenced creeks.	Jackson Klamath	MD-D LV-D	RRS-S F-W-S	Upper Rogue and Upper Klamath sub-basins.	NI	Not documented in Project vicinity.
Fredenburg pebblesnail <i>Fluminicola sp. nov. 11</i>			STR	S&M-A	Freshwater in Middle Rogue and Upper Klamath sub-basins; possibly extirpated. Found in narrow and shallow small, cold spring runs, on cobbles and gravel.	Jackson Klamath	MD-D		Upper Klamath Sub-basin.	NI	Not documented in Project vicinity.
Toothed pebblesnail <i>Fluminicola sp. nov.</i>			STR	S&M-A	Very large, cold springs and their outflow with exceptionally good water quality and gravel or boulder substrates.	Jackson	MD-D		Upper Rogue and Upper Klamath sub-basins.	NI	Not documented in Project vicinity.
Klamath Rim pebblesnail <i>Fluminicola sp. nov. 3</i>			STR	STR S&M-A	Gravel or boulder substrates with flowing water (cold, oligotrophic water with high dissolved oxygen); rarely found in springs, avoids dense macrophyte beds.	Klamath		RRS-S	Upper Klamath Sub-basin.	NI	Not documented in Project vicinity.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	County	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service			BLM	Forests Service				
Turban pebblesnail <i>Fluminicola turbiniformis</i>				SEN	Found to date only in one, large oligotrophic spring complex with very cold water, in semi-arid sage scrub. Abundant <i>Rorippa</i> and <i>Mimulus</i> flora present. Substrate is mud, basalt gravel, bedrock and cobble, with bedrock predominate in area of occurrence.	Klamath		F-W-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Casebeer pebblesnail <i>Fluminicola sp. nov.</i>			STR	STR	Freshwater.	Klamath	LV-S	F-W-S	Lost Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.	
Crooked Creek pebblesnail <i>Fluminicola sp. nov.</i>				STR	Freshwater.	Klamath		F-W-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Lake of the Woods pebblesnail <i>Fluminicola sp. nov.</i>			STR	STR	Freshwater.	Klamath	LV-D	F-W-D RRS-S	F-W NF: within ROW near MP 171.05.	MIIH	Potential mortality and loss or modification of habitat.	
Lost River pebblesnail <i>Fluminicola sp. nov.</i>				STR	Occurs in cold, swift-flowing freshwater in large spring-fed creeks, often near shore. Substrates usually sand-cobble. Periphyton and perolithon grazer.	Klamath		F-W-S	Lost Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.	
Tiger lily pebblesnail <i>Fluminicola sp. nov.</i>			STR	STR	Freshwater in Upper Klamath sub-basins; possibly extirpated.	Klamath	LV-S	F-W-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Odessa pebblesnail <i>Fluminicola sp. nov.</i>			STR	STR	Freshwater.	Klamath	RO-D	F-W-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Ouxy Spring pebblesnail <i>Fluminicola sp. nov.</i>				STR	Freshwater in Upper Klamath Sub-basins, possibly extirpated	Klamath		F-W-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Wood River pebblesnail <i>Fluminicola sp. nov.</i>				STR	Freshwater.	Klamath		F-W-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Tall pebblesnail <i>Fluminicola sp. nov. 2</i>				STR	Freshwater in Upper Klamath sub-basins; possibly extirpated. Springs and spring runs; substrates include mud, silt, sand to gravel, cobble, and boulders.	Klamath		F-W-S	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>				Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service	Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>		
Klamath Lake springsnail <i>Pyrgulopsis sp. Nov</i>				STR	Freshwater.	Klamath		F-W-S	Lost Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.
Lost River springsnail <i>Pyrgulopsis sp. Nov</i>			STR	STR	Freshwater.	Klamath	LV-S	F-W-D	Lost Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.
Pristine springsnail <i>Pristinicola hemphilla</i>			STR	STR	Inhabits freshwater springs, spring outflow channels, and spring-influenced stream reaches with cobble substrates, slow to moderate flows, and shallow, cold, clear waters that are relatively undisturbed.	Jackson	MD-D	RRS-S	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.
Archimedes springsnail <i>Pyrgulopsis archimedis</i>				SEN	Freshwater in Upper Klamath and Lost River sub-basins, possibly extirpated. Prefers gravel-boulder basalt and pumice substrates. Completely aquatic with a lifespan of 1 year.	Klamath		F-W-D	Lost Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.
Crooked Creek springsnail <i>Pyrgulopsis intermedia</i>			SEN	SEN	Freshwater, possibly extirpated. Clear, cold springs, spring-influenced creeks with gravel-boulder substrates.	Klamath	LV-S	F-W-D	None reported by ORBIC, 2017.	NI	Not anticipated to occur in watersheds crossed by the Project.
Jackson Lake springsnail <i>Pyrgulopsis robusta</i>			SEN	SEN	Freshwater, possibly extirpated. Cold water habitats, predominantly large springs and spring-influenced portions of streams, lakes, and rivers. Found on a variety of substrates. Semelparous; lays eggs on hard substrates. Emergence of young snails in summer and fall. Lifespan of approximately 1 year.	Klamath	LV-S		None reported by ORBIC, 2017.	NI	Not anticipated to occur in watersheds crossed by the Project.
Dall rams-horn <i>Vorticifex effuses dalli</i>				STR	Freshwater	Klamath		F-W-S	Link River (1997) not crossed	MIIH	Potential loss or modification of habitat.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>				Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service	Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>		
Lined rams-horn <i>Vorticifex effusa diagonalis</i>			SEN	SEN	Freshwater; possibly extirpated. Large streams, spring-influenced lakes, and highly oxygenated cold water on boulder-gravel substrate. Semelparous with a lifespan of 1-2 years. Eggs are laid from spring to fall; they attach to plants, stones, or other objects. No larval stage. Not active in the winter.	Klamath		F-W-D	None reported by ORBIC, 2017.	MIIH	Potential loss or modification of habitat.
Klamath rams-horn <i>Vorticifex klamathensis klamathensis</i>				STR	Freshwater, possibly extirpated in Upper Klamath Lake and Lost sub-basins. Spring-fed lakes and spring-influenced streams, but not springs. Very cold, highly oxygenated water with boulder-gravel substrate. Semelparous with a lifespan of 1-2 years. Lays eggs from spring to fall. Hatches as young snails.	Klamath		F-W-D	Lost Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.
Sinitsin rams-horn <i>Vorticifex klamathensis sinitsini</i>				STR S&M-E	Freshwater; possibly extirpated in Upper Klamath Lake sub-basins, springs and spring runs, substrates include mud, silt, sand, gravel, cobble, and boulders. Hermaphroditic and capable of self-fertilization. Semelparous with a lifespan of 1 year.	Klamath		F-W-S	Upper Klamath Lake	NI	Not documented in or near Project area.
Robust walker <i>Pomatiopsis binneyi</i>			SEN	SEN	Freshwater; possibly extirpated Coos Sub-basin. Seeps, rivulets, shallow mud banks and marsh seepages leading into shallow streams. Semi-aquatic.	Coos	CB-S	RRS-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>				Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service				
Pacific walker <i>Pomatiopsis californica</i>			SEN	SEN	Freshwater; possibly extirpated from Coos Sub-basin. Semi-aquatic; inhabits wet leaf litter and vegetation adjacent to flowing or standing water in humid, shaded areas.	Coos	CB-D	RRS-S	None reported by ORBIC, 2017.	MIIH	Potential mortality and loss or modification of habitat.	
Marsh walker <i>Pomatiopsis chacei</i>			STR	STR	Freshwater, shaded, swampy sites, margins of seeps, springs, and stable streams with gravel substrate.	Coos	CB-S	RRS-S	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.	
Scale lanx <i>Lanx kalmathensis</i>			SEN	SEN	Spring-influenced portions of large lakes and streams or limnocene springs with boulder-cobble substrates and well-oxygenated, cold water.	Klamath	MD-S	F-W-D RRS-S	Lost and Upper Klamath sub-basins.	NI	Not documented in or near Project area.	
Rotund lanx <i>Lanx subrotunda</i>			SEN	SEN	Found in unpolluted rivers and large streams at low to moderate elevations, in highly oxygenated, swift-flowing, cold water on stable cobble, boulder, or bedrock substrates.	Coos Douglas	CB-S MD-S RO-D	F-W-D RRS-S UMP-D	Distribution includes portions of the North Umpqua River below the confluence with Little River, all of Little River, portions of the South Umpqua River and major tributaries above Roseburg, and Cow Creek.	NI	Not documented in or near Project area.	

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>				Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service	Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>		
Highcap Ianx <i>Lanx alta</i>			SEN	SEN	Freshwater in Middle Rogue and Upper Klamath sub-basins; possibly extirpated. Larger tributaries and outcrops, on upper surfaces of bedrock and bedrock outcrops. Cold, fast-flowing, highly oxygenated, clear water. Semelparous with a lifespan of 1 to 2 years. Eggs are laid from spring to fall. No larval stage. Feeds through scraping. Creeks; possibly extirpated. Streams with cobble, boulder, or bedrock substrates free of fine sediment. Streams often have an open mixed deciduous-coniferous canopy. Larvae are aquatic and feed by scraping periphyton and fine detritus from rock and wood. Univoltine, from egg development through 5 larval instars, pupate and emerge as adults in one year. Feeds through scraping.	Jackson Klamath	MD-D	F-W-D RRS-D	None reported by ORBIC, 2017.	NI	No suitable habitat in Project area.
Denning's agapetus caddisfly <i>Agapetus denningi</i>	SOC		STR	STR	Streams with low to medium current and cobbles or coarse substrate at 4,000-6,000 feet in elevation. Various degrees of shading required, not present in clearcuts.	Jackson	MD-S	RRS-S UMP-D	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.
Cascades apatanian caddisfly <i>Apatania tavala</i>	SOC				Very cold streams. Larvae are found on moss on submerged rocks or along edges in small streams. Adults crawl onto sunny snow banks.	Douglas Klamath			None reported by ORBIC, 2017.	NI	Not documented in or near Project area.
Mt. Hood primitive brachycentrid caddisfly <i>Eobrachycentrus gelidae</i>	SOC					Douglas	CB-S		None reported by ORBIC, 2017.	NI	Not documented in or near Project area.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>				Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service	Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>		
Green Springs Mountain farulan caddisfly <i>Farula davisi</i>	SOC		STR	STR	Not well studied. Probably uses small streams or seeps, maybe marshes. Associated with exposed bedrock having thin streams passing over the bedrock. Univoltine; larvae pupate in aggregations on the underside of rocks and logs.	Jackson	MD-D	RRS-S	Upper Klamath Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.
Tombstone Prairie farulan caddisfly <i>Farula reapi</i>	SOC				Larvae found in small, cold, spring-fed streams shaded by old growth. Stream mosses abundant, large amounts of woody debris present.	Douglas			None reported by ORBIC, 2017.	NI	Not documented in or near Project area.
Sagehen Creek goeracean caddisfly <i>Goeracea oregona</i>	SOC				Creeks or springs.	Douglas Jackson			None reported by ORBIC, 2017.	NI	Not documented in or near Project area.
Schuh's homoplectran caddisfly <i>Homoplectra schuhi</i>	SOC			STR	Spring seepage areas in montane forested areas as well as adjacent herbaceous and shrub vegetation. Substrates of unconsolidated coarse particulate organic matter, moss, and gravel with subsurface water flows at moderate velocities.	Jackson Klamath		F-W-S RRS-S	LV (T40S,R6E,S13; 1963); S of MP 184.24; Lost and Upper Klamath sub-basins.	MIIH	Potential mortality and loss or modification of habitat.
A caddisfly (no common name) <i>Moselyana comosa</i>			STR	STR	Creeks or springs, forested seeps, particularly subalpine forest seeps.	Douglas Jackson	CB-S MD-S	F-W-S RRS-S UMP-S	None reported by ORBIC, 2017.	NI	Not documented in or near Project area.
A caddisfly (no common name) <i>Namamyia plutonis</i>			SEN	STR	Creeks or springs in densely forested old growth or mature forest watersheds. Larvae found in areas of coarse gravel mixed with silt and organic sediment.	Douglas Jackson Klamath	CB-S RO-S	F-W-S RRS-D UMP-S	None reported by ORBIC, 2017.	MIIH	Potential disturbance and modification of habitat.
A caddisfly (no common name) <i>Rhyacophila chandleri</i>			SEN	SEN	Very cold larger spring-fed creeks or springs, often with cobble and boulder substrate with high sand/gravel embedding.	Douglas	CB-S	UMP-D	South Umpqua Sub-basin.	MIIH	Potential mortality and loss or modification of habitat.

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
A caddisfly (no common name) <i>Rhyacophila leechi</i>			SEN		Confined to smaller, headwater streams, or even springs	Jackson	MD-D		Upper Klamath Sub-basin	MIIH	Potential mortality and loss or modification of habitat.
Haddock's Rhyacophilan caddisfly <i>Rhyacophila haddocki</i>			SEN	SEN	Creeks or springs, clear mountain streams, sometimes prefers riffles. In order to develop, larvae and pupae require cool, well-aerated microsites free of excessive fine sediments. Pupae are found on the underside of cobbles at base of riffles, cascades, or bedrock chutes.	Douglas	CB-S	RRS-S	None reported by ORBIC, 2017.	NI	Not documented in or near Project area; extremely restricted range.

a/ Status Key:
 Federal Status: T = Threatened, CH = Critical Habitat, SOC = Species of Concern
 State Status: SC = Sensitive-Critical, S = Sensitive
 BLM and Forest Service Status: SEN = Sensitive Species, STR = Strategic Species, S&M = Survey and Manage, letter after S&M = Survey and Manage Species Category (A – F)

b/ Occurrence Key:
 BLM: CB = Coos Bay District, RO = Roseburg District, MD = Medford District, LV = Lakeview District
 Forest Service: F-W = Fremont-Winema National Forest, RRS = Rogue River-Siskiyou National Forest, UMP = Umpqua National Forest
 D = Documented occurrence: A species located on land administered by the BLM or the Forest Service based on historic or current known sites of a species reported by a credible source for which BLM and the Forest Service have knowledge of written, mapped or specimen documentation of the occurrence.
 S = Suspected occurrence: Species is not documented on land administered by the BLM or the Forest Service, but may occur on the unit because: 1) BLM District or National Forest is considered to be within the species' range and 2) appropriate habitat is present or 3) known occurrence of the species (historic or current) in vicinity such that the species could occur on BLM or FS land.
 I = Forest Service Actions Influence Downstream

c/ Documentation within Project Area: Aquatic invertebrates documented within 500 feet of the proposed Pacific Connector Pipeline Project alignment.

d/ Effect of Impact:
 Species federally listed or proposed for listing:
 NE = No Effect
 NLAA = Not Likely to Adversely Affect
 LAA = Likely to Adversely Affect
 All other species:
 NI = No Impact
 MIIH = May Impact Individuals or Habitat, but is not likely to contribute to a trend toward federal listing or loss of viability of the species

TABLE I-4

Special Status Fish Species and Aquatic Invertebrates That May Occur Near the JCEP & PCGP Project

Common and/or Scientific Name	Status <u>a/</u>				Life History and Expected Habitat	Occurrence <u>b/</u>			Waterbodies Crossed by Project/ Documentation in Vicinity of Project Area <u>c/</u>	Effect of Impact <u>d/</u>	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forests Service			
Species Fish Type Abbreviations:											
SMU	Species Management Unit (Oregon State Designation only)										
ESU	Evolutionarily Significant Unit (NMFS designation)										
DPS	Distinct Population Segment (NMFS and FWS designations)										
References:											
Status and Occurrence References: FWS 2017; ORBIC 2017; BLM 2015; Forest Service 2015.											
Life History and Expected Habitat References: Kostow 1995; NatureServe 2017; ODFW 2005; Laufle et al. 1986; Pauley et al. 1986; NMFS 2012.											
Waterbodies Crossed: ORBIC 2017; Kostow 1995.											

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Bryophytes											
<i>Aloina bifrons</i>			SEN		Arid shrub-steppe (sagebrush) and grassland habitat below 4,000 feet. A component of biological soil crusts.		LV-S			NI	Not documented in Project vicinity.
Tiny notchwort <i>Anastrophyllum minutum</i>			SEN	SEN	On peaty soil >5,500 feet. In the <i>Tsuga mertensiana</i> zone, typically associated with ledges or at the base of cliffs.	Jackson	MD-S	UMP-S RRS-S FW-S		NI	Not documented in Project vicinity.
Granite moss <i>Andreaea nivalis</i>			STR	STR	On damp boulders in streamlet gullies, exposed rock outcrops, boulders next to melting snow, dry cliffs, sandy soil over boulders, and damp cliff faces in alpine to subalpine areas.			RRS-D	RRS FS (2007) in and adjacent to ROW near MP 162.21 and 162.35.	MIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
Broad-leaved lantern moss <i>Andreaea schofieldiana</i>			SEN	SEN	Forms mats on dry and exposed to moist, shaded igneous rocks, montane to subalpine.		CB-S MD-D	UMP-S RRS-D		NI	No suitable habitat in Project area.
<i>Anoetangium aestivum</i>			STR	STR	Moist cliffs, humid cliff crevices, and overhanging rocks, from near sea-level to subalpine, mostly in coastal areas.	Jackson	MD-D			NI	Not documented in Project vicinity.
<i>Anomobryum julaceum</i>			STR	STR	Damp outcrops, earth cliff crevices, cliff crevices, tussock tundra with seeps and late snow melt areas, granitic outcrops.	Klamath	MD-S	UMP-S RRS-S FW-D		NI	Not documented in Project vicinity.
Spidery threadwort <i>Blepharostoma arachnoideum</i>			SEN	SEN	Old growth forests, in mesic habitats, where it most often grows on rotten logs.	Douglas		UMP-D		NI	Not documented in Project vicinity.
Giant fourpoint <i>Barbilophozia lycopodioides</i>			SEN	SEN	Forming mats on peaty soil on damp ledges of rock outcrops and cliffs at higher elevations (known sites in OR and WA: 3,400-7,500 feet).			FW-S		NI	Not documented in Project vicinity.
<i>Brotherella roelli</i>				S&M E	Rotten wood and bark in cool to moist mixed deciduous and conifer forest, usually at low elevations along valley margins.					NI	Not documented in Project vicinity.
<i>Bruchia bolanderi</i>			STR	STR	Montane meadows and streambanks, disturbed soil.	Klamath	LV-S	RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Bryoerythrophyllum columbianum</i>			SEN		Arid shrub-steppe (sagebrush) and grassland habitat below 4,000 feet. A component of biological soil crusts		LV-S			NI	Not documented in Project vicinity.
Beautiful bryum <i>Bryum calobryoides</i>			SEN	SEN	Rock outcrops and shallow soil	Jackson	RO-S MD-D	UMP-D RRS-D		NI	Not documented in Project vicinity.
Bog pouchwort <i>Calypogeia sphagnicola</i>			SEN	SEN	Sphagnum containing wetlands.	Coos Douglas	CB-D MD-D	UMP-D RRS-D		NI	Not documented in Project vicinity.
<i>Campylopodia flagellacea</i>			STR	STR	In California, collected on a seeping metamorphic rock road bank. (Habitat info on the Jackson Co. population is not available.)	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
<i>Campylopus schmidii</i>			SEN	SEN	Nutrient-poor sandy substrates near the coast. Grows on shaded to exposed sand around the edges of vernal pools. Also seen on exposed seasonally flooded sand on deflation plains.		CB-S RO-D			NI	Not documented in Project vicinity.
<i>Campylopus subulatus</i>			STR	STR	Low-elevation species with suboceanic tendency. In California, found in an oak woodland, Douglas-fir forest and on sand dunes with <i>Pinus contorta</i> from 260-655 feet.	Douglas Jackson	CB-S MD-D RO-D	RRS-S		NI	Not documented in Project vicinity.
Spiny threadwort <i>Cephalozia spinigera</i>			SEN	SEN	Wetlands containing Sphagnum.	Klamath	CB-S RO-S MD-D	UMP-S RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Cryptomitrium tenerum</i>			SEN	SEN	Forms small to locally extensive mats on bare, usually shaded and humid soil on hillsides, rock outcrops, and streambanks. In OR, between sea level and 1,000 feet. Root balls and cutbanks are favored habitat in forests.		CB-S	RRS-D		NI	Not documented in Project vicinity.
<i>Cynodontium jeneri</i>			STR	STR	Occurs on peaty slopes, shaded rocks, outcrop crevices and shelves, and on humus of cliff terrace slopes		CB-S			NI	Not documented in Project vicinity
<i>Didymodon norrisii</i>			STR	STR	Occurs on rock, outcrops, calcareous and volcanic boulders, fields, and cliffs in runoff areas, in low to moderate elevations (650-4,920 feet).	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Diplophyllum plicatum</i>				S&M-B	Moist cool forests on bark, rotting wood, humus and soil.	Coos Douglas	CB-D RO-S MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Encalypta brevicollis</i>			STR	STR	Unknown.	Coos	CB-S MD-S	UMP-S RRS-D		NI	Not documented in Project vicinity.
White-mouthed Extinguisher-moss <i>Encalypta brevicollis</i>			SEN	SEN	Deep, rocky ravine.	Coos	CB-S MD-S	UMP-S RRS-D		NI	Not documented in Project vicinity.
Candle snuffer moss <i>Encalypta brevipes</i>			SEN	SEN	Soil on ledges and in crevices on cliffs, reported from both igneous and siliceous substrates.		CB-S	UMP-S RRS-D		NI	No suitable habitat in Project area.
<i>Entosthodon californicus</i>			STR		Clay or fine sandy soil in disturbed areas such as ditches, roadsides, vernal pools and seasonally flooded areas at moderate elevations. Often mixed in with grass.	Jackson	MD-D			NI	Not documented in Project vicinity.
Banded cord-moss <i>Entosthodon fascicularis</i>			SEN	SEN	Seasonally wet, exposed soil in seeps or along intermittent streams. Usually hidden among grasses, other mosses, and litter. Known habitats: grassland, oak savanna, grassy balds, and rock outcrops. In OR, known at elevations below 3,000 feet.		CB-S RO-S MD-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Ephemerum crassinervium</i>			SEN		Bare soil, high light levels, and seasonal moisture.	Jackson	MD-D			NI	Not documented in Project vicinity.
<i>Grimmia lisae</i>			STR		Dry acidic to basic rock; low to moderate elevations (195-3,280 feet).		CB-S			NI	Not documented in Project Vicinity
Braided frostwort <i>Gymnomitrium concinatum</i>			SEN	SEN	On peaty soil of cliffs and rock outcrops, full exposure or shaded. In OR and WA, it has only been found in subalpine parkland areas.		CB-S RO-S MD-S	UMP-S		NI	Not documented in Project vicinity.
<i>Haplomitrium hookeri</i>			SEN	SEN	Growing on soil in full sun, intermixed with other liverworts and hornworts.		CB-S			NI	Not documented in Project vicinity.
Great mountain flapwort <i>Harpanthus flotovianus</i>			SEN	SEN	Wet places, often with sphagnum.	Klamath		UMP-S RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Herbertus aduncus</i> ssp. <i>aduncus</i>			SEN	SEN S&M-E	Although often an epiphyte in the northern part of its range, this species is found only on cliffs in Oregon. Its primary associates are mosses and other liverworts. It is found in cool, moist sites in a variety of forest types.					NI	Not documented in Project vicinity.
<i>Hygrohypnum alpinum</i>			STR	STR	A higher elevation species that depends on cold, clean swiftly running mountain streams.	Jackson	MD-S	UMP-S RRS-D		NI	Not documented in Project vicinity.
<i>Iwatsukiella leucotricha</i>			STR	STR S&M-B	In OR and WA, appears to be restricted to forests along maritime fog-drenched coastal ridges that usually have older <i>Abies</i> species present. OR elevations: 2,700-2,900 feet.					NI	Not documented in Project vicinity.
<i>Jamesoniella autumnalis</i> var. <i>heterostipa</i>				SEN	Reportedly an obligate aquatic taxon growing over rocks in moving water or forming sometimes extensive, loose mats in lakes.			UMP-S		NI	Not documented in Project vicinity.
<i>Kurzia makinoana</i>			SEN	SEN S&M-B	In old growth forests. Occurs on rocky cliffs and ledges, soil banks and cuts and on decayed wood, rarely on the base of trees, in shaded moist sites or in bogs. Located in humic soils at lower elevations, especially stream terraces, often with liverworts.	Coos	CB-D	RRS-S		NI	Not documented in Project vicinity.
<i>Limbella fryei</i>	SOC	C	SEN	SEN	On wet rotting wood, leaf litter and lower trunks of tall shrubs in coastal shrub swamps.	Coos Douglas	CB-D			NI	Not documented in Project vicinity.
Gillman's pawwort <i>Lophozia gillmanii</i>			SEN	SEN	Found on peaty soil, usually associated with cliffs or ledges. It is an obligate calciphile.			UMP-S RRS-S FW-S		NI	Not documented in Project vicinity.
<i>Lophozia laxa</i>			SEN	SEN	Restricted to well-developed hummocks of Sphagnum in fens and bogs along the coast and in the Cascade Range. Grows in full sun to partial shade. Elevation ranges from sea level to 5,000 feet.		CB-S			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Marsupella emarginata</i> var. <i>aquatica</i>			SEN	SEN S&M-B	Old growth forests. Grows in robust colonies attached to submerged rocks in partially shaded cold, flowing, cold perennial stream habitats. Known occurrence at Waldo Lake, Willamette National Forest in the Oregon Cascades.			UMP-S		NI	Not documented in Project vicinity.
<i>Metzgeria violacea</i>			SEN	SEN	Forming mats or mixed with other bryophytes on trunks of trees and shrubs in coastal rainforest. Usually in cool, moist riparian areas or shaded north-facing talus slopes and outcrops.		CB-D			NI	Not documented in Project vicinity.
<i>Orthodontium gracile</i>				SEN S&M-B	Occurs in old-growth or secondary growth redwood. May be found on the lower bark of trunks, below tree wounds, or downed redwood logs. Typically on redwood bark that has been burned or charred.			RRS-D		NI	Not documented in Project vicinity.
Translucent orthodontium <i>Orthodontium pellucens</i>			SEN	SEN	Forming dense cushions or mats on stumps, rotten logs and bark of living redwood trees, confined to redwood groves near the Pacific Ocean. Sometimes on charred wood, or below gaping wounds in trees. In OR, restricted to <i>Sequoia sempervirens</i> in extreme SW corner of the state.		MD-S	RRS-D		NI	No suitable habitat in Project area.
<i>Orthotrichum bolanderi</i>			STR	STR	Dry igneous and sedimentary rocks and faces of cliffs in areas with a Mediterranean climate. Elevations probably mostly below 3,000 feet.		CB-S RO-S MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Orthotrichum euryphyllum</i>			STR	STR	On basalt rocks and outcrops around springs and streambeds. Primarily in dry <i>Juniperus occidentalis</i> , <i>Pinus ponderosa</i> , and <i>Artemisia tridentata</i> associations.		MD-D LV-S	FW-S	Observed >100 feet from ROW in BLM MD near MP 126.52	MIIH	Potential indirect effects to individuals and habitat.
<i>Orthotrichum hallii</i>			STR	STR	On rocks, usually limestone or calcareous sandstone. Occasionally it is found on granite, quartzite or basalt.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Philonotis yezoana</i>				STR	Rocky cliffs or steep slopes, wet or dry sites; 0-8,860 feet.			RRS-S		NI	Not documented in Project vicinity.
Tuberous hornwort <i>Phymatoceros phymatodes</i>			SEN	SEN	On bare, mineral soil which remains moist until late spring or summer. From near sea level to 2,100 feet elevation	Douglas	CB-D RO-S MD-S	RRS-D		NI	Not documented in Project vicinity.
<i>Plagiothecium cavifolium</i>			STR		Shaded soil or humus overlying boulders and cliffs, rotten logs, stumps, base of trees; low to high elevations (100-6,560 feet)		CB-S			NI	Not documented in Project vicinity.
<i>Pohlia bolanderi</i>			STR	STR	Dry soil in alpine and subalpine areas, and occasionally along streams in high montane to alpine areas.			RRS-D		NI	Not documented in Project vicinity.
<i>Pohlia cardotii</i>				STR	On wet soil or along snowmelt streamlets in subalpine and alpine habitats. Elevations range from 6,000-8,000 feet.			RRS-S FW-S		NI	Not documented in Project vicinity.
<i>Pohlia obtusifolia</i>			STR	STR	On moist rich soil in snowmelt areas within the alpine zone.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Pohlia tundrae</i>				STR	Wet acid soil or along snowmelt streamlets in subalpine and alpine habitats. Elevations range from 6,000-8,000 feet.			UMP-S FW-S RRS-D		NI	Not documented in Project vicinity.
<i>Polytrichastrum sexangulare</i> var. <i>sexangulare</i>			STR	STR	Damp gravelly soil and rocks next to snow-melt streams and areas with late summer snow melt in alpine to subalpine areas. (Note: this is info for <i>P. sexangulare</i> var. <i>vulcanicum</i> .)			UMP-S FW-S		NI	Not documented in Project vicinity.
Dwarf rock haircap <i>Polytrichastrum sexangulare</i> var. <i>vulcanicum</i> (<i>Polytrichum sphaerothecium</i>)				SEN	Base of cliffs and boulders in open lava field; on thin dry soil over rock; on dry shaded rock; on dry soil in graminoid meadow; and on dry exposed soil in alpine tundra near summit. Elevations range between 5,400 ft. to 7,000 feet			UMP-S FW-S		NI	Not documented in Project vicinity.
<i>Polytrichum strictum</i>			SEN	SEN	Organic soils, particularly on top of Sphagnum hummocks, in coastal and montane bogs and fens.		CB-S	UMP-S		NI	Not documented in Project vicinity.
Bolander's scalemoss <i>Porella bolanderi</i>			SEN	SEN	On a variety of rock types (siliceous, calcareous, and metamorphic) and trunks of <i>Quercus</i> , <i>Umbellularia</i> , and <i>Acer macrophyllum</i> . In the Pacific Northwest, known elevations range from 500-3,000 feet.		CB-S RO-D MD-D	UMP-S RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Blunt water moss <i>Pseudocalliergon trifarium</i> (<i>Calliergon trifarium</i>)			SEN	SEN	Calcareous fens.	Klamath		RRS-S FW-D		NI	No suitable habitat in Project area.
<i>Ptychostomum cyclophyllum</i>			STR	STR	Wet soil at both low and high elevations.		MD-D	RRS-D		NI	Not documented in Project vicinity.
<i>Racomitrium aquaticum</i> (<i>Codiophorus ryszardii</i>)				S&M-E	Forms mats on shaded, moist rocks and cliffs along shady streams or in forests, often in the splash zone, but never aquatic.		CB-S			NI	Not documented in Project vicinity.
<i>Racomitrium depressum</i> (<i>Codiophorus depressus</i>)			SEN	SEN	Forming mats on rocks in perennial or intermittent streams, and in the spray zone of waterfalls, between 400 and 11,000 feet elevation. Habitats are subject to scour at high water.		CB-S RO-S MD-D	UMP-S RRS-S FW-S		NI	Not documented in Project vicinity.
<i>Racomitrium ryszardii</i> (<i>Codiophorus ryszardii</i>)			STR	STR	Forming mats on shaded, moist rocks and cliffs along shady streams or in forests, often in the splash zone, but never aquatic. Elevations for known sites in OR and WA: 1,000-6,000 feet.		CB-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Rhizomnium nudum</i>				S&M-B (OR)	On moist organic soil, or among rocks or on rotten logs in mid to high elevations.	Douglas	CB-S	UMP-D RRS-S FW-S		NI	Not documented in Project vicinity.
<i>Rhytidiadelphus subpinnatus</i>			STR		Damp to wet soil, humus, logs, and rocks in swamps and moist forests, often along streams and in spray of waterfalls.		CB-S			NI	Not documented in Project vicinity.
<i>Rivulariella gemmipara</i> (<i>Chiloscyphus gemmiparus</i>)			SEN	SEN	Grows attached to rocks in moderately fast-moving water. Restricted to places where water flows over gravel or rocks.		MD-S	UMP-S RRS-D FW-S		NI	Not documented in Project vicinity.
<i>Rosulabryum gemmascens</i>			STR		Exposed to shaded soil, soil over rock, rotting wood; low to moderate elevations (0-3,280 feet).		CB-S			NI	Not documented in Project vicinity.
<i>Scapania obscura</i>			SEN	SEN	On peaty soil close to streams below cold water springs and in snow melt seepage channels. At least in this region, it grows in full sun.			UMP-S		NI	Not documented in Project vicinity.
Schistidium moss <i>Schistidium cinclidodonteum</i>			SEN	SEN	On wet or dry rocks or on soil in crevices of rocks and boulders, often along intermittent streams, at elevations of 5,000-11,000 feet.		MD-D	RRS-S FW-S		NI	Not documented in Project vicinity.
<i>Schistidium tenerum</i>			STR	STR	On exposed, dry rock outcrops and on moist shaded soil in crevices on a rock outcrop.		MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Schistostega pennata</i>				S&M-A	Mineral soil in shaded pockets of overturned tree roots, often with shallow pools of standing water at the base of the root wad; attached to rock or mineral soil around the entrance to caves, old cellars, and animal burrows. Microhabitat requirements include dense shade, high humidity, and some source of reflection of light (i.e., a pool of water)	Douglas Klamath	CB-S RO-S	UMP-D RRS-S FW-S		NI	Not documented in Project vicinity.
Alpine masterwort <i>Schofieldia monticola</i>				SEN	Terrestrial, on peaty soil under heather or beside small streams; strictly subalpine-alpine.			UMP-S		NI	Not documented in Project vicinity.
<i>Scouleria marginata</i>			STR	STR	On rocks in streams, often submerged part of the year.	Douglas Jackson	CB-S RO-D MD-D	UMP-D RRS-S		NI	Not documented in Project vicinity.
<i>Tetraphis geniculata</i>			SEN	SEN S&M-A	A moss that occurs in moist, coniferous forests with down logs; on the cut or broken ends or lower half of large (usually over 15" dbh), decay class 3, 4, and 5 rotted logs, or stumps, and occasionally on peaty banks in moist coniferous forests from sea level to subalpine elevations.		CB-S RO-S	UMP-S		NI	Not documented in Project vicinity.
<i>Thamnobryum neckeroides</i>			STR	STR	Found on both rocks and trees, often in shaded, damp locations in mixed Doug-fir/western hemlock forest with <i>Acer macrophyllum</i> .	Klamath	MD-S RO-D	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Tortella fragilis</i>			STR	STR	A calciphile that grows on rock or occasionally on dry soil in exposed locations.	Jackson	CB-S MD-D	RRS-S		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Tortella tortuosa</i> var. <i>tortuosa</i>			STR	STR	A calciphile that grows on rock or occasionally on dry soil in exposed locations.		MD-D	RRS-S		NI	Not documented in Project vicinity.
Mucronleaf tortula moss <i>Tortula mucronifolia</i>			SEN	SEN	On soil or rock.	Jackson	RO-S MD-D LV-S	RRS-D		NI	Not documented in Project vicinity.
Asano's trematodon moss <i>Trematodon asanoi</i>			SEN	SEN	On moist bare soil along the edges of trails, streams and ponds in the subalpine zone. Soils usually have some organic content and are irrigated by meltwater from late-season snowbeds.		RO-S	UMP-S FW-S		NI	Not documented in Project vicinity.
<i>Trichostomum crispulum</i>			STR	STR	On shaded or unshaded calcareous or base-rich rock ledges and may abound on the damp floors of disused limestone quarries. It also occurs on mortar and in crevices of walls, in shallow turf, in calcareous dunes, on stream banks, and on limestone chippings beside forestry tracks.			RRS-S		NI	Not documented in Project vicinity.
<i>Trichostomum tenuirostre</i> var. <i>tenuirostre</i>			STR	STR	Calcareous rock and soil, cliffs, logs, areas with trickling water, soil in stony fissures, on visible tree roots in canopied habitats along streams.		MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Triquetrella californica</i>			STR	STR	On exposed to shaded soil, rocks, sand, or gravel in dry or moist situations. Reported from trails, roadsides, picnic areas, playgrounds, and rock outcrops from sea level to about 1,600 feet elevation, within 10 miles of the coast.		CB-S	RRS-S		NI	Not documented in Project vicinity.
<i>Tritomaria exsectiformis</i>				S&M-B	Occurs in shady, cool, moist sites such as wet banks of riparian areas, spring heads, decaying logs and associated humus. Also on cliffs, ledges, and rock crevices covered with thin peaty acidic soils. In Oregon, it mostly occurs in peaty soils of mid-elevation coldwater streams.	Douglas Klamath		UMP-D RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Tritomaria quinquedentata</i>				STR S&M-B	Restricted to organic substrates where perpetually shady, cool, and moist.					NI	Not documented in Project vicinity.
Fungi											
<i>Acanthophysium farlowii</i>			STR	STR S&M-B	Fruits on recently dead twigs attached to living Pinaceae.					NI	Not documented in Project vicinity.
<i>Albatrellus avellaneus</i>			SEN	SEN S&M-B	Presumed mycorrhizal with pine trees, known from Shore Acres in Coos County, in T26S, R14W, Sec. 17 SWNE along Cape Arago area.	Coos	CB-S	RRS-S		NI	Not documented in Project vicinity.
<i>Albatrellus caeruleoporus</i>			STR	STR S&M-B	Old growth forest, ranging from near sea level to montane.	Coos	CB-D	UMP-D RRS-S		NI	Not documented in Project vicinity.
<i>Albatrellus dispansus</i>			STR	STR	Found in litter under conifers	Klamath	MD-D	FW-D RRS-D	RRS: Observed in ROW and <100 feet from ROW. FW: observed <100 feet from ROW.	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
<i>Albatrellus ellisii</i>				S&M-B	Occurs as solitary sporocarps or small clusters on soil surface in coniferous or mixed hardwood-coniferous forests; see the Survey and Manage Report (appendix F.5 of this EIS).	Douglas Jackson Klamath	CB-S LV-D MD-D RO-D	UMP-D RRS-D FW-D	Observed in UMP, RRS, and FW and RO BLM; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Alpova alexsmithii</i>				S&M-B	Known from <i>Tsuga mertensiana</i> , <i>Abies amabilis</i> , and <i>Thuja plicata</i> vegetation zones at elevations of 2,852-5,805 feet. Associated species include <i>Abies amabilis</i> , <i>Pinus contorta</i> , <i>Picea engelmannii</i> , <i>Tsuga mertensiana</i> , <i>Vaccinium membranaceum</i> and <i>Vaccinium scoparium</i> .					NI	Not documented in Project vicinity.
<i>Alpova olivaceotinctus</i>				S&M-B	Associated with true fir, Douglas-fir, madrone, ponderosa pine, and black oak	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Amanita novinupta</i>			STR	STR	Unknown.	Coos	CB-S	RRS-D		NI	Not documented in Project vicinity.
<i>Arcangeliella camphorata</i>				S&M-B	Forms sporocarps beneath soil surface associated with various <i>Pinaceae</i> sp., particularly <i>Pseudotsuga menziesii</i> and <i>Tsuga heterophylla</i> from 600 ft. to 2,800 feet elevation.	Coos	CB-D MD-S	RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Arcangeliella crassa</i>				S&M-B	Associated with conifers, including <i>Tsuga mertensiana</i> , <i>Abies concolor</i> , <i>A. magnifica</i> , <i>Pinus ponderosa</i> , <i>P. jeffreyi</i> , and <i>P. contorta</i> .	Coos Douglas	CB-D	UMP-S RRS-S FW-D	Observed > 100 feet from ROW in FW near MP 173.2; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Arcangeliella lactarioides</i>				S&M-B	Forms sporocarps beneath the soil surface associated with various Pinaceae species., particularly <i>Abies magnifica</i> and <i>Pinus ponderosa</i> above 5,400 feet elevation.			RRS-S		NI	Not documented in Project vicinity.
<i>Arrhenia lobata</i>			STR	STR	On moss in wet sites, alpine sites or bogs or fens, often around the margins of pools.			FW-D		NI	Not documented in Project vicinity.
<i>Asterophora lycoperdoides</i>				S&M-B	It grows as a parasite on other mushrooms, mainly <i>Russulas</i> .			CB-D		NI	Not documented in Project vicinity.
<i>Asterophora parasitica</i>				S&M-B	It grows as a parasite on other mushrooms, mainly <i>Russulas</i> .			CB-S MD-D		NI	Not documented in Project vicinity.
<i>Baeospora myriadophylla</i>				S&M-B	Lignicolous scattered to densely gregarious on decayed <i>Abies</i> spp. logs, sometimes buried deep within the logs, at higher elevations in mixed coniferous forests.					NI	Not documented in Project vicinity.
<i>Balsamia nigrens</i>			STR	STR S&M-B	Likely associated with mature stands. Forms sporocarps beneath the soil surface associated with various Pinaceae species., particularly <i>Pinus jeffreyi</i> and <i>Pseudotsuga menziesii</i> and at low to mid elevation. (Note: has also been called <i>B. nigra</i> .)	Jackson	CB-S MD-D	RRS-D		NI	Not documented in Project vicinity.
<i>Boletus haematinus</i>				S&M-B	Populations range from 42-5,620 feet in elevation and are found in equal numbers on south, east and west-facing slopes. No populations have been documented on north facing sites.					NI	Not documented in Project vicinity.
<i>Boletus pulcherrimus</i>				S&M-B	West side Cascades, sporocarps usually solitary in association with mixed conifer (grand fir, Douglas-fir) and hardwoods (tanoak) in coastal forests; also found in low- to mid-elevation coniferous forests and open stands of mixed hardwoods and young conifers.	Jackson Klamath	MD-D RO-D	RRS-D FW-D	Observed in RRS and FW; 7 sites documented within the project area; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Brauniellula albipes</i>			STR	STR	Solitary to scattered, associated with pine forests			MD-S FW-D	FW (2015) in ROW near MP 168.86	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
<i>Bridgeoporus nobilissimus</i>			SEN	SEN S&M-A	On large, dying and dead noble fir and Pacific silver fir in late-successional old-growth forests and on remnant stumps and snags in young and mature second-growth forests in the Pacific silver fir and western hemlock zones in western Washington and Oregon.			RO-S		NI	Not documented in Project vicinity.
<i>Catathelasma ventricosa</i>				S&M-B	Grows alone or scattered on the ground under conifers			CB-S		NI	Not documented in Project vicinity.
<i>Cazia flexiascus</i>			STR	STR	Unknown.	Douglas	RO-S MD-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Chalciporus piperatus (Boletus piperatus)</i>				S&M-D	Coniferous, mixed and broadleaf forests, under various trees.			CB-S		NI	Not documented in Project vicinity.
<i>Chamonixia caespitosa</i>			SEN	SEN S&M-B	Forms sporocarps beneath the soil surface associated with various Pinaceae species., particularly <i>Abies amabilis</i> and <i>Tsuga</i> spp. at high elevation and <i>Picea sitchensis</i> , <i>Pseudotsuga menziesii</i> , and <i>Tsuga heterophylla</i> in coastal forests.			CB-S MD-S	RRS-D	NI	Not documented in Project vicinity.
<i>Choiromyces alveolatus</i>			STR	STR S&M-B	Forms sporocarps beneath the soil surface associated with various Pinaceae species., particularly <i>Abies</i> sp., lodgepole pine, Douglas-fir, western hemlock, and mountain hemlock between 1,600 and 7,000 feet.	Douglas Jackson	RO-S MD-D	UMP-D RRS-D FW-D	One site observed in FW outside of ROW between MP 172.1 and 172.2; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Choiromyces venosus</i>			SEN	SEN S&M-B	Grows in acid soils with high rainfall, associated with deciduous and coniferous trees; prefers clayey soils.					NI	Not documented in Project vicinity.
<i>Chroogomphus loculatus</i>				S&M-B	Found in association with the roots of assorted Pinaceae, particularly <i>Tsuga mertensiana</i> .			UMP-S		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/			Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning	
	Federal	State	BLM Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/			
<i>Chrysomphalina grossula</i>			STR, S&M-B	Coniferous debris, mixed forests and parks.		CB-S	UMP-S RRS-D		NI	Not documented in Project vicinity.	
<i>Clavariadelphus ligula</i>			S&M-B	Grows in coniferous forest on the ground, as well as in moss at higher elevations	Coos Douglas Jackson	CB-D LV MD-D	UMP-D	UMP: < 100 feet from ROW.	NI	Occurrence located in the moderate to high intensity burned area during the Stouts Creek fire.	
<i>Clavariadelphus occidentalis</i>			S&M-B	Coniferous and hardwood forests; see the Survey and Manage Report (appendix F.5 of this EIS).	Douglas	CB-D RO-D	UMP-D RRS-D	Observed in UMP, CB and RO; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.	
<i>Clavariadelphus sachalinensis</i>			S&M-B	Coniferous forests; see the Survey and Manage Report (appendix F.5 of this EIS).		RO-D LV MD-D	UMP-D RRS-D FW-D	Observed in RO, MD, UMP, and RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.	
<i>Clavariadelphus subfastigiatus</i>		STR	STR S&M-B	On soil or duff, under mixed conifers.	Douglas Jackson	RO-D MD-D	UMP-D RRS-S		NI	Not documented in Project vicinity.	
<i>Clavariadelphus truncatus</i>			S&M-B ^{ef} (outside Jackson County, OR) / D (Jackson County, OR)	Coniferous forests; see the Survey and Manage Report (appendix F.5 of this EIS).	Douglas Jackson Klamath	CB-D RO-D LV MD-D	UMP-D RRS-D FW-D	Observed in RO, MD, UMP, FW, and RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.	
<i>Clavulina castaneipes</i> var. <i>lignicola</i>		STR	STR S&M-B	Associated with late successional forests. On wood or bark.		CB-S			NI	Not documented in Project vicinity.	
<i>Clavulinopsis fusiformis</i>		STR	STR	Occurs in dense clusters with a common base. Found under hardwoods or conifers.		CB-S	RRS-S		NI	Not documented in Project vicinity.	
<i>Climacocystis borealis</i>		STR	STR	Solitary or as overlapping clusters at the base of and on roots of living conifers as well as on logs and stumps.		MD-S	RRS-D		NI	Not documented in Project vicinity.	
<i>Clitocybe senilis</i>			S&M-B	Restricted to conifer forests, in duff under <i>Pinus</i> and <i>Picea</i> spp.		CB-S			NI	Not documented in Project vicinity.	
<i>Clitocybe subditopoda</i>		STR	STR S&M-B	Usually found gregarious to subcaespitose on needle beds in coastal to mid-elevation conifer forests.					NI	Not documented in Project vicinity.	
<i>Collybia bakerensis</i>			S&M-F	Restricted to conifer forests; see the Survey and Manage Report (appendix F.5 of this EIS).	Klamath		FW-D RRS-D	Observed in FW (2000); see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.	
<i>Collybia [Dendrocollybia] racemosa</i>		STR	STR S&M-B	Gregarious, on rotting or mummified remnants of agarics, or seldom in nutrient-rich leaf mulch, in forests.	Douglas Jackson	CB-D MD-D	UMP-D RRS-D	Observed in UMP; and MD; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.	
<i>Cordyceps ophioglossoides</i>			S&M-B	Grows underground on other fungi.		CB-S			NI	Not documented in Project vicinity.	
<i>Cortinarius barlowensis</i> (<i>C. azureus</i>)		SEN	SEN S&M-B	Coastal to montane conifer forests up to at least 3,940 feet elevation; late successional old-growth association; fruits in autumn.	Douglas	CB-S	UMP-D		NI	Not documented in Project vicinity.	
<i>Cortinarius boulderensis</i>			S&M-B	Well-decayed, large conifer stumps and snags containing brown cubical rot.		MD			NI	Not documented in Project vicinity.	
<i>Cortinarius cyanites</i>		STR	STR S&M-B	Solitary to gregarious in coastal to montane conifer forests up to at least 3,940 feet elevation		CB-S			NI	Not documented in Project vicinity.	
<i>Cortinarius depauperatus</i> (<i>C. spilomeus</i>)		STR	STR S&M-B	Moist conifer forests.		CB-S			NI	Not documented in Project vicinity.	

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Cortinarius magnivelatus</i>			STR	STR S&M-B	Old-growth, montane coniferous forests. Sporocarps known to occur in association with the roots of various species, including <i>Abies concolor</i> , <i>A. lasiocarpa</i> , <i>A. magnifica</i> , <i>Picea engelmannii</i> , <i>Pinus lambertiana</i> , and <i>P. ponderosa</i> at elevations above 4,500 feet.	Klamath Jackson	MD-D	FW-D RRS-D	Observed in FW; see the Survey and Manage Report (appendix F.5 of this EIS)..	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Cortinarius olympianus</i>				S&M-B	Found in complex coniferous forests, generally restricted to the western hemlock zone; see the Survey and Manage Report (appendix F.5 of this EIS).	Coos Jackson Klamath	CB-D MD-D	UMP-D RRS-D	Observed in UMP and RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Cortinarius pavelekii</i>			SEN	SEN	Forms mycorrhiza exclusively with the roots of mature to old-growth Sitka spruce			CB-S		NI	Not documented in Project vicinity.
<i>Cortinarius speciosissimus</i>				S&M-B	Acidic soils in forested areas.					NI	Not documented in Project vicinity.
<i>Cortinarius tabularis</i>				S&M-B	Unknown.					NI	Not documented in Project vicinity.
<i>Cortinarius umidicola</i>				S&M-B	Unknown.					NI	Not documented in Project vicinity.
<i>Cortinarius valgus</i>				S&M-B	Solitary, scattered, gregarious or cespitose; sometimes locally abundant under <i>Abies amabilis</i> , <i>Picea sitchensis</i> , <i>Pseudotsuga menziesii</i> , and <i>Tsuga heterophylla</i> .			MD		NI	Not documented in Project vicinity.
<i>Cortinarius variipes</i>				S&M-B	Dry habitats on basic soils.					NI	Not documented in Project vicinity.
<i>Cortinarius verrucisporus</i>			STR	STR S&M-B	Dry, late-successional conifer forests at elevations above 4,000 feet; Associated with <i>Abies magnifica</i> and possibly other true fir species, as well as <i>Pinus albicaulis</i> .	Klamath		RRS-S FW-D	Observed in FW near MP 168.8 and between 172.1 and 173.3; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Cortinarius wiebeae</i>				STR S&M-B	Montane coniferous forests.				FW-S	NI	Not documented in Project vicinity.
<i>Cudonia monticola</i>				S&M-B	On woody debris and spruce needles in mature, moist coniferous forests with white fir, Douglas-fir, and pine.	Coos Douglas Jackson Klamath	CB-D MD-D	UMP-D RRS-D	Observed in UMP; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Cudoniella clavus</i>			STR	STR	Solitary to gregarious on rotting stems of grasses and herbs in boggy montane meadows; fruiting in the spring shortly after snow melt.				FW-S	NI	Not documented in Project vicinity.
<i>Cyphellosterium laeve</i>				S&M-B	Scattered to gregarious on various species of moss, usually on moss-covered banks. Widely distributed in coniferous forests.					NI	Not documented in Project vicinity.
<i>Dermocybe humboldtensis</i>			SEN	SEN S&M-B	Stabilized dunes on roots of pine and huckleberry species and conglomerate rock and gravelly loam soil with Douglas-fir and ponderosa pine	Douglas	CB-S RO-D MD-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Destuntzia fusca</i>			STR	STR S&M-B	Forms sporocarps beneath the soil associated with <i>Lithocarpus densiflorus</i> , <i>Pseudotsuga menziesii</i> & <i>Tsuga heterophylla</i> , below 3,280 feet elevation.				UMP-S RRS-S	NI	Not documented in Project vicinity.
<i>Destuntzia rubra</i>			STR	STR S&M-B	In association with the roots of <i>Abies grandis</i> , <i>Arbutus menziesii</i> , <i>Lithocarpus densiflora</i> , <i>Pseudotsuga menziesii</i> , and <i>Sequoia sempervirens</i> at below 2,130 feet elevation.				UMP-S RRS-S	NI	Not documented in Project vicinity.
<i>Dichostereum boreale</i>				S&M-B	Presumed mycorrhizal with <i>Tsuga</i> spp.					NI	Not documented in Project vicinity.
<i>Elaphomyces anthracinus</i>				STR S&M-B	Forms sporocarps beneath the soil surface associated with the roots of <i>Pinus ponderosa</i> in Oregon.				FW-S	NI	Not documented in Project vicinity.
<i>Elaphomyces decipiens</i>			STR	STR	Fruits on dead conifer wood.			MD-S	RRS-S	NI	Not documented in Project vicinity.
<i>Elaphomyces reticulatus</i>			STR	STR	Unknown.			MD-S	RRS-D	NI	Not documented in Project vicinity.
<i>Elaphomyces subviscidus</i>			STR	STR S&M-B	Forms sporocarps beneath the soil surface associated with the roots of <i>Pinus contorta</i> and <i>Tsuga mertensiana</i> at high elevation (7,210 feet).			MD-S	RRS-S FW-S UMP-D	NI	Not documented in Project vicinity.
<i>Endogone acrogena</i>				S&M-B	Found in association with the roots of <i>Abies lasiocarpa</i> .					NI	Not documented in Project vicinity.

TABLE I-5											
Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Endogone oregonensis</i>			STR	STR S&M-B	Roots of Sitka spruce, Douglas-fir, and western hemlock, below 1,150 feet elevation, known from Cascade Head and Lincoln County.	Douglas	CB-S			NI	Not documented in Project vicinity.
<i>Entoloma nitidum</i>				S&M-B	Saprobic in coniferous woodland, especially with pine trees, usually on acidic soil.					NI	Not documented in Project vicinity.
<i>Fayodia bisphaerigera</i> (<i>F. gracilipes</i>)				S&M-B	On conifer needles		CB-S			NI	Not documented in Project vicinity.
<i>Fevansia aurantiaca</i>			STR	STR S&M-B	High altitude true fir and hemlock forests.					NI	Not documented in Project vicinity.
<i>Galerina atkinsoniana</i>				S&M-B ^{ef}	Found in boreal forests with full canopies and sufficient moss and needle litter; typically found in moist areas within spruce and Douglas-fir forests.		MD-D RO-D	UMP-D RRS-D	Observed in UMP in 2010; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Galerina cerina</i>				S&M-B	Gregarious on mosses in sphagnum bogs. Also sometimes found on the mucky humus in sphagnum bogs or on colonizing mosses in burned areas.		CB			NI	Not documented in Project vicinity.
<i>Galerina heterocystis</i>				S&M-E	Found in rotting wood or in moss		CB-S MD			NI	Not documented in Project vicinity.
<i>Galerina sphagnicola</i>				S&M-E	Gregarious on mosses in sphagnum bogs. Also sometimes found on the mucky humus in sphagnum bogs or on colonizing mosses in burned areas.					NI	Not documented in Project vicinity.
<i>Gastroboletus imbellus</i>			STR	STR S&M-B	Occurs in Pacific Silver Fir (50%) and Mountain Hemlock (50%) series at elevations of 2,528-5,169 feet. Associated with roots of grand fir, subalpine fir and mountain hemlock.			UMP-S		NI	Not documented in Project vicinity.
<i>Gastroboletus ruber</i>			STR	STR S&M-B	Occurs above 4,000 ft. and is found in association with the roots of assorted Pinaceae, particularly <i>Tsuga mertensiana</i> , <i>Abies amabilis</i> , <i>Abies procera</i> , or <i>Pinus monticola</i> .					NI	Not documented in Project vicinity.
<i>Gastroboletus subalpinus</i>				S&M-B	Grows in association with roots of various conifers including mountain hemlock, California red fir, lodgepole pine, and whitebark pine; see the Survey and Manage Report (appendix F.5 of this EIS).	Klamath		UMP-D RRS-D FW-D	Observed in FW: adjacent to and south of MP 172.5 and 172.6; see the Survey and Manage Report (appendix F.5 of this EIS)	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Gastroboletus turbinatus</i>				S&M-B	Scattered to gregarious under conifers in the montane regions.		CB-S MD			NI	Not documented in Project vicinity.
<i>Gastroboletus vividus</i>			SEN	SEN S&M-B	Associated with <i>Abies magnifica</i> and <i>Tsuga mertensiana</i> .		MD-S	UMP-S RRS-D FW-S		NI	Not documented in Project vicinity.
<i>Gastrolactarius camphoratus</i>			SEN	SEN	Associated with the roots of <i>Tsuga heterophylla</i> and possibly <i>Picea sitchensis</i> from sea level to 3,040 feet elevation.		CB-D MD-S	RRS-D		NI	Not documented in Project vicinity.
<i>Gastrolactarius crassus</i>			STR	STR	Epigeous or subhypogeous, ectomycorrhizal with trees.		CB-D	RRS-S UMP-D FW-D		NI	Not documented in Project vicinity.
<i>Gastrolactarius lactarioides</i>				STR	Epigeous or subhypogeous, ectomycorrhizal with trees.			RRS-S		NI	Not documented in Project vicinity.
<i>Gastrosuillus amaranthii</i>				S&M-E	Found in association with the roots of <i>Pinus lambertiana</i> above 5,000 feet and in association with the roots of <i>Pinus monticola</i> above 7,000 feet elevation.					NI	Not documented in Project vicinity.
<i>Gastrosuillus umbrinus</i>				S&M-B	Insufficient locations to determine.					NI	Not documented in Project vicinity.
<i>Gautieria magnicellaris</i>			STR	S&M-B	Only two know locations.					NI	Not documented in Project vicinity.
<i>Gautieria otthii</i>			STR	STR S&M-B	Forms sporocarps beneath the soil surface associated with the roots of <i>Pinus ponderosa</i> and other Pinaceae between 2,620 and 5,415 feet elevation.		MD-S	RSS-S		NI	Not documented in Project vicinity.
<i>Gelatinodiscus flavidus</i>				S&M-B	Scattered to gregarious in habit and restricted to fruiting from cones, twigs and foliage of <i>Chamaecyparis nootkatensis</i> .		MD-D			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Glomus pubescens</i>			STR	STR	Hypogenous fungi in coniferous forests.	Coos Douglas	CB-S RO-S			NI	Not documented in Project vicinity.
<i>Glomus radiatum</i>			STR	STR S&M-B	Forms sporocarps beneath the soil surface associated with the roots of <i>Chamaecyparis nootkatensis</i> and <i>Sequoia sempervirens</i> below 5,415 feet elevation.		CB-S	RRS-S		NI	Not documented in Project vicinity.
<i>Gomphus bonarii</i>				S&M-B	Late successional forest. Singly, in cespitose clusters and arcs under conifers.			UMP-D RRS FW-D		NI	Not documented in Project vicinity.
<i>Gomphus clavatus</i>				S&M-F	Found in LSOG forests, typically in deep humus in coniferous forests.	Coos Douglas Jackson Klamath	CB-D MD-D RO-D	UMP-D RRS-D FW-D	Three sites observed in UMP; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Gomphus kauffmanii</i>				S&M-E	Associated with true firs, Douglas-fir, pine, and hemlock trees in LSOG forests, as well as younger forests.	Coos Douglas Jackson Klamath	CB-D RO-D MD-D	UMP-D RRS-D FW-D	Observed in RRS and FW; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Gymnomyces abietis</i>				S&M-B	Grows in association with the roots of conifer trees, including true fir and mountain hemlock, primarily above 3,000 feet.	Jackson		RRS-D	Observed in RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Gymnomyces fragrans</i>			SEN	SEN	Populations have been located in the Pacific silver fir, mountain hemlock and Shasta red fir plant associations. Populations range from 4,803-6,853 feet elevation and are found on east-facing and west-facing slopes.			MD-D UMP-S RRS-D		NI	Not documented in Project vicinity.
<i>Gymnomyces monosporus</i>			STR		Unknown.	Douglas	CB-D RO-D MD-S			NI	Not documented in Project vicinity.
<i>Gymnomyces nondistincta</i>			STR	S&M-B	Associated with roots of Pacific silver fir and mountain hemlock in Mountain Hemlock and Parkland series.			MD-D		NI	Not documented in Project vicinity.
<i>Gyromitra (Pseudorhizina) californica</i>			SEN	SEN S&M-B	Solitary or in small groups in conifer woods; fruiting in humus or on rotting wood in moist areas; also found on soil along streams, skid trails, and recently disturbed soil.	Douglas Jackson Klamath	RO-S MD-S	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Hebeloma olympianum</i>				S&M-B	Associated with roots of various Pinaceae.					NI	Not documented in Project vicinity.
<i>Helvella crassitunicata</i>			SEN	SEN S&M-B	Scattered or gregarious on soil along trails in montane regions with <i>Abies</i> spp.			RO-S MD-S		NI	Not documented in Project vicinity.
<i>Helvella elastica</i>				S&M-B	Conifer woodlands on acid soil.			CB-S MD-D		NI	Not documented in Project vicinity.
<i>Hydnотrya inordinata</i>			STR	STR S&M-B	Found in association with the roots of <i>Abies amabilis</i> , <i>Pseudotsuga menziesii</i> , <i>Pinus contorta</i> , and <i>Tsuga heterophylla</i> at mid to high elevation.					NI	Not documented in Project vicinity.
<i>Hydnотrya subnix</i>				S&M-B	Found in association with the roots of <i>Abies amabilis</i> .					NI	Not documented in Project vicinity.
<i>Hydropus marginellus (Mycena marginella)</i>			STR	STR S&M-B	Conifer wood; <i>Abies</i> , <i>Pinus</i> .			CB-D	RRS-S	NI	Not documented in Project vicinity.
<i>Hygrophorus albicarneus</i>			STR	STR	Unknown.	Klamath	RO-S MD-S	FW-S		NI	Not documented in Project vicinity.
<i>Hygrophorus caeruleus</i>				S&M-B	Found at mid-elevations in montane coniferous forests, typically in conifer duff; occurs in soil in association with roots of conifer trees. near melting snowbanks.	Klamath		UMP-D RRS-D FW-D	Observed in RRS and FW; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Hygrophorus karstenii</i>				S&M-B	Forms associations with trees (both broadleaf and conifer) and hence typically found in woodlands.					NI	Not documented in Project vicinity.
<i>Hygrophorus vernalis</i>				S&M-B	Associated with roots of Pinaceae species near melting snowbanks in spring.					NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Hypomyces luteovirens</i>				S&M-B	Solitary, scattered or gregarious in the woods, often partially buried in the duff, usually on the fruiting bodies of <i>Lactarius</i> and/or <i>Russula</i> .		CB-S			NI	Not documented in Project vicinity.
<i>Leptonia occidentalis</i> var. <i>occidentalis</i>			STR		Moist woods and forested areas, often in shaded draws, riparian areas, and ravines. It is sometimes found in grassy areas with scattered trees		MD-S			NI	Not documented in Project vicinity.
<i>Leptonia subeuchroa</i>			STR	STR	On mossy logs which have fallen across streams in cedar, hemlock, and maple forests.			RRS-S		NI	Not documented in Project vicinity.
<i>Leptonia violaceonigra</i>			STR	STR	Generally grows on ground, but sometimes found on wood.		MD-D	RRS-S	Observed in RRS within the ROW.	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects
<i>Leucogaster citrinus</i>				S&M-B	LSOG coniferous forests at low to high elevations, ranging from about 250–6,500 feet It grows in association with roots of white fir, subalpine fir, lodgepole pine, western white pine, Douglas-fir, and hemlocks.	Klamath	CB-S MD-D	RRS-S UMP-D FW-D	Observed in UMP and FW.	MIIH	Occurrences located in the moderate to high intensity burned areas during the Stouts Creek fire..
<i>Leucogaster microsporus</i>				S&M-B	Found in soil or duff under conifers, in association with the roots of Douglas-fir and western hemlock		CB-S			NI	Not documented in Project vicinity.
<i>Leucogaster odoratus</i>			STR	STR	Unknown.			UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Lyophyllum pallidum</i>			STR	STR	Gregarious on soil under conifers.			UMP-D RRS-S		NI	Not documented in Project vicinity.
<i>Macowanites chlorinosmus</i>			STR	STR S&M-B	Found in association with the roots of <i>Picea sitchensis</i> and <i>Tsuga heterophylla</i> below 660 feet elevation.		CB-S			NI	Not documented in Project vicinity.
<i>Macowanites lymanensis</i>				S&M-B	Found in association with the roots of <i>Abies amabilis</i> and <i>A. lasiocarpa</i> at high elevation.					NI	Not documented in Project vicinity.
<i>Macowanites mollis</i>				SEN S&M-B	Found in association with the roots of <i>Pseudotsuga menziesii</i> , <i>Abies grandis</i> , and <i>Tsuga heterophylla</i> above 3,500 feet elevation.					NI	Not documented in Project vicinity.
<i>Marasmius applanatipes</i>				S&M-B	Found gregarious to subcaespitose in duff.					NI	Not documented in Project vicinity.
<i>Martellia fragrans</i>				S&M-B	Found in association with the roots of <i>Tsuga mertensiana</i> or <i>Pseudotsuga menziesii</i> at high elevation.		MD			NI	Not documented in Project vicinity.
<i>Martellia idahoensis</i>				S&M-B	Found in association with the roots of <i>Abies amabilis</i> , <i>A. lasiocarpa</i> , <i>A. procera</i> , <i>Picea engelmannii</i> , and <i>Tsuga mertensiana</i> above 3,500 feet elevation.		CB-S			NI	Not documented in Project vicinity.
<i>Mycena hudsoniana</i>			STR	STR S&M-B	Restricted to conifer forests and is usually found scattered in the duff.					NI	Not documented in Project vicinity.
<i>Mycena overholtsii</i>				S&M-D	Coniferous forests above 3,000 feet, primarily near true fir trees; see the Survey and Manage Report (appendix F.5 of this EIS).	Jackson Klamath		UMP-D RRS-D FW-D	Observed in FW; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Mycena quinaultensis</i>			STR	STR S&M-B	Found in gregarious, caespitose clusters on senescent conifer needles or uncommonly on decayed wood in conifer forests.		CB-S RO-S MD-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Mycena tenax</i>			STR	STR S&M-B	Densely gregarious in duff under fir, Douglas-fir, spruce, and redwood trees, known from several coastal sites in Douglas, Lane, and Lincoln Counties; fruits in spring and autumn.	Douglas	CB-S	UMP-S RRS-D		NI	Not documented in Project vicinity.
<i>Mythicomycetes corneipes</i>			SEN	SEN S&M-B	Occurs along bog margins, among mosses, or on wet soil under conifers.					NI	Not documented in Project vicinity.
<i>Neolentinus adhaerens</i>				S&M-B	On logs and stumps of conifers, occasionally hardwood.					NI	Not documented in Project vicinity.
<i>Neolentinus kauffmanii</i>				S&M-B	Saprophytic on conifer logs.		CB-S	FW-D		NI	Not documented in Project vicinity.

TABLE I-5

Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/			Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning		
	Federal	State	BLM		Forest Service	County	BLM	Forest Service			Within Vicinity of Project Area c/	
<i>Nivatogastrium nubigenum</i>				S&M-B (except Oregon Eastern Cascades and California Cascades Physiographic Provinces)	Solitary to scattered on conifer wood in montane areas; fruiting during the spring shortly after snow-melt; common.		MD	FW-D	Observed in FW (2000); see the Survey and Manage Report (appendix F.5 of this EIS).	NI	Not listed as S&M in Oregon Eastern Cascades Physiographic Provinces, where observation was located.	
<i>Nolanea edulis var. concentrica</i>			STR		Solitary or more often scattered in troops on bare soil amid small herbaceous plants and areas with short grass, often in exposed settings along trails or roads in urban area.			CB-S		NI	Not documented in Project vicinity.	
<i>Nolanea verna var. isodiametrica</i>			STR		Mainly under conifers.	Douglas		RO-S MD-D		NI	Not documented in Project vicinity.	
<i>Octaviania cyanescens</i>				STR S&M-B	Found with <i>Tsuga mertensiana</i> at 6,230 feet elevation.			UMP-S		NI	Not documented in Project vicinity.	
<i>Octavianina macrospora</i>			STR	STR S&M-B	Found in association with the roots of <i>Tsuga heterophylla</i> .					NI	Not documented in Project vicinity.	
<i>Octavianina papyracea</i>				S&M-B	Found in association with the roots of Pinaceae in forests dominated by <i>Sequoia sempervirens</i> at low elevation (below 2,000 feet).					NI	Not documented in Project vicinity.	
<i>Otidea leporina</i>				S&M-D	Grows terrestrially in woods under hardwoods or conifers; often clustered, but occasionally growing alone or scattered.			CB-D MD-D		NI	Not documented in Project vicinity.	
<i>Otidea smithii</i>			STR	STR S&M-B	On exposed soil, moss, litter or humus under Douglas fir, western hemlock, ponderosa pine, bigleaf maple, Oregon white oak and black cottonwood.	Douglas		CB-S RO-D MD-S	RRS-D	Observed in RO BLM (2014), >100 feet near MP 61.3.	WOFV ^{f/}	Potential impacts to individuals or habitat; indirect habitat effects. May cause loss of viability and/or contribute to a trend toward Federal listing ^{f/}
<i>Phaeocollybia attenuata</i>				S&M-D	Undisturbed, moist coniferous forests and mixed hardwood-coniferous forests. It is also occasionally found in urban parks and younger forests. Grows in highly humus soil associated with mosses under conifers, such as <i>Picea sitchensis</i> , <i>Tsuga heterophylla</i> , or <i>Abies amabilis</i> .			CB-D RO-D MD		Observed in CB (in ROW and <100 feet from ROW) and RO BLM (<100 feet from ROW).	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/}
<i>Phaeocollybia californica</i>			SEN	SEN S&M-B	Roots of Sitka spruce, Pacific silver fir and western hemlock	Douglas		CB-D RO-D MD-D	RRS-D		NI	Not documented in Project vicinity.
<i>Phaeocollybia dissiliens</i>			STR	STR S&M-B	On soil, litter and humus in association with roots of Pacific fir, Sitka spruce, Douglas fir and western hemlock principally in Western Hemlock series (67%) at elevations of 313-2,431 feet.			CB-D RO-S		Observed in CB BLM (2012) greater than 100 feet from ROW near MP 24.85BR.	MIIH ^{f/}	Potential indirect effects to individuals and habitat ^{f/}
<i>Phaeocollybia fallax</i>				S&M-D	Scattered to gregarious in highly humus soil in mixed coniferous forests associated with <i>Abies</i> , <i>Picea</i> , <i>Pseudotsuga</i> , and <i>Tsuga</i> .	Coos		CB-D MD		Observed in CB BLM (2010) within ROW.	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/}
<i>Phaeocollybia gregaria</i>			SEN	SEN S&M-B	Associated with the roots of Sitka spruce and Douglas-fir in Sitka Spruce (50%) and Western Hemlock (50%) series at elevations of 477-1,486 feet.			CB-S RO-S			NI	Not documented in Project vicinity.
<i>Phaeocollybia kauffmannii</i>				S&M-D	Appears to be restricted to mesic coniferous forests in closed-canopy stands, primarily LSOG forests; primarily found in undisturbed forests, although also documented in younger plantations about 35 years old and in urban parks. Often associated with the roots of <i>Picea sitchensis</i> , <i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , and occasionally <i>Abies amabilis</i> and may be found in mixed stands with <i>Sequoia</i> , <i>Lithocarpus</i> , <i>Tsuga</i> , <i>Abies</i> , and <i>Pseudotsuga</i> species.	Coos		CB-D MD-D		Observed in CB BLM within ROW.	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/}
<i>Phaeocollybia lilacifolia</i>			STR	STR	Found on soil under Sitka spruce and redwood.	Coos		CB-D			NI	Not documented in Project vicinity.
<i>Phaeocollybia olivacea</i>				S&M-B ^{e/}	Primarily found in fairly complex forests with a mix of hardwood trees, particularly <i>Quercus</i> or <i>Lithocarpus</i> , and conifer trees and occasionally in pure coniferous stands. More prevalent in low-elevation coastal forests, but has been found in montane coniferous forests.	Coos		CB-D MD-D	RRS-D	Observed in CB BLM within ROW and <100 meters from ROW near MP 27.4.	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/ j/}

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Phaeocollybia oregonensis</i>			SEN	SEN S&M-B	On soil in association with roots of Douglas-fir, western hemlock and Pacific silver fir, primarily in Western Hemlock series (75%) at elevations of 826-3,817 feet.		CB-D RO-S MD-D			NI	Not documented in Project vicinity.
<i>Phaeocollybia piceae</i>				S&M-B	Solitary to scattered to conrescent, in duff under conifers, primarily Sitka spruce; common from mid fall through winter in northern coastal forests.		CB-D MD-D		Not observed during Project surveys; however, agency databases indicate there is a site in the vicinity of the Project documented in 2012 in CB BLM.	MIIH ^{f/}	Potential indirect effects to individuals and habitat. ^{f/}
<i>Phaeocollybia pseudofestiva</i>			STR	STR S&M-B	Associated with Pinaceae, mixed conifers, and hardwoods; fruits in October - January and April – July.	Coos Douglas	CB-D RO-D MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Phaeocollybia radicata</i>			STR	STR	Conifer forest: Douglas-fir, salal, sword-fern.	Coos	CB-D	RRS-S		NI	Not documented in Project vicinity.
<i>Phaeocollybia scatesiae</i>				S&M-B	Found in well-decomposed wood or woody humus in densely canopied coniferous forest; primarily in LSOG coniferous forests. Grows in association with <i>Abies</i> spp., <i>Picea sitchensis</i> , and <i>Vaccinium</i> spp. More prevalent in low-elevation coastal forests but has been found in montane coniferous forests.		CB-D		Observed in CB BLM within ROW and <100 meters from ROW.	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/}
<i>Phaeocollybia sipei</i>				S&M-B	Occurs in humus, litter, or soil in coniferous and mixed hardwood-coniferous forests at elevations ranging between approximately 350 and 3,550 feet. Found associated with the roots of western hemlock, Douglas-fir, Sitka spruce, Pacific silver fir, and red fir.		CB RO			NI	Not documented in Project vicinity.
<i>Phaeocollybia spadicea</i>				S&M-B	Associated with the roots of various Pinaceae: <i>Abies amabilis</i> , <i>Tsuga heterophylla</i> , <i>Pseudotsuga menziesii</i> , and <i>Picea sitchensis</i> .		CB-D MD		Not observed during Project surveys; however, agency databases indicate there is a site in the vicinity of the Project documented in 2012 near MP 21.5 in CB BLM.	MIIH ^{f/}	Potential indirect effects to individuals and habitat. ^{f/}
<i>Phellodon atratus</i> (<i>P. atratum</i>)				S&M-B	Solitary to scattered to conrescent, in duff under conifers, primarily Sitka spruce; common from mid-fall through winter in northern coastal forests.		CB-S			NI	Not documented in Project vicinity.
<i>Pholiota</i> (<i>Stropharia</i>) <i>albivelata</i>			STR	S&M-B	Scattered under conifers on conifer litter from late April through early January.	Coos	CB-S			NI	Not documented in Project vicinity.
<i>Podostroma alutaceum</i>			STR	STR S&M-B	Conifer forests.		CB-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Polyozellus multiplex</i>				S&M-B	Primarily found in LSOG coniferous forests at mid-elevations; see the Survey and Manage Report (appendix F.5 of this EIS).	Jackson Klamath	CB-S MD-D	UMP-D RRS-D FW-D	Observed in RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Psathyrella aquatic</i>				STR	Substrates include water-logged wood, gravel, and the silty riverbed			RRS-D		NI	Not documented in Project vicinity.
<i>Psathyrella quercicola</i>			STR	STR	Unknown.	Jackson	RO-S MD-S	RRS-S		NI	Not documented in Project vicinity.
<i>Pseudaleuria quinaultiana</i>			STR	STR S&M-B	Occurs on disturbed microsites (trail sides, recent windthrow mounds) in low elevation old-growth forest that includes <i>Picea sitchensis</i> , <i>Pseudotsuga menziesii</i> , and <i>Tsuga heterophylla</i> .		CB-S			NI	Not documented in Project vicinity.
<i>Pseudorhizina</i> (<i>Gyromitra</i>) <i>californica</i>			SEN	SEN S&M-B	Solitary or in small groups in conifer woods; fruiting in humus or on rotting wood in moist areas; also found on soil along streams, skid trails, and recently disturbed soil.	Douglas Jackson Klamath	RO-S MD-S	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Radiigera bushnellii</i>			STR	STR	Unknown.		MD-D			NI	Not documented in Project vicinity.
<i>Ramaria abietina</i>			STR	STR S&M-B	In duff under conifers, especially Monterey cypress and Coast Redwood; from late fall to late winter.	Douglas	RO-D MD-D CB-S	UMP-S RRS-D		NI	Not documented in Project vicinity.
<i>Ramaria amyloidea</i>			SEN	SEN S&M-B	In humus or soil under <i>Abies</i> spp., Douglas-fir, and western hemlock from September to October.	Douglas	RO-S	UMP-D RRS-S FW-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Ramaria araiospora</i> (var. <i>araiospora</i> or var. <i>rubella</i>)				S&M-B	Primarily found in humus or soil in coniferous forests in association with true firs, Douglas-fir, western hemlock, and Sitka spruce; see the Survey and Manage Report (appendix F.5 of this EIS).	Coos	CB-D	UMP-D	Observed in CB and UMP; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Ramaria aurantiiscescens</i>				S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.		CB-D MD-D			NI	Not documented in Project vicinity.
<i>Ramaria botrytis</i> var. <i>aurantiramosa</i>			STR	STR S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.	Douglas Klamath	RO-S	UMP-D RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Ramaria celerivirescens</i>				S&M-B	Primarily found in LSOG coniferous forests in association with true firs (<i>Abies</i> spp.), Douglas-fir, and western hemlock; although has also been found in urban parks and younger forests neighboring LSOG stands.		CB-D MD		Observed in CB BLM within ROW.	MIIH ^{ff}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{ff}
<i>Ramaria claviramulata</i>				S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.					NI	Not documented in Project vicinity.
<i>Ramaria concolor</i> f. <i>marii</i>				S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.					NI	Not documented in Project vicinity.
<i>Ramaria concolor</i> f. <i>tsugina</i> (R. <i>tsugina</i>)			STR	S&M-B	In humus or soil under <i>Abies</i> ssp., Douglas-fir, and western hemlock in October.	Coos	CB-S RO-S			NI	Not documented in Project vicinity.
<i>Ramaria conjunctipes</i> var. <i>sparsiramosa</i>			STR	STR S&M-B	On ground in moist conifer forests in fall.	Coos	CB-D RO-D MD-S	UMP-S RRS-D		NI	Not documented in Project vicinity.
<i>Ramaria coulterae</i>			STR	STR S&M-B	Found in coniferous debris; associated with trees in the Pinaceae family.	Jackson Klamath	RO-S MD-D	UMP-D RRS-D FW-D	Observed in RRS and FW; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Ramaria cyaneigranosa</i>				S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.		CB-D MD-D			NI	Not documented in Project vicinity.
<i>Ramaria gelatiniaurantia</i>			STR	STR S&M-B	Occurs on litter and soil, associated with <i>Pinaceae</i> spp.		CB-D RO-S	RRS-S		NI	Not documented in Project vicinity.
<i>Ramaria gracilis</i>			STR	STR S&M-B	Fruits in humus or soil and matures above the surface of the ground. Associated with <i>Abies</i> spp., <i>Pseudotsuga menziesii</i> , and <i>Tsuga heterophylla</i>		CB-S MD-S	RRS-D		NI	Not documented in Project vicinity.
<i>Ramaria hiliaris</i> var. <i>olympiana</i>				S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.		CB-D			NI	Not documented in Project vicinity.
<i>Ramaria largentii</i>			STR	STR S&M-B	In humus or soil under <i>Abies</i> spp., Douglas-fir, western white pine, and western hemlock in October.	Jackson	CB-S RO-D MD-D	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Ramaria lorithamnus</i>				S&M-B	Form coralloid sporocarps in humus or soil that mature above the surface of the ground.					NI	Not documented in Project vicinity.
<i>Ramaria maculatipes</i>			STR	STR S&M-B	Fruits in humus or soil and matures above the surface of the ground. Associated with <i>Abies</i> spp., <i>Pseudotsuga menziesii</i> , and <i>Tsuga heterophylla</i> .		MD-D	UMP-S RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Ramaria rainierensis</i>			STR	STR S&M-B	In humus or soil under <i>Abies</i> ssp Douglas-fir and western hemlock in December and March.	Coos	CB-D	RRS-S		NI	Not documented in Project vicinity.
<i>Ramaria rubella</i> var. <i>blanda</i>			SEN	SEN S&M-B	Fruits on wood in conifer forests.		RO-D CB-D	RRS-D		NI	Not documented in Project vicinity.
<i>Ramaria rubribrunescens</i>			STR	STR S&M-B	Terrestrial under species of Pinaceae in October and November.	Coos Douglas Jackson	CB-D RO-D MD-D	UMP-D RRS-S		NI	Not documented in Project vicinity.
<i>Ramaria rubrievanescens</i> (RARU5)				S&M-B	Found primarily in LSOG coniferous forests in association with trees in the Pinaceae family; see the Survey and Manage Report (appendix F.5 of this EIS).	Coos Douglas Jackson	CB-D MD-D	UMP-D RRS-D FW-D	Observed in UMP; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Ramaria rubripermanens</i> (RARU6)				S&M-D (OR) / B (WA and CA)	Found primarily in LSOG coniferous forests in association with trees in the Pinaceae family; see the Survey and Manage Report (appendix F.5 of this EIS).	Douglas Jackson Klamath	CB-D MD-D	UMP-D RRS-D FW-D	Observed in UMP and FW; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Ramaria spinulosa</i> var. <i>diminutiva</i>				S&M-B	Terrestrial under species of Pinaceae in October and November.	Douglas	CB-S RO-D MD-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Ramaria stuntzii</i>				S&M-B	Found primarily in LSOG coniferous forests in association with trees in the family Pinaceae, particularly Douglas-fir, western hemlock, and Pacific silver fir.		CB-D MD-D RO-D	UMP-D RRS-D	Observed in CB BLM (<100 feet)..	MIIH #	Potential indirect effects to individuals and habitat. #
<i>Ramaria suecica</i>			STR	STR S&M-B	On litter; fruits in autumn	Douglas	RO-D MD-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Ramaria thiersii</i>			STR	STR S&M-B	Terrestrial under species of Pinaceae in June.	Douglas Jackson Klamath	RO-S MD-D	UMP-S RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Ramaria tsugina</i> (<i>R. concolor</i> f. <i>tsugina</i>)			STR	S&M -B	In humus or soil under <i>Abies</i> ssp., Douglas-fir, and western hemlock in October.	Coos	CB-D RO-S			NI	Not documented in Project vicinity.
<i>Ramaria verlotensis</i>				S&M-B	Unknown.					NI	Not documented in Project vicinity.
<i>Rhizopogon abietis</i>			STR	STR S&M-B	Associated with Pinaceae. subalpine fir, Englemann spruce, and western white pine.		MD-D	UMP-S RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Rhizopogon atroviolaceus</i>			STR	STR S&M-B	Ectomycorrhizal association with trees in the Pinaceae family. Common symbionts of pine, fir, and Douglas-fir trees.			UMP-D RRS-S FW-S		NI	Not documented in Project vicinity.
<i>Rhizopogon bacillisporus</i>			STR	STR	Ectomycorrhizal association with trees in the Pinaceae family. Common symbionts of pine, fir, and Douglas-fir trees.		MD-D	FW-D		NI	Not documented in Project vicinity.
<i>Rhizopogon brunneiniger</i>			STR	STR S&M-B	Associated with roots of various Pinaceae species in low to high elevation conifer forests in September and October.	Douglas	CB-S RO-S MD-S	UMP-D RRS-D		NI	Not documented in Project vicinity.
<i>Rhizopogon chamaleontinus</i>			SEN	SEN S&M-B	Found in association with the roots of <i>Pseudotsuga menziesii</i> and scattered <i>Pinus lambertiana</i> at 3,600 feet elevation.		RO-S MD-S	RRS-D		NI	Not documented in Project vicinity.
<i>Rhizopogon clavitiosporus</i>			STR	STR	Ectomycorrhizal association with trees in the Pinaceae family. Common symbionts of pine, fir, and Douglas-fir trees.	Jackson	RO-S MD-S	RRS-S		NI	Not documented in Project vicinity.
<i>Rhizopogon ellipsosporus</i>			SEN	SEN S&M-B	Associated with roots of Douglas-fir and sugar pine in October.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
<i>Rhizopogon evadens</i> var. <i>subalpinus</i>				S&M-B	Found in association with the roots of <i>Tsuga mertensiana</i> or <i>Abies</i> spp. at mid to high elevation.		LV	FW-D	FW: observed in ROW.	NI	The single site observed during surveys will be avoided.
<i>Rhizopogon exiguus</i>			SEN	SEN S&M-B	Associated with the roots of <i>Pseudotsuga menziesii</i> and <i>Tsuga heterophylla</i> at 3,100 feet elevation.		CB-S RO-S MD-D	UMP-S RRS-D		NI	Not documented in Project vicinity.
<i>Rhizopogon flavofibrillosus</i>			STR	STR S&M-B	Associated with roots of various Pinaceae species in mid to high elevation conifer forests from July through November.	Douglas	CB-S RO-D MD-S	UMP-D RRS-D FW-S		NI	Not documented in Project vicinity.
<i>Rhizopogon hysteroangioides</i>				STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.			FW-S		NI	Not documented in Project vicinity.
<i>Rhizopogon inquinatus</i>			SEN	SEN S&M-B	Found in association with the roots of <i>Pinus jeffreyi</i> , <i>Pseudotsuga menziesii</i> and <i>Tsuga heterophylla</i> from 1,640 to 4,600 feet elevation.			UMP-S		NI	Not documented in Project vicinity.
<i>Rhizopogon masoniae</i>			STR	STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.			RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Rhizopogon olivaceotinctus</i>			STR	STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.		MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Rhizopogon oregonensis</i>				STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.			RRS-S		NI	Not documented in Project vicinity.
<i>Rhizopogon rogersii</i>			STR	STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.		MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Rhizopogon semireticulatus</i>			STR	STR	Under mixed conifers including <i>Pinus ponderosa</i> , <i>Pinus contorta</i> , <i>Pseudotsuga menziesii</i> , <i>Larix occidentalis</i> , <i>Abies lasiocarpa</i> , <i>Arbutus menziesii</i> and <i>Quercus</i> spp.	Douglas, Jackson	RO-D MD-S	RRS-D FW-D		NI	Not documented in Project vicinity.
<i>Rhizopogon subclavitisporus</i>			STR	STR	In duff under mixed conifers.		MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Rhizopogon subpurpurascens</i>			STR	STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.			RRS-D		NI	Not documented in Project vicinity.
<i>Rhizopogon truncatus</i>				S&M-D	Found in coniferous forests; documented on <i>Abies</i> spp., <i>Arbutus menziesii</i> , <i>Arctostaphylos uva-ursi</i> , <i>Pinus contorta</i> , <i>P. lambertiana</i> , <i>P. monticula</i> , <i>P. ponderosa</i> , <i>P. resinosa</i> , <i>Pseudotsuga menziesii</i> , <i>Tsuga canadensis</i> , and <i>T. mertensiana</i> .	Douglas Jackson Klamath	CB-S MD-D	UMP-D RRS-D FW-D	Observed in UMP and RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Rhizopogon variabilisporus</i>			STR	STR	Primarily found in ectomycorrhizal association with trees in the Pinaceae family and are especially common symbionts of pine, fir, and Douglas-fir trees.	Jackson	RO-S MD-D	RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Rhodocybe speciosa</i>				S&M-B	Found in gregarious, caespitose clusters on rotten conifer wood at high elevation.					NI	Not documented in Project vicinity.
<i>Rickenella swartzii</i> (<i>R. setipes</i>)			STR	STR S&M-B	Moist, shaded locations, typically in moss beds; known from coastal forests in the fall; locally abundant in small troops on or among mosses under hardwoods.	Coos Douglas	CB-D RO-D	RRS-S		NI	Not documented in Project vicinity.
<i>Russula mustelina</i>				S&M-B	Scattered to gregarious in montaine coniferous forests, particularly with <i>Abies</i> spp.					NI	Not documented in Project vicinity.
<i>Sarcodon fuscoindicus</i>			STR	STR S&M-B	Found on soil associated with mature forests and old trees in conifer and mixed temperate forests.	Douglas Jackson	CB-S RO-D MD-D	UMP-D RRS-S	Observed in UMP; see the Survey and Manage Report (appendix F.5 of this EIS).	WOFV	Potential impacts to individuals or habitat; would affect site persistence and remaining sites may not provide a reasonable assurance of species persistence.
<i>Sedecula pulvinata</i>				STR S&M-B	Restricted to relatively dry areas of coniferous forests at relatively high elevation ranges and with little annual rainfall; found in association with the roots of <i>Abies concolor</i> , <i>A. lasiocarpa</i> , <i>A. magnifica</i> , <i>Picea engelmannii</i> , and <i>Pinus contorta</i> .			RRS-D FW-D	Observed in RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Sowerbyella rhenana</i>				S&M-B	Prefers wet mossy areas under conifers.			CB-D MD-D		NI	Not documented in Project vicinity.
<i>Sparassis crispa</i>				S&M-D	Primarily found in low-elevation coniferous forests in association with very large conifer trees; typically found within 6 feet of the base of a living conifer tree, such as <i>Pseudotsuga menziesii</i> , <i>Pinus muricata</i> , and <i>P. radiata</i> .	Coos Douglas Jackson	CB-D MD-D RO-D	UMP-D RRS-D	Observed in RO BLM and UMP; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Spathularia flavida</i>				S&M-B	Found in a variety of forest types, ranging from coniferous to hardwood forests.	Jackson Klamath	CB-S RO-D	RRS-D UMP-D	Observed in RRS, UMP, and RO BLM; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Stagnicola perplexa</i>			SEN	SEN S&M-B	Colonizes plant debris in wet coniferous forest floor depressions and shallow pools.			UMP-S RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Stropharia (Pholiota) albovelata</i>			STR	S&M - B	Scattered under conifers on conifer litter from late April through early January.	Coos	CB-S			NI	Not documented in Project vicinity.
<i>Thaxterogaster pavelekii</i>				S&M-B	Associated with roots of Sitka spruce and lodgepole pine in Sitka Spruce (63%) and Western Hemlock (37%) series at elevations of 17-588 feet.		CB-S			NI	Not documented in Project vicinity.
<i>Tremiscus helvelloides</i>				S&M-D	Typically found in mesic coniferous forests where the humidity is high and the moss layer is well-developed.	Coos Douglas Jackson Klamath	CB-D RO-D MD-D	UMP-D RRS-D	Observed in RO, MD, UMP, and RRS; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Tricholoma venenatum</i>				S&M-B	Solitary to scattered in duff of montane conifers; fruiting in the spring shortly after winter snows have melted; common. See the Survey and Manage Report (appendix F.5 of this EIS).	Douglas	RO-D	UMP-D	Observed in RO and UMP.	NI	Occurrences located in the moderate to high intensity burned areas during the Stouts Creek fire.
<i>Tricholomopsis fulvescens</i>			STR	STR S&M-B	Found solitary on decayed conifer wood above 3,280 feet elevation.			UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Tuber asa</i>			STR	STR S&M-B	Found in association with the roots of <i>Pseudotsuga menziesii</i> and <i>Tsuga heterophylla</i> at 560 to 1,640 feet elevation in Oregon.		CB-S			NI	Not documented in Project vicinity.
<i>Tuber pacificum</i>			STR	STR S&M-B	Low elevation moist coniferous forests.	Coos	CB-S			NI	Not documented in Project vicinity.
<i>Tylophilus porphyrosporus (T. pseudoscaber)</i>				S&M-D	Solitary to scattered under conifers, especially Sitka Spruce. Also associated with pines.		CB-D			NI	Not documented in Project vicinity.
<i>Urnula craterium</i>			STR	STR	Moist ground in spring; fallen oak branches.	Jackson	MD-S	RRS-S		NI	Not documented in Project vicinity.
<i>Vibrissea truncorum</i>			STR		Unknown.		CB-S			NI	Not documented in Project vicinity.
Lichens											
<i>Anaptychia crinalis</i>			STR	STR	Rangewide, on sheltered rock (often calcareous), bark and soil, from sea level to 9,000 ft elevation. In the Pacific Northwest, on bark (<i>Picea</i> , <i>Pinus</i> , <i>Thuja</i>) and wood in sand dunes and headlands along the immediate coast.		CB-D			NI	Not documented in Project vicinity.
<i>Bryoria bicolor</i>			STR	STR	In the Pacific Northwest, on windswept, exposed trees along the immediate coast and over mossy rocks, heath, and bark of conifers on windswept and fog-drenched summits at highest elevations along the immediate coast. Rock types here are basalt.		CB-S			NI	Not documented in Project vicinity.
Horsehair lichen <i>Bryoria pseudocapillaris</i>			S&M-B	S&M-A	Grows on exposed or moderately exposed coastal trees, shrubs, and (once) on rock, primarily in late seral and old-growth shorepine scrub forests of dunes, marine terraces, and in Sitka spruce forests along the edges of coastal lagoons, estuaries, and headlands at or near sea level (0-250 feet elevation). Occurring in sites with moderated temperature and high humidity provided by frequent fog.		CB-D RO-S			NI	Not documented in Project vicinity.
<i>Bryoria spiralifera</i>				S&M-A	Grows on exposed or moderately exposed coastal trees, shrubs, and (once) on rock, primarily in late seral and old-growth shorepine scrub forests of dunes, marine terraces, and in Sitka spruce forests along the edges of coastal lagoons, estuaries, and headlands at or near sea level (0-250 feet elevation). Occurring in sites with moderated temperature and high humidity provided by frequent fog.	Coos Douglas	CB-D RO-S			NI	Not documented in Project vicinity.
<i>Bryoria subcana</i>			SEN	SEN S&M-B	Grows on conifer bark in forests of coastal bays, streams, dune forests, and high precipitation ridges within 30 mi (50 km) of the ocean. Inhabits areas of high humidity, mostly in late-seral to old-growth stands.	Coos	CB-D RO-D	RRS-D	Observed in CB BLM approximately 100 ft from ROW near MP 21.88BR.	MIIH #	Potential indirect effects to individuals and habitat. #
<i>Buellia oidalea</i>			STR	STR S&M-E	Bark of various shrubs, hardwoods, and conifers, maritime (< 1 km from coastline), known from Oregon Dunes NRA.	Douglas Jackson	CB-S			NI	Not documented in Project vicinity.
<i>Calicium abietinum</i>				S&M-B	Mostly found in sparsely forested reegions, becoming very rare in drier, non-forested areas and wetter, densely forested areas.		CB-D			NI	Not documented in Project vicinity.
<i>Calicium adpersum</i>			STR	S&M-E	Highly textured bark on the boles of old growth conifer trees.	No Data	CB-S RO-S			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Calicium quercinum</i>			STR	STR	The single known occurrence in the Pacific Northwest is on bark of old <i>Quercus garryana</i> trunks in an open grove.		RO-S MD-S	UMP-S		NI	Not documented in Project vicinity.
<i>Caloplaca stantonii</i>			STR	STR	On rocks near coast.	Coos	CB-S			NI	Not documented in Project vicinity.
<i>Cetrelia cetrarioides</i>				S&M-E	Riparian and epiphytic lichen that is typically found on the bark of hardwood and conifer trees, including <i>Alnus rubra</i> , <i>Acer macrophyllum</i> , and <i>Pseudotsuga menziesii</i> , in riparian areas; occasionally found on mossy rocks.	Coos	CB-D		Observed in CB BLM (<100 m from ROW) near MP 17.6BR.	MIIH ^{f/}	Potential indirect effects to individuals and habitat. ^{f/}
<i>Chaenotheca chrysocephala</i>				S&M-B	Frequent on bark and wood of old conifers including <i>Abies</i> spp., <i>Picea</i> spp., <i>Pseudotsuga menziesii</i> , <i>Thuja plicata</i> and decorticated snags. Prefers semi-open forests at relatively low elevations (260-13,770 feet elevation) and is most abundant on conifer trunks in mixed forests and in edge habitats, also in relatively young stands.	Douglas	CB-D RO-D MD-D		Observed in CB (<100 feet from ROW), RO (within ROW and <100 feet from ROW), and MD.	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/}
<i>Chaenotheca ferruginea</i>				S&M-B	Found on the bark and wood of conifers in semi-open montane forests and foothills, as well as on conifer boles in rainforests. In the Pacific Northwest, mostly found on the bark of oak and coniferous trees more than 200 years old in open habitats, with occasional occurrences on slightly younger trees.	Douglas Jackson	CB-S RO-D MD-S		Observed in RO (within ROW and <100 feet from ROW) and MD (<100 meters from ROW).	MIIH ^{f/}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{f/}
<i>Chaenotheca furfuracea</i>				S&M-F ^{ef/}	Generally found in sheltered coves under the bole of an old-growth tree, but occasionally within other overhangs with exposed roots. Typically associated with trees more than 200 years old; presumed to be restricted to specific microclimate conditions of LSOG coniferous and mixed hardwood-coniferous forests across a wide elevation range.		CB-D RO-D		Observed in CB BLM and RO BLM.	MIIH ^{f/}	Potential impacts to individuals or habitat. ^{f/}
<i>Chaenotheca subroscida</i>				S&M-E	Primarily found on conifer bark and occasionally wood in old-growth forests at low to middle elevations, generally less than 6,000 feet.	Douglas Jackson Klamath	RO-D MD-D CB-S	UMP-D RRS-D FW-D	Observed in RO BLM, MD BLM, RRS, and FW.	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Chaenothecopsis pusilla</i>				S&M-E	Usually occurs in relatively open stands in drier microhabitats where sheltered from precipitation, such as in crevices of bark, the dry side of leaning trunks, or the underside of limbs.		CB-S			NI	Not documented in Project vicinity.
<i>Cladidium bolanderi</i>			SEN	SEN	On a variety of rock types (sandstone, chert, granite, serpentine) on coastal bluffs and coastal grasslands. Presumably nitrophilous because of its occurrence where birds roost. Elevations from sea level to 1,000 feet.		CB-S			NI	Not documented in Project vicinity.
<i>Cladonia norvegica</i>				S&M-B ^{ef/}	Decaying wood and bark at the base of conifers in humid shady forests.		CB-D			NI	Not documented in Project vicinity.
<i>Collema curtisporum</i>			STR	STR	Riparian zones with high humidity and large <i>Populus</i> trees in areas of periodic flooding.		MD-D	RRS-D	Observed in MD (2017): UCSA near MP 117.02, ROW near MP 117.07, ROW near MP 117.42, ROW near MP 117.54, 1 site 90 feet north of TEWA 117.82-N; 70 feet west of MP 128.3; ROW near MP 129.03; in TEWA 140.28-W; 55 feet west near MP 140.55; 6 sites in ROW, west and east of ROW from MP 141.55-141.88; 6 sites in ROW/TEWA from MP 148.32-149; on edge of TEWA 150.32-W; 4 sites in ROW/TEWA from MP 150.95-151.3; in TEWA 152.86-W; RRS (2017): 3 sites 12, 14, and 90 feet north and south of MP 154.8- 154.81.	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
<i>Collema nigrescens</i>				S&M-F (WA and OR; except Klamath Physiographic Province)	Grows on bark of hardwood trees and shrubs, including Garry oak, canyon live oak, big-leaf maple, cottonwood, and vine maple.		RO-D MD-D			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning	
	Federal	State	BLM	Forest Service		County	BLM	Forest Service			Within Vicinity of Project Area c/
<i>Collema quadrifidum</i>			STR	STR	Typically occurs on open grassy hillsides and ridges where soils are thin and annual grasses and mosses dominate.		MD-D	RRS-D	Observed in MD (2017): in ROW near MP 124.64, 42 feet east of MP 124.79, in ROW near MP 125.26, 122 feet east of TEWA 126.26-N, 38 feet east of MP 126.93, ROW near MP 127.08, 2 sites in ROW/12 feet west near MP 127.44, in ROW near MP 128.25, 5 sites 25-110 feet north of ROW between MPs 129.13-129.31, edge of TEWA 131.34-W near MP 131.5, 2 sites along EAR 139.05 to be improved; RRS (2017): 1 site on edge of TEWA 154.71-W.	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
<i>Collema undulatum</i> var. <i>granulosum</i>			STR	STR	On periodically moistened calcareous rocks or on mosses over rocks, occasionally on soil. In Oregon it was found in full shade on a steep upper slope of exposed non-calcareous bedrock, with seeps providing lime to the rock surface.	Jackson	RO-S MD-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Dendrioscopaulon intricatum</i>				S&M-A (OR, except Coos, Curry, Douglas, Josephine and Jackson counties, and WA) / E (CA)	In oak habitat is most commonly found growing on the boles and larger branches of young oaks.		MD-D		Observed in MD; not S&M in Jackson County.	MIIH	Potential impacts to individuals or habitat; however, this species is not considered an S&M species in Jackson County.
<i>Dermatocarpon luridum</i>				S&M-E	Aquatic lichen which grows on rocks, small boulders, and bedrock, submerged or seasonally emergent, adjacent to or in clear mountain streams where it can be locally abundant. It is present on seepy terraces, and in streams and rivers with red alder, Douglas-fir, western hemlock and riparian vegetation ranging from young stands to old-growth, and in streams in alpine meadows.		CB-S	RRS-S UMP-D FW-S		NI	Not documented in Project vicinity.
<i>Fuscopannaria (Pannaria) saubinetii</i>				S&M-E	Base of large <i>Quercus</i> spp. and <i>Fagus</i> spp. in Mediterranean climates at low elevations.		CB-D		Observed in CB BLM.	MIIH #	Potential impacts to individuals or habitat. #
<i>Heterodermia japonica</i>			STR	STR	In the Pacific Northwest, currently known only from twigs of <i>Picea sitchensis</i> in old-growth, fog-drenched coastal headland forest.		CB-S			NI	Not documented in Project vicinity.
<i>Heterodermia sitchensis</i>			STR	STR S&M-E	Restricted to the immediate coast. The north-facing, foreshore exposure in Oregon seems to indicate a requirement for high humidity.		CB-S			NI	Not documented in Project vicinity.
<i>Hypogymnia duplicata</i>				S&M-C	Mid-elevation moist western hemlock stands, old-growth Douglas-fir, mature western hemlock/Douglas-fir forest, moist Pacific silver fir or noble fir forests, Sitka spruce, riparian forest and later-successional forest, along ridgetops in Oregon Coast Range, also on red alder in sedge-sphagnum bogs in Oregon Coast Range. Elevation 1,100-5,450 feet.		CB-S RO-S			NI	Not documented in Project vicinity.
<i>Hypogymnia pulverata</i>			STR	STR	The single known site in the Pacific Northwest is in coastal forest, where it was collected in litterfall from branches of <i>Picea sitchensis</i> near the top of a forested dune.		CB-S			NI	Not documented in Project vicinity.
<i>Hypogymnia subphysodes</i>			STR	STR	The single known site in the Pacific Northwest is in coastal sand dunes, where it was collected on branches of <i>Pinus contorta</i> in the <i>Pinus contorta/Arctostaphylos</i> plant association. Elsewhere in its range it occurs on dead wood, bark, twigs, and rocks.		CB-S			NI	Not documented in Project vicinity.
<i>Hypogymnia vittata</i>				S&M-E	Grow on bark, cork, plant surface, trunks, branches, twigs.					NI	Not documented in Project vicinity.
<i>Hypotrachyna revoluta</i>				S&M-E	On rocks, trunks of alders growing on streambanks and lakesides.	Coos	CB-D		Observed in CB BLM (2014) less than 100 feet from ROW near MP 21.88BR.	MIIH #	Potential indirect effects to individuals or habitat. #
<i>Lecanora caesiorubella</i> ssp. <i>merrillii</i>			STR	STR	On bark of trees and shrubs, and on decaying wood (including redwood fenceposts) in dry, open deciduous or coniferous woodland, chaparral, and salt marsh from sea level to about 1500 feet elevation.		CB-S	RRS-D		NI	Not documented in Project vicinity.
Treepelt lichen <i>Leioderma solediatum</i>			SEN	SEN	On shrubs (huckleberry and manzanita) and mossy conifer branches in humid coastal forests.	Douglas	CB-S			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Leptogium burnetiae</i> var. <i>hirsutum</i>			STR	STR S&M-E	Usually on hardwood trunks and branches but also on decaying logs and rocks. In mesic open forests.	Jackson	MD-S	UMP-S FW-S		NI	Not documented in Project vicinity.
<i>Leptogium cyanescens</i>			SEN	SEN S&M-A	Occurs in mixed conifer and Douglas-fir stands, and in maple and willow thickets in both riparian and upland habitats.	Douglas Jackson	CB-S	RRS-S		NI	Not documented in Project vicinity.
<i>Leptogium platynum</i>			STR	STR	On soil or rock, usually near seeps or areas wet most of the year.	Coos	CB-D RO-D		Observed in CB BLM: In ROW near MP 40.20	MIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
<i>Leptogium plicatile</i>			STR	STR	Moist, calcareous rocks or soil. In Oregon, it has been found on non-calcareous rocks with seeps providing lime to the rock surface, in a seasonally wet small meadow, low trees and brush providing 10% cover, at an elevation of about 650 feet.		MD-D	RRS-S		NI	Not documented in Project vicinity.
<i>Leptogium rivale</i>				S&M-E	Streams with no scouring and no or only minor siltation and unpolluted water; primarily found on rocks submerged in water.		CB-S MD-D			NI	Not documented in Project vicinity.
<i>Leptogium siskiyouensis</i>			STR		On shaded twigs of deciduous trees and shrubs in humid habitats.		CB-S			NI	Not documented in Project vicinity.
<i>Leptogium teretiusculum</i>				S&M-E	Found in hardwood stands in riparian areas, particularly in shaded areas where humidity is high; more abundant on hardwoods compared to conifers and prefers larger, older trees; see the Survey and Manage Report (appendix F.5 of this EIS).	Douglas Jackson	CB-S RO-D MD-D	UMP-S RRS-D	Observed in MD BLM and RRS; see the Survey and Manage Report (appendix F.5 of this EIS)	MIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
<i>Lobaria linita</i>			SEN	SEN S&M-A (WA and OR)	On trees, shrubs, mossy rocks or alpine sod. Montane to alpine.	Douglas Jackson	CB-S RO-D MD-D	UMP-D RRS-S		NI	Not documented in Project vicinity.
<i>Microcalicium arenarium</i>			SEN	SEN S&M-B	Forms small colonies on free-living green algae or leprose lichens growing in drier microhabitats such as bark, wood, root, and rock faces that are sheltered from precipitation. In the Pacific Northwest, probably restricted to old-growth forests because its host species often appear only in forests older than 100 years. Known elevations are below 2,000 feet.		CB-D			NI	Not documented in Project vicinity.
<i>Nephroma bellum</i>				S&M-E (OR: Klamath, Willamette Valley, E. Cascades; WA: W. Cascades outside GPNF, E. Cascades, Olympic Peninsula) F ^{el} (OR: W. Cascades, Coast; WA: W. Cascades in GPNF)	Strongly associated with riparian stands. They often have a gappy canopy, a large proportion of hardwood versus conifer trees, variable tree size, and perennial surface water.					NI	Not documented in Project vicinity.
<i>Nephroma isidiosum</i>				S&M-E	Grows on bryophytes, mosses, liverworts, bark, cork, plant surface trunks, branches, twigs, rock, stones, pebbles.					NI	Not documented in Project vicinity.
<i>Nephroma occultum</i>				S&M-B ^{el}	Found on branches of old-growth Douglas-fir, western hemlock, and Pacific silver fir; elevation 1,000-3,200 feet.		CB-S MD-S RO-D	RRS-D UMP-D		NI	Not documented in Project vicinity.
Niebla lichen <i>Niebla cephalota</i>			SEN	SEN S&M-A	Strictly a coastal species but may extend up to 15 miles inland where influenced by the coastal fog belt; occurs on exposed trees shrubs, and less often on rocks or bark; elevation <250 feet. Found on exposed Sitka's spruce, Hooker's willow, Monterey cypress, and shore pine in open forest, forest edges, and scrublands.	Coos	CB-D			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Pannaria rubiginella</i>			SEN	SEN	On bark and wood in cool, moist habitats along the Pacific coast. Inland habitat not well documented.		CB-D			NI	Not documented in Project vicinity.
<i>Pannaria rubiginosa</i>			SEN	SEN S&M-E	Low elevation coastal shrub thickets on wet deflation plains, mature Douglas-fir/western hemlock forest, and old growth conifer forest dominated by Douglas-fir, Sitka spruce, and western red cedar.	Coos Douglas	CB-D			NI	Not documented in Project vicinity.
<i>Peltigera pacifica</i>				S&M-E	Grows on soil, moss, rocks, logs, and tree bases, mainly in moist coniferous and hardwood forests with closed canopy stands.		CB-D RO-D MD-D	RRS-S UMP-D	Observed in RO (within ROW and <100 meters from ROW).	MIIH #	Potential removal of individuals within ROW; direct and indirect habitat effects. #
<i>Peltula euploca</i>			STR	STR	On noncalcareous rock in open and very dry to damp.	Jackson Klamath	RO-S MD-D LV-D	RRS-S FW-S	Observed in MD >100 feet from ROW near MP 117.	MIIH	Potential indirect impacts to individuals or habitat.
<i>Pilophorus nigricaulis</i>			SEN	SEN	Grows primarily on volcanic rock substrates (basalt and andesite). Habitats have been described as lava flows, cliffs, rock outcrops, talus slopes, and large boulders.		RO-S			NI	Not documented in Project vicinity.
<i>Platismatia lacunosa</i>				S&M-E (except OR Coast Range)	Uncommon on the boles and branches of hardwood and conifer bark in moist, cool upland sites as well as moist riparian forest in the Coast Range and Cascades.		CB-D		Observed in CB BLM (2014) in ROW at MP 18.99BR.	MIIH #	Potential removal of individuals within ROW; direct and indirect habitat effects. #
<i>Pseudocyphellaria perpetua</i> (<i>Pseudocyphellaria</i> sp. 1)				S&M-A	Oregon Coast on old growth conifer trees in western hemlock forests, sand late-seral Douglas-fir forests.	Coos	CB-D RO-S			NI	Not documented in Project vicinity.
<i>Pseudocyphellaria rainierensis</i>				S&M-A	Epiphyte primarily on conifer trees in cool, humid, old-growth to climax forests in the Western Hemlock or lower Pacific Silver Fir zones; elevation between 330-4,000 feet.		CB-D RO-S	UMP-D		NI	Not documented in Project vicinity.
<i>Ramalina intermedia</i>				STR	Open forest dominated by ponderosa pine; grow on a variety of rock and bark types.			RRS-S		NI	Not documented in Project vicinity.
<i>Ramalina pollinaria</i>			SEN	SEN	Bark and wood, usually in low elevation swamps.	Coos Jackson?	CB-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Schaereria dolodes</i>			STR	STR	On bark of conifers and decaying wood in mature, dry, open forests. Elevation ranges from about 1,500 feet at the northern edge of its range to 11,000 feet elevation at the southern end of its range.		CB-S MD-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
<i>Sclerophora amabilis</i>			STR		Old-growth forest.		RO-D		Observed in RO BLM (2017) in ROW at MP 78.18 and in USCA 78.05-W 30 feet from ROW near MP 78.34.	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
<i>Sclerophora peronella</i>			STR		Late successional, old-growth forest.		RO-D			NI	Not documented in Project vicinity.
<i>Sigridea californica</i>			STR	STR	On bark of trees and shrubs, and on decaying wood in dry, open deciduous or coniferous woodland and chaparral.		CB-S	RRS-S		NI	Not documented in Project vicinity.
<i>Stenocybe clavata</i>				S&M-E	On bark of old conifers in humid, sheltered forests at low elevations.	Coos	CB-D		Observed in CB BLM (2014) within ROW.	MIIH #	Potential removal of individuals within ROW; direct and indirect habitat effects. #
<i>Stereocaulon spathuliferum</i>			SEN	SEN	On rock.	Not within counties affected by Project.	RO-S			NI	Not documented in Project vicinity.
<i>Sticta weigelii</i>			STR		Grows on bark, cork, plant surface, trunks, branches, twigs.		CB-D			NI	Not documented in Project vicinity.
<i>Teloschistes flavicans</i>			SEN	SEN S&M-A	Forested headlands and dunes of the coastal fog belt, especially on capes or peninsulas, at sites less than 200 m (600 ft) elevation. Found on oak, shore pine, Sitka spruce, shrubs, moss, and soil.	Coos	CB-D			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<i>Texosporium sancti-jacobi</i>	SOC		SEN	SEN	Arid to semi-arid shrub-steppe, grassland or savannah communities up to 3,280 feet in elevation. It requires natural openings or gaps in arid vegetation that are not maintained by fire.		LV-S	FW-S		NI	Not documented in Project vicinity.
<i>Thelenella muscorum</i> var. <i>octospora</i>			STR	STR	In the Pacific Northwest, a component of biological soil crusts in semi-arid shrub-steppe and grassland below elevations of 4,000 feet.		LV-S	FW-S		NI	Not documented in Project vicinity.
<i>Thelomma mammosum</i>			STR	STR	On acidic rock near coast.	No Data	CB-S			NI	Not documented in Project vicinity.
<i>Tholurna dissimilis</i> (south of Columbia River)			SEN	SEN S&M-B	On krummholz subalpine fir and Engleman spruce on windswept ridges in the upper montane and subalpine zones up to timberline. Elevation from just above sea level to 6,700 feet., in old growth forests.					NI	Not documented in Project vicinity.
<i>Umbilicaria hirsuta</i>			STR	STR	The single known population in Oregon occurs on the vertical face of an igneous rock outcrop (noncalcareous) with an intermittent seep, in partial shade.		RO-S MD-D	UMP-S RRS-D FW-S		NI	Not documented in Project vicinity.
<i>Umbilicaria phaea</i> var. <i>coccinea</i>			STR	STR	Arid environments on exposed or partly shaded basalt and ultramafic rock, often on steep slopes, at elevations of near sea level to 4445 feet.			FW-S		NI	Not documented in Project vicinity.
<i>Umbilicaria rigida</i>			STR	STR	Grows on rock, siliceous, siliciferous, acidic soils.			FW-S		NI	Not documented in Project vicinity.
<i>Usnea hesperina</i>				S&M-E	Epiphyte on coniferous trees and hardwood shrubs in forested and shrubby habitats of the coastal fog belt. All known sites are within 5 km (3 mi) of the Pacific Ocean.		CB-S MD-S			NI	Not documented in Project vicinity.
<i>Usnea lambii</i>			STR	STR	On acidic rocks and boulders in open subalpine to alpine habitats.			UMP-D RRS-S FW-D		NI	Not documented in Project vicinity.
<i>Usnea longissima</i>				S&M-A (Curry, Josephine, Jackson counties OR; CA / F (other OR counties; WA)	Occurs in old-growth and late successional conifer stands, and in hardwood stands and lowland riparian woodland areas. It can also grow in clear-cut and other young stands where there is suitable substrate (i.e. conifers and hardwoods) for colonization.		CB-D MD-D RO-D	UMP-D	CB BLM within ROW and < 100 meters from ROW near MP 27.3 and 27.4.	MIH ^{ff}	Potential indirect effects to individuals or habitat. ^{ff}
<i>Usnea nidulans</i>			SEN	SEN	Occurs exclusively in hyper-maritime forests on the immediate coast and in the Coast Ranges. It grows on conifers and deciduous trees.		CB-S			NI	Not documented in Project vicinity.
<i>Veizdaea stipitata</i>			STR	STR	Humid habitats under cortex of host lichen or under the cuticle of moss leaves.	Douglas	RO-D MD-S	UMP-S		NI	Not documented in Project vicinity.
Vascular Plants											
Pink sand verbena <i>Abronia umbellata</i> var. <i>breviflora</i>	SOC	E	SEN	SEN	Beaches and foredunes of the Pacific Coast. In Oregon and north, restricted to beaches, and rarely occurs in foredune environments. Occurs on fine sand between the high-tide line and the long-term driftwood zone. Occurs in areas of sand movement. Most populations occur on broad beaches and/or near the mouths of creeks or rivers.	Coos Douglas	CB-D			NI	Not documented in Project vicinity.
California maiden-hair <i>Adiantum jordanii</i>			SEN	SEN	Rocky areas in moist woods.	Coos Douglas	CB-D RO-D MD-D	UMP-S RRS-D FW-S		NI	Not documented in Project vicinity.
Cusick's giant-hyssop <i>Agastache cusickii</i>			SEN		Dry, rocky sites and often on talus slopes.		LV-D			NI	Not documented in Project vicinity.
Henderson's bentgrass <i>Agrostis hendersonii</i>	SOC		STR		Vernal pools, Agate Desert.	Jackson	MD-S			NI	Not documented in Project vicinity.
Bolander onion <i>Allium bolanderi</i> var. <i>Bolanderi</i>			STR	STR	Gravelly areas in forest openings.	Jackson?	CB-D MD-D	RRS-D		NI	Not documented in Project vicinity.
Geyer's onion <i>Allium geyeri</i> var. <i>geyeri</i>			SEN	SEN	Moist, open slopes, meadows, or stream banks in mountains.		LV-D			NI	Not documented in Project vicinity.
Peninsular onion <i>Allium peninsulare</i>			SEN	SEN	Dry open or wooded slopes and flats to 3000 feet; valley grassland, foothill woodlands; March through June.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Dotted onion <i>Allium punctum</i>				STR	Restricted to a narrow range of habitat conditions. It occurs on open, relatively barren, xeric, gentle to very steep, sandy slopes, generally with a southerly aspect, but ranging from east to west. It is usually associated with relatively sparsely vegetated bitterbrush or bitterbrush/sagebrush communities.			FW-S		NI	Not documented in Project vicinity.
Sanborn's Onion <i>Allium sanbornii</i> var. <i>sanbornii</i>				STR	Heavy serpentine clay; 2,295-4,595 feet elevation.	Jackson	MD-S			NI	Not documented in Project vicinity.
Long-stemmed androsace <i>Androsace elongata</i> ssp. <i>acuta</i>				STR	Found on slopes between 0-4,000 feet within chaparral, foothill woodland, northern coastal scrub, and coastal sage scrub.	Jackson	MD-D			NI	Not documented in Project vicinity.
Bog anemone <i>Anemone oregana</i> var. <i>felix</i>				STR	STR			CB-S		NI	Not documented in Project vicinity.
Koehler's rockcress <i>Arabis koehleri</i> var. <i>koehleri</i>	SOC	C		SEN	Rocky cliff sites.	Douglas	RO-D			NI	Not documented in Project vicinity.
Rogue Canyon rockcress <i>Arabis modesta</i>				SEN	SEN	Jackson	MD-D	RRS-D	STF (2017) 2 sites 24 feet and 90 feet N/NW of TEWA 124.30-N.	MIIH	Potential indirect impacts to individuals and habitat.
Gasquet (hairy) manzanita <i>Arctostaphylos hispidula</i>				SEN	SEN	Douglas	CB-D RO-S MD-S	RRS-D		NI	Outside of known (or probable) range
Shasta arnica <i>Arnica viscosa</i>				SEN	SEN	Douglas Klamath	MD-S	UMP-D RRS-S FW-D		NI	Not documented in Project vicinity.
Coastal sagewort <i>Artemisia pycnocephala</i>				SEN	SEN	Coos	CB-D			NI	No suitable habitat in Project area.
Grass-fern <i>Asplenium septentrionale</i>				SEN	SEN	Dougals Jackson Klamath	RO-S MD-S	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
Applegate's milk-vetch <i>Astragalus applegatei</i>	E	E			Occurs in flat-lying, seasonally moist, strongly alkaline soils dominated by greasewood with sparse, native bunch grasses and patches of bare soil.	Klamath			Sites documented near ROW between MP 195.35 and 196.50 and within the Klamath Falls Memorial Drive 2/Bair pipe storage yard. Historical documentation between MP 191.20 – 214.30.	LAA	Impacts to potential habitat that has not been surveyed; impacts to individuals if present.
California milk-vetch <i>Astragalus californicus</i>				SEN	Dry open areas in shrubland.	Jackson	MD-D			NI	Not documented in Project vicinity.
Gambel milk-vetch <i>Astragalus gambelianus</i>				SEN	Open grassy areas, shrublands.	Jackson	MD-D			NI	Not documented in Project vicinity.
Geyer's milk-vetch <i>Astragalus geyeri</i> var. <i>geyeri</i>				SEN	Chenopod scrub, Great Basin scrub			LV-S		NI	Not documented in Project vicinity.
Lemmon's milk <i>Astragalus lemmonii</i>				SEN	SEN	Klamath		FW-D		NI	Not documented in Project vicinity.
Peck's milk-vetch <i>Astragalus peckii</i>	SOC	T		SEN	SEN	Klamath		FW-D		NI	Species has not been documented in Project vicinity and no suitable habitat is present in Project area.
Bastard kentrophyta <i>Astragalus tegetarioides</i>		C		SEN	SEN			LV-D		NI	Not documented in Project vicinity.

Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Marsh baccharis <i>Baccharis douglasii</i>			STR	STR	Moist salt marshes, coastal strands, stream edges, hillsides, railroads; 0–3,940 feet.		CB-S	RRS-S		NI	Not documented in Project vicinity.
Bensonia <i>Bensoniella oregana</i>	SOC	C	SEN	SEN	Wet meadows and moist streamside sites in pre-Cretaceous metasedimentary rock at elevations above 4,000 feet.	Coos Douglas	CB-D RO-D MD-D	RRS-D	One site located (2011) in RO BLM approximately 150' E of existing Signal Tree Road Quarry (MP 47.00)	NI	The single site observed during surveys will be avoided.
Crater Lake rock-cress <i>Boechera horizontalis</i> (<i>Arabis suffrutescens</i> var. <i>horizontalis</i>)	SOC	C		STR	Gravel or stony slopes, dry pumice; high elevation open sites.	Jackson Klamath		UMP-S RRS-S FW-S		NI	Not documented in Project vicinity.
Crenulate moonwort (Crenulate grape-fern) <i>Botrychium crenulatum</i>	SOC	C	SEN	SEN	Marshes, meadows above 4000 feet.	Douglas Jackson	LV-D	FW-S		NI	Not documented in Project vicinity.
Victorin's grape-fern <i>Botrychium minganense</i>				S&M-A (OR and CA)	Various: old-growth forests and riparian zone (not wet soils), subalpine and lush meadows, mossy talus slopes under bigleaf maple, road cuts, shrub lands, and alder thickets.		RO-S	UMP-S		NI	Not documented in Project vicinity.
Mountain grape-fern <i>Botrychium montanum</i>			SEN	SEN S&M-A	Occurs in dark coniferous forests, usually near swamps and streams from (3300-9800 feet) in elevation.					NI	Not documented in Project vicinity.
Pumice grape-fern <i>Botrychium pumicola</i>		T	SEN	SEN	Loose volcanic soil, frost pockets and lodgepole pine basins (4,985–8,105 feet).	Klamath	LV-S	UMP-S RRS-S FW-D		NI	Species has not been documented in Project vicinity and no suitable habitat is present in Project area.
Dwarf brodiaea <i>Brodiaea terrestris</i>			SEN	SEN	Grassland, open woodlands.	Coos	CB-D			NI	Not documented in Project vicinity.
Densetuft hairsedge <i>Bulbostylis capillaris</i>			STR		Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest.		MD-S			NI	Not documented in Project vicinity.
Brewer's reedgrass <i>Calamagrostis breweri</i>			SEN	SEN	Restricted to subalpine habitats in a narrow elevation range in Oregon. Most populations in Oregon occur between 5,000-6,000 feet. Usually found in moist meadows with limited vegetative competition.			UMP-S		NI	Not documented in Project vicinity.
The dalles water-starwort <i>Callitriche fassettii</i>			STR	STR	Forested wetlands.		CB-S	FW-S		NI	Not documented in Project vicinity.
Winged water-starwort <i>Callitriche marginata</i>			SEN		Ponds, vernal pools.	Jackson	MD-D			NI	Not documented in Project vicinity.
Cox's (Crinite) mariposa-lily <i>Calochortus coxii</i>	SOC	E	SEN		Typically grows in serpentine grasslands and forest margins most often on shady, north-facing, mesic sites near ridgelines.	Douglas	RO-D MD-S		RO BLM within construction right-of-way between MP 74.08-75.02	MIH	Impacts to individuals and habitat.
Greene's mariposa-lily <i>Calochortus greenei</i>	SOC	C	SEN	SEN	Grows on dry, bushy hillsides in southern Jackson County.	Jackson Klamath	MD-D	FW-S		NI	Not documented in Project vicinity.
One-leaved mariposa-lily <i>Calochortus monophyllus</i>			SEN		Wooded slopes, clay loam soils.	Jackson Klamath	MD-D			NI	Not documented in Project vicinity.
Broad-fruit mariposa-lily <i>Calochortus nitidus</i>	SOC		STR	STR	Open rocky areas or dry meadows.	Jackson	MD-S			NI	Not documented in Project vicinity.
Shasta star-tulip <i>Calochortus nudus</i>			STR	STR	Moist grassy areas, meadows, lake and bog margins, 3,940-8,200 feet.	Jackson	MD-S	RRS-S		NI	Not documented in Project vicinity.
Siskiyou mariposa lily <i>Calochortus persistens</i>	C	C	SEN		Open rocky areas.	Jackson	MD-D			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Umpqua mariposa lily <i>Calochortus umpquaensis</i>	SOC	E	SEN	SEN	Transitional zone between forest and grassland, on serpentine soils (885-2,690 feet).	Douglas Jackson	MD-S RO-D	UMP-D	UMP (2016) 7 plants along EAR 102.30 and 25 feet E of Rock Source/Disposal Hatchet Quarry MP 102.30; large populations have been documented 1.3 to 2.5 miles E of MP 99.55 on Umpqua National Forest.	MIIH	Potential impacts to individuals and habitat.
Howell's camassia <i>Camassia howellii</i>	SOC	C	SEN	SEN	Grassy wet meadows, swampy ground, and transitional areas between wet meadows and coniferous woodlands.	Jackson	RO-S MD-D	RRS-D		NI	No suitable habitat in Project area.
Slender-flowered evening-primrose <i>Camissonia graciliflora</i> (Tetrapteron graciliflorum)			SEN	SEN	Open rocky grassy and shrublands, usually clay soils.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
Washoe suncup <i>Camissonia pusilla</i>			SEN	SEN	Dry, open to branchy slopes, flats, and roadsides on sandy soil with <i>Artemisia</i> to pinyon-juniper			FW-S		NI	Not documented in Project vicinity.
Awne sedge <i>Carex atherodes</i>			STR	STR	Wetlands, shallow water.	Klamath	LV-D			NI	Not documented in Project vicinity.
Short-stemmed sedge <i>Carex brevicaulis</i>			SEN	SEN	Rocky or sandy soils.	Coos Douglas	CB-D RO-S			NI	Not documented in Project vicinity.
Capitate sedge <i>Carex capitata</i>			SEN	SEN	Wet places.	Jackson Klamath	MD-D LV-S	RRS-D FW-D		NI	Not documented in Project vicinity.
Bristly sedge <i>Carex comosa</i>			SEN	SEN	Wet places.	Klamath	RO-S MD-D	RRS-S FW-S	Observed on private land 66 feet S of TEWA 184.30.	MIIH	Potential indirect impacts to individuals and habitat.
Cordilleran sedge <i>Carex cordillerana</i>			SEN	SEN	Naturally disturbed, rocky slopes with organic layer and leaf litter in mesic mixed forests, or disturbed, open, grassy slopes; 1,640-7,900 feet.			FW-D		NI	Not documented in Project vicinity.
Crawford's sedge <i>Carex crawfordii</i>			STR	STR	Moist or wet places.	Jackson	CB-S MD-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
Dry-spike sedge <i>Carex davyi</i>				STR	Moist meadows, rocky slopes; 4,920-10,500 feet; subalpine coniferous forest, upper montane coniferous forest.			FW-S		NI	Not documented in Project vicinity.
Lesser panicled sedge <i>Carex diandra</i>			SEN	SEN	Meadows.		LV-D	UMP-S RRS-S FW-D		NI	Not documented in Project vicinity.
Needleleaf sedge <i>Carex duriuscula</i>			STR	STR	Dry prairies, sagebrush grasslands, openings in dry forests.			FW-S		NI	Not documented in Project vicinity.
A sedge <i>Carex klamathensis</i>			SEN	SEN	Chaparral, cismontane woodland, meadows, and seeps.		MD-D	RRS-D		NI	Not documented in Project vicinity.
Slender sedge <i>Carex lasiocarpa</i> var. <i>americana</i>			SEN	SEN	Bogs, shallow water.	Klamath	LV-D	UMP-S RRS-S FW-D		NI	Not documented in Project vicinity.
Pale sedge <i>Carex livida</i>			SEN	SEN	Moist to wet, shade-free habitats such as bogs, fens, swamps, stream banks and damp forests.		MD-D			NI	Not documented in Project vicinity.
Bighead sedge <i>Carex macrocephala</i>			SEN	SEN	Sandy beaches, sand dunes.	Coos Douglas	CB-S			NI	Not documented in Project vicinity.
Spikenard sedge <i>Carex nardina</i>			SEN	SEN	Exposed arctic and alpine tundra, usually calcareous cliffs, rocky slopes, ridges, and summits; 150-10,800 feet.	Douglas		UMP-D		NI	Not documented in Project vicinity.
Sierra nerved sedge <i>Carex nervina</i>			SEN	SEN	Moist to wet places.	Jackson	MD-S	RRS-D		NI	Not documented in Project vicinity.
Russet sedge <i>Carex saxatilis</i>				SEN	Fens, bogs, wet tundra, roadside ditches, shores of lakes, ponds, and slow moving streams, often in shallow water, 0-12,150 feet.			FW-S		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Dark alpine sedge <i>Carex subnigricans</i>			SEN	SEN	Moist rocky slopes, alpine meadows; above 8,200 feet.		LV-S			NI	Not documented in Project vicinity.
Native sedge <i>Carex vernacula</i>			SEN	SEN	Moist alpine tundra, moist forest openings just below treeline.		LV-S	UMP-S FW-D		NI	Not documented in Project vicinity.
Green-tinged paintbrush <i>Castilleja chlorotica</i>	SOC		SEN	SEN	Grows on dry gravelly or sandy slopes; Elevation 6000 - 8000 feet; late June through mid-August. Found in shrub openings on slopes and ridges.	Klamath	LV-S	FW-D		NI	No suitable habitat in Project area.
Mendocino coast indian paintbrush <i>Castilleja mendocinensis</i>	SOC		STR		Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal prairie, coastal scrub.		CB-S			NI	Not documented in Project vicinity.
Split-hair paintbrush <i>Castilleja schizotricha</i>				SEN	Decomposed granite or marble at high elevations.	Jackson		RRS-D		NI	No suitable habitat in Project area.
Shasta pincushion <i>Chaenactis suffrutescens</i>				STR	Grows in coniferous forests and other habitat in the Klamath Mountains and the southernmost Cascade Range mountains, sometimes on serpentine soils.			RRS-D		NI	Not documented in Project vicinity.
Desert chaenactis <i>Chaenactis xantiana</i>			SEN	SEN	Open, deep, loose sandy (rarely gravelly) soils, arid and semiarid shrublands, chaparral.		LV-D			NI	Not documented in Project vicinity.
Coville's lip-fern <i>Cheilanthes covillei</i>			SEN	SEN	Rock outcrops, cliffs.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
Fee's lip-fern <i>Cheilanthes feei</i>			SEN	SEN	Calcareous cliffs and ledges, usually on limestone or sandstone; 325-12,470 feet.		LV-S	FW-S		NI	Not documented in Project vicinity.
Coastal lip-fern <i>Cheilanthes intertexta</i>			SEN	SEN	Rock outcrops, cliffs.	Douglas Jackson	MD-D	RRS-S FW-S	Observed in MD BLM (2015) 65 feet W of MP 148.9; >100 feet of MP 149.9 (2000).	MIH	Potential impacts to individuals and habitat.
Narrow-leaved amole <i>Chlorogalum angustifolium</i>			SEN	SEN	Clay soils in dry grassland.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
Soap lily <i>Chlorogalum pomeridianum</i> ssp. <i>novum</i>				MW	Coastal shrub, chaparral, oak woodlands, low elevation conifer and mixed-evergreen forests.		MD-D		Observed in MD BLM (2007) in ROW near MP 150.7 and AGF 150.7.	MIH	Potential impacts to individuals and habitat.
Oregon timwort <i>Cicendia quadrangularis</i>			SEN	SEN	Openings.	Coos Douglas	CB-D RO-D	RRS-D		NI	Not documented in Project vicinity.
Bulb-bearing water-hemlock <i>Cicuta bulbifera</i>			STR	STR	Wetlands and lake and stream margins.	Klamath	LV-S	FW-S		NI	Not documented in Project vicinity.
Tall bugbane <i>Cimicifuga elata</i> var. <i>elata</i>		C			Mature to old-growth forests; generally with distinct canopy layers and relatively sparse understory.	Douglas				NI	Not documented in Project vicinity.
Andrew's bead-lily <i>Clintonia andrewsiana</i>				STR	Moist, coastal redwood forests; 0-1,310 feet.			RRS-S		NI	Not documented in Project vicinity.
Scurvygrass <i>Cochlearia groenlandica</i>			STR		Found along moist sandy shorelines, mudflats, and tidal marshes, at low elevations.		CB-S			NI	Not documented in Project vicinity.
Mt. Mazama collomia <i>Collomia mazama</i>	SOC		SEN	SEN	Dry woods at high elevations; July and August; True fir/lodgepole pine forest, meadows, and meadow edges; On Fremont-Winema NF, found in Lost Creek, Horse Creek, Rock Creek and Cherry Creek drainages, Klamath RD.	Douglas Jackson Klamath		UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
Spleenwort-leaved goldthread <i>Coptis asplenifolia</i>				S&M-A	Occurs in moist forests and bogs, at low to middle elevations, in areas with a strong maritime influence.		RO			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Threeleaf goldthread <i>Coptis trifolia</i>			SEN	SEN S&M-A	Associated with small wetland areas located within mature coniferous forests in the Western Hemlock Zone and Silver Fir Zone at an elevation of 3,280-3,800 feet above sea level. Soils are poorly drained histosols.					NI	Not documented in Project vicinity.
Coldwater corydalis <i>Corydalis aquae-gelidae</i>		C	SEN	SEN S&M-A	Found in close proximity to seeps, springs, or streams with relatively cold water, a substrate of gravelly-sand, upper level canopy closure of 70% to 90%, and little herbaceous competition. Located in the Western Hemlock and Pacific Silver Fir Zones. Elevation range between 1,200-4,260 feet.		RO	RRS-D		NI	Not documented in Project vicinity.
Pt. Reyes bird's-beak <i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	SOC	E			Inhabits salt marshes along the coast, sometimes growing just above tidewater in wet areas.	Coos	CB-D		Documented on the shorelines of: Jordan Cove (1992), 260 feet S of TEWA 0.10 (1999); Haynes Inlet (1999) 815 feet N of Jordan Cove MS; also occurs along the shoreline between APCO Sites 1 and 2 and along shoreline south of the South Dunes site. Pony Slough (1999) 670 feet W/SW of MP 1.09; (2017) on edge of Coos Bay inlet in 475 feet NW of ROW near MP 0.9 and 700 feet W/NW of TEWA 1.09-W.	MIIH	Construction of the Project has the potential to impact individual plants found within and near the proposed Project (including both the LNG Project area and the pipeline). Plants adjacent to the pipeline construction areas would be protected through the appropriate installation of safety and silt fence.
Soleri's pygmy-weed <i>Crassula solierii</i>			STR	STR	Vernal pools, shores of lakes and streams; 0-26,890 feet. NOTE: Spelled <i>C. solieri</i> in numerous references.			FW-S		NI	Not documented in Project vicinity.
Seaside cryptantha <i>Cryptantha leiocarpa</i>			SEN		Coastal strand, northern coastal scrub.		CB-D			NI	Not documented in Project vicinity.
Milo baker's cryptantha <i>Cryptantha milobakeri</i>			SEN	SEN	Rocky or gravelly soils in conifer openings, chaparral or oak woodlands.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
Pine woods cryptantha <i>Cryptantha simulans</i>				SEN	Gravelly or rocky habitats.		LV-D	RRS-D FW-D	RRS (2017): 50 plants 96 feet NW of MP 155.8; FW (2017): 5 plants on edge of Clover Creek Rd and 10 feet from ROW near MP 175.3; LV BLM: 100 plants in ROW near MP 176.96; 1 plant on edge of Clover Creek Road and ROW near MP 176.98.	MIIH	Potential impacts to individuals and habitat.
Snowline spring-parsley <i>Cymopterus nivalis</i>			SEN	SEN	Dry drainages, coarse soils in shrub-steppe.		LV-D			NI	Not documented in Project vicinity.
Short-pointed cyperus <i>Cyperus acuminatus</i>			SEN	SEN	Wet, low places in valley and lowlands, edges of temporary pools, ponds, streams, ditches.	Jackson	MD-S	RRS-S		NI	Not documented in Project vicinity.
Clustered lady's slipper <i>Cypripedium fasciculatum</i>	SOC	C	SEN	SEN S&M-C	Perennial herbaceous plant, found in a variety of habitats, although primarily in older Douglas-fir forests on old stream terraces. The largest populations in southwestern Oregon tend to occur on moist stream terraces, but others inhabit dry rocky up-slope sites. Elevation ranges from 1,000-6,400 feet.	Douglas Jackson	RO-S MD-D	UMP-D RRS-D	Observations in 1994 and 2003 documented species on UMP at MP 104.1 and on MD BLM west of MP 128; see the Survey and Manage Report (appendix F.5 of this EIS).	MIIH	Potential impacts to individuals or habitat; however, remaining sites would provide a reasonable assurance of species persistence.
Mountain lady's slipper <i>Cypripedium montanum</i>				S&M-C	Inhabits a wide variety of substrates in wooded communities with 60-80 percent canopy closure. Generally found growing in mixed conifers and mixed evergreen/oak woodland plant communities. Elevation range: 1,500-6,500 feet.		MD-D RO-D LV-D	UMP RRS-D FW	Observed in MD BLM.	MIIH ^{ff}	Potential removal of individuals within ROW; direct and indirect habitat effects. ^{ff}
Red larkspur <i>Delphinium nudicaule</i>			SEN	SEN	Rocky openings, often in talus on moist slopes.	Douglas Jackson	RO-S MD-D	RRS-D		NI	Not documented in Project vicinity.
Few-flowered bleedingheart <i>Dicentra pauciflora</i>			SEN	SEN	Openings in coniferous forests, in volcanic and granitic soils; 3,90 -8,900 feet.		MD-D	RRS-D		NI	Not documented in Project vicinity.
Howell's whitlow-grass <i>Draba howellii</i>		C	SEN	SEN	Rocky summits, cracks in granite walls, rock crevices; 6,230-8,900 feet.		MD-D	RRS-D		NI	Not documented in Project vicinity.
Short seeded waterwort <i>Elatine brachysperma</i>			SEN	SEN	Occurs almost always under natural conditions in wetlands.		LV-D	UMP-S FW-S		NI	Not documented in Project vicinity.
Bolander's spikerush <i>Eleocharis bolanderi</i>			SEN	SEN	Fresh, often summer-dry meadows, springs, seeps, stream margins; 3,280-11,150 feet.	Klamath	LV-D	FW-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Oregon willow herb <i>Epilobium oreganum</i>	SOC	C	SEN	SEN	Grows in bogs at low elevations. Known only from Josephine County.	Douglas	RO-S MD-D	RRS-D		NI	No suitable habitat in Project area.
Siskiyou willow herb <i>Epilobium siskiyouense</i>		C		SEN	Scree and talus on Serpentine ridges.	Jackson		RRS-D		NI	No suitable habitat in Project area.
Golden fleece <i>Ericameria arborescens</i>			SEN	SEN	Dry foothill slopes, in chaparral; 300-6,560 feet.		CB-D MD-S	RRS-D		NI	Not documented in Project vicinity.
Siskiyou daisy <i>Erigeron cervinus</i>			SEN	SEN	Rocky streambanks; dry, stony soil of grasslands, sagebrush steppe, woodlands, fellfields, open forest.	Jackson	CB-S MD-D	RRS-D		NI	Not documented in Project vicinity.
Klamath daisy <i>Erigeron klamathensis</i>				STR	Inhabits both seasonally flooded bottomland prairies and well drained upland prairies at elevations ranging from 240-950 feet.			RRS-D		NI	Not documented in Project vicinity.
Cliff (rock) daisy <i>Erigeron petrophilus</i>				SEN	Rocky foothills to montane forest.	Jackson		RRS-D		NI	Not documented in Project vicinity.
Stansell's daisy <i>Erigeron stanselliae</i>			STR	STR	Mixed scrubland and woodland, in serpentine grass.		CB-S	RRS-D		NI	Not documented in Project vicinity.
Crosby's buckwheat <i>Eriogonum crosbyae</i> var. <i>crosbyae</i>			SEN		Found in sagebrush scrub, and pinyon-juniper woodlands.		LV-D			NI	Not documented in Project vicinity.
Cusick's buckwheat <i>Eriogonum cusickii</i>	SOC	C	SEN	SEN	Sandy, volcanic flats, mixed grassland and sagebrush communities, montane conifer woodlands; of conservation concern; 4,265-4,920 feet.		LV-D			NI	Not documented in Project vicinity.
Lobb's buckwheat <i>Eriogonum lobbii</i>			SEN	SEN	Gravelly to rocky or talus slopes, mixed grassland, buckbrush, manzanita, and sagebrush communities, montane, subalpine, or alpine conifer woodlands.		MD-S	RRS-D		NI	Not documented in Project vicinity.
Del norte buckwheat <i>Eriogonum nudum</i> var. <i>paralinum</i>			STR		Sandy to gravelly flats, mesas, or coastal bluffs, mixed grassland and manzanita communities, oak and scattered conifer woodlands.		CB-S			NI	Not documented in Project vicinity.
Prostrate buckwheat <i>Eriogonum prociduum</i>	SOC	C	SEN	SEN	Areas of barren rocky or gravelly volcanic soils within juniper or sagebrush habitat.	Klamath	LV-D	FW-D		NI	Not documented in Project vicinity.
Green buckwheat <i>Eriogonum umbellatum</i> var. <i>glaberrimum</i>			SEN	SEN	Sandy to gravelly slopes, sagebrush communities, aspen and montane conifer woodlands; 5,250-7,550 feet.		LV-D	FW-D		NI	Not documented in Project vicinity.
Acker Rock wild buckwheat <i>Eriogonum villosissimum</i>				SEN	Grows exclusively on quartz rock at high elevations.			UMP-D		NI	Not documented in Project vicinity.
Russet cotton-grass <i>Eriophorum chamissonis</i>			SEN	SEN	Bogs along the coast.	Coos	CB-D			NI	No suitable habitat in Project area.
Large-leaved filaree <i>Erodium macrophyllum</i>	SOC		SEN		Open sites grassland and shrubland.	Jackson	MD-D			NI	Not documented in Project vicinity.
Pacific wallflower <i>Erysimum concinnum</i>			STR		Coastal bluff scrub, coastal dunes, coastal prairie.		CB-S			NII	Not documented in Project vicinity.
Howell's adder's tongue <i>Erythronium howellii</i>			SEN	SEN	Found in open woods primarily in the upper Illinois River basin, mostly in serpentine soil; April and May.	Jackson	MD-D	RRS-D		NI	Outside of known (or probable) range
Gold poppy <i>Eschscholzia caespitosa</i>			SEN	SEN	Grows on dry, brushy slopes and flat areas, mostly along roadsides; known in southern Douglas County; March through early June.	Douglas	RO-S MD-D	RRS-S		NI	No suitable habitat in Project area.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Wayside aster <i>Eucephalis vialis</i> (<i>Aster vialis</i>)	SOC	T	SEN	SEN S&M-A	Areas of natural and man-made disturbance, edges and openings in woodlands and forests, both in second and old-growth, and shaded roadsides.	Douglas Jackson	CB-S RO-D MD-D	UMP-S	No plants documented within 500 feet of the Project; 8 plants documented in 2007 0.5 mile S of MP 79.4 (resurvey in 2010 did not relocate this site). <u>Private:</u> 30 plants 0.8 mile NE of MP 79.86 <u>RO BLM:</u> 1 plant 0.3 mile W of MP 80.31; 1.0 mi SW of MP 80.65	NI	Surveys conducted within the vicinity of the Pipeline project have not documented this species within 100 feet of proposed disturbance, including proposed access roads.
Umpqua swertia <i>Frasera umpquaensis</i>		C	SEN	SEN	Elevations 4,500 – 6,500 feet in conifer forests, in damp, shaded or sometimes open environments.	Douglas Jackson	RO-S MD-D	UMP-D RRS-D		NI	Not documented in Project vicinity.
Butte county fritillaria <i>Fritillaria eastwoodiae</i>	SOC		STR		Dry benches and slopes, sometimes on serpentine, in chaparral or beneath conifers; 1,640-4,920 feet.	Jackson	MD-S			NI	Not documented in Project vicinity.
Gentner's fritillary <i>Fritillaria gentneri</i>	E	E			Often occupies grassland and chaparral habitats within, or on the edges of, dry open mixed woodland at elevations below 5,065 feet.	Jackson	MD-D	RRS-D	Five sites documented in vicinity of Project area; 3 of which occur within botanical analysis area: <u>MD BLM</u> - 2 plants 0.4 mi NE and 1.0 mi SW of MP 128.0; 3 plants adjacent to TEWA 128.01-W near MP 128.1; 2 plants 77 feet NE of MP 129.1 (near TEWA 128.96-N) <u>Private:</u> 2 plants located 1.2 mi SE of MP 134.43; one plant, and other <i>Fritillaria</i> leaves, in TEWA 142.07-N (project modified to avoid).	LAA	Impacts to potential habitat that has not been surveyed; impacts to individuals if present.
Purdy's fritillary <i>Fritillaria purdyi</i>			STR		Dry hillsides, open woods and thickets; 490-4,900 feet.		MD-S			NI	Not documented in Project vicinity.
Boreal bedstraw <i>Galium kamtschaticum</i> , (West Cascades)				S&M-A	Inhabits moist, cold, coniferous forests, and mossy places throughout its range. Generally found underneath dense shrub cover.		RO			NI	Not documented in Project vicinity.
Warner mt. bedstraw <i>Galium serpticum</i> ssp. <i>warnerense</i>			SEN	SEN	Meadows in subalpine forest.		LV-D	FW-D		NI	Not documented in Project vicinity.
Newberry's gentian <i>Gentiana newberryi</i> var. <i>newberryi</i>			SEN	SEN	High alpine meadows of the Cascade Mountains; wet meadows and meadow edges, generally 5,000 feet and above. On Fremont-Winema NF found on Klamath RD.	Klamath		UMP-S RRS-D FW-D		NI	Not documented in Project vicinity.
Elegant gentian <i>Gentiana plurisetosa</i>			SEN	SEN	Meadows in lodgepole forest, red fir forest, or yellow pine forest.		MD-S	RRS-D		NI	Not documented in Project vicinity.
Waldo gentian <i>Gentiana setigera</i>		C	SEN	SEN	Meadows in yellow pine forest, red fir forest, wetland-riparian. Almost always under natural conditions in wetlands.		CB-D MD-D	RRS-D		NI	Not documented in Project vicinity.
Seaside gilia <i>Gilia millefoliata</i>			SEN	SEN	Stabiilized coastal dunes.	Coos Douglas	CB-D			NI	No suitable habitat in Project area.
Boggs lake hedge-hyssop <i>Gratiola heterosepala</i>			SEN	SEN	Restricted to clay soils in or near shallow water such as at the margins of lakes and vernal pools.		LV-D	FW-S		NI	Not documented in Project vicinity.
Beautiful stickseed <i>Hackelia bella</i>			SEN	SEN	Forest openings, roadsides.	Jackson Klamath	MD-D	RRS-D		NI	Not documented in Project vicinity.
Purple-flowered rush-lily <i>Hastingsia bracteosa</i> var. <i>atropurpurea</i>			SEN	SEN	Wetland area soils, seeps and rills; seepage areas, <i>Darlingtonia</i> bogs, hillside marshes, fens, or small streams.		MD-D	RRS-D		NI	Not documented in Project vicinity.
Large-flowered rush-lily <i>Hastingsia bracteosa</i> var. <i>bracteosa</i>			SEN	SEN	It is found in lowland forests up to an elevation of 1,640 feet.		MD-D	RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Salt heliotrope <i>Heliotropium curassavicum</i>			SEN	SEN	Moist to dry saline soils.	Klamath	LV-D	FW-D		NI	No suitable habitat in Project area.
Short-leaved evax <i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>			STR		Sandy bluffs and flats.	Coos	CB-D MD-S			NI	Not documented in Project vicinity.
Baker's cypress <i>Hesperocyparis bakeri</i> (<i>Cupressus bakeri</i>)			SEN	SEN	Open, fire-maintained, scrubby forest similar to the knobcone pine (<i>Pinus attenuata</i>) forest.		MD-D	RRS-D		NI	Not documented in Project vicinity.
Shaggy hawkweed <i>Hieracium horridum</i>			SEN	SEN	Rocky places.	Jackson Klamath	MD-D	RRS-S		NI	Not documented in Project vicinity.
Shaggy horkelia <i>Horkelia congesta</i> ssp. <i>congesta</i>	SOC	C	SEN		Open dry ground and rocky flats.	Douglas Jackson	RO-D			NI	Not documented in vicinity of project.
Henderson's horkelia <i>Horkelia hendersonii</i>				SEN	Endemic to summits of a few granite peaks in southern Jackson County.	Jackson		RRS-D		NI	No suitable habitat in Project area.
Silky horkelia <i>Horkelia sericata</i>			STR	STR	Found on hillsides and alluvial flats, open shrublands, and Jeffery pine savannas in rocky serpentine soils.		CB-D	RRS-D		NI	Not documented in Project vicinity.
Three-toothed horkelia <i>Horkelia tridentata</i> ssp. <i>tridentata</i>			SEN	SEN	Granitic soils.	Jackson	RO-S MD-D	RRS-D		NI	Not documented in Project vicinity.
Whorled marsh-pennywort <i>Hydrocotyle verticillata</i>			SEN	SEN	Swampy ground, lake margins.	Coos Douglas	CB-S			NI	Not documented in Project vicinity.
Cooper's goldflower <i>Hymenoxys cooperi</i> var. <i>canescens</i>			STR		Roadsides, open areas, meadows, on slopes, along drainages and streams.					NI	Not documented in Project vicinity.
California globe mallow <i>Iliamna latibracteata</i>			SEN	SEN	Grows in coastal ranges in Coos and Douglas counties; also known from Curry, Jackson, Josephine, and Linn counties.	Coos Douglas Jackson	CB-S RO-D MD-D	UMP-D RRS-D	RO BLM (2017) in ROW near MP 99.9 (Stouts Creek Fire area); UMP (2017) in ROW near MP 106.23; UMP (2017) in ROW near MP 106.74.	MIIH	Potential removal of individuals within ROW; direct and indirect habitat effects.
Shelly's ivesia <i>Ivesia rhypara</i> var. <i>shellyi</i>	SOC		SEN		Found on either light colored ash-tuff or on outcrops of volcanic ash deposited with riverbed gravels. Habitat is very dry and relatively barren with no canopy cover.		LV-D			NI	Not documented in vicinity of project.
Shockley's ivesia <i>Ivesia shockleyi</i>			SEN	SEN	Subalpine forest, bristle-cone pine forest, alpine fell-fields.		LV-S	FW-D		NI	Not documented in Project vicinity.
Kellogg's rush <i>Juncus kelloggii</i>			STR	STR	Swampy or sandy ground.	Klamath	MD-S			NI	Not documented in Project vicinity.
Tiehm's rush <i>Juncus tiehmii</i>			SEN	SEN	Bare granitic sands of seeps, streambanks, meadows to 10,000 feet.			FW-S		NI	Not documented in Project vicinity.
Fragrant kalmiopsis <i>Kalmiopsis fragrans</i>	SOC	C	SEN	SEN	Cliffs and rock outcrops; known only from North Umpqua River.	Douglas	RO-S	UMP-D		NI	Not documented in Project vicinity.
Bush beardtongue <i>Keckiella lemmonii</i>			SEN	SEN	Rocky slopes, chaparral.	Jackson	MD-S	RRS-D		NI	Not documented in Project vicinity.
Large-flowered goldfields <i>Lasthenia ornduffii</i>			STR		Coastal bluffs, 0-1,640 feet.		CB-S			NI	Not documented in Project vicinity.
Thin -leaved peavine <i>Lathyrus holochlorus</i>	SOC		SEN	SEN	Thickets and open woods, low elevations, fence rows.	Douglas	RO-S			NI	Not documented in Project vicinity.
Nevada peppergrass <i>Lepidium montanum</i> var. <i>nevadense</i>			STR		Sand dunes or deep sand.		LV-S			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Columbia lewisia <i>Lewisia columbiana</i> var. <i>columbiana</i>			SEN	SEN	Reported on three mountains in the southeastern portion of Douglas County.	Douglas		UMP-D		NI	Not documented in Project vicinity.
Lee's lewisia <i>Lewisia leana</i>			SEN	SEN	Grows on high elevation serpentine ridgest.	Douglas Jackson	RO-S MD-D	UMP-S RRS-D		NI	Not documented in Project vicinity.
Kellogg's lily <i>Lilium kelloggii</i>	SOC		STR	STR	Grows on sandstone/sedimentary type of soil in dry wooded areas.	Klamath	CB-S MD-S	RRS-S		NI	Not documented in Project vicinity.
Western lily <i>Lilium occidentale</i>	E	E			Poorly drained, organic soils on the edges of coastal bogs (0-325 feet) that are within 4 miles of the Pacific Coast.	Coos	CB-D			NLAA	Species has not been documented where surveys have been conducted. Unsurveyed habitat is low quality habitat. If plants are identified within the Project area, conservation measures developed to avoid or minimize potential impacts to identified plants would be applied.
Bellinger's meadowfoam <i>Limnanthes floccosa</i> ssp. <i>bellingiana</i>	SOC	C	SEN	SEN	Seasonally wet depressions above 2500 feet; seasonally wet meadows in Klamath County.	Jackson Klamath	MD-D	RRS-D	RRS in ROW near MP 154.1, and from 154.71 to MP 154.82; MD BLM greater than 100 feet near MPs 120.28, 128.8, and 129; MD BLM (2017) over 600 plants in/near TEWA 128.79-N.	MIIH	Impacts to individuals and habitat; however, remaining sites would provide a reasonable assurance of species persistence.
Dwarf wooly meadowfoam <i>Limnanthes floccosa</i> ssp. <i>pumila</i> (<i>L. pumila</i> ssp. <i>pumila</i>)	SOC	T	SEN		Small depressions in thin clay soil overlying old basalt at the edges of deep vernal pools which dry by mid-summer, generally in full sun. However, the taxon may also be found near the edges of wet trails, roads, and small streams. The soils it inhabits are volcanic in origin.	Jackson	MD-D			NI	Not documented in Project vicinity.
Slender meadow-foam <i>Limnanthes gracilis</i> ssp. <i>gracilis</i> (<i>L. alba</i> ssp. <i>gracilis</i>)		C	SEN	SEN	Found in Douglas, Jackson, and Josephine counties in very wet areas (early spring) and often in serpentine soil; March through May. Vernal pools.	Douglas Jackson	RO-D MD-D	RRS-S		NI	Not documented in Project vicinity.
Large-flowered meadowfoam <i>Limnanthes pumila</i> ssp. <i>grandiflora</i> (<i>L. floccosa</i> ssp. <i>grandiflora</i>)	E/CH	E			Periphery of vernal pools at 1,230-1,310 feet, near the wetter, inner edges.	Jackson	MD-S		Documented 0.3 mile E of Burrill Lumber pipe storage yard (2007). Additional documentation within federally-designated critical habitat W of Burrill Lumber pipe storage yard and over 500 feet from other proposed pipe yards.	NLAA	Applicant would avoid using portions of proposed pipe storage yards with high-quality vernal pool habitat and/or identified plants. Effects to suitable habitat by the Pipeline are likely to be insignificant. Construction of the Pipeline is not expected to adversely modify designated critical habitat subunit RV6C.
Western marsh-rosemary <i>Limonium californicum</i>			SEN	SEN	Coastal strands, salt marshes.	Coos	CB-D			NI	No suitable habitat in Project area.
Aristulate lipocarpha <i>Lipocarpha aristulata</i>			SEN	SEN	Wet soil at an elevation of 325 to 1,315 feet. In Washington, has been found along shorelines and islands below high water on silty substrates.	Klamath	LV-S	FW-S		NI	Not documented in Project vicinity.
Cook's lomatium <i>Lomatium cookii</i>	E/CH	E			Margins of vernal pools in the Agate Desert, usually with native forbs and introduced annual grasses.	Jackson	MD-D	RRS-S	No documentation within 0.1 mi (500 feet) of Pacific Connector Pipeline Project; however, it has been documented 0.5 mile S of Avenue F & 11 th Street and WC Short pipe storage yards and over 1.0 mile S of Burrill Lumber and E of Rouge Aggregates pipe storage yards.	NLAA	Species not documented during surveys of suitable habitat. Unsurveyed habitat is low quality vernal pool habitat located over 0.5 mile from known sites with no apparent hydrologic connectivity. The Pipeline is over 0.5 miles from the nearest critical habitat subunit RV6A.
Englemann's desert-parsley <i>Lomatium engelmannii</i>			SEN	SEN	Chaparral, red fir forest, yellow pine forest.		MD-S	RRS-D		NI	No suitable habitat in Project area.
Packard's lomatium <i>Lomatium packardiae</i>			STR	STR	Found within sagebrush communities, on dry, open, rocky clay soils derived from rhyolite or volcanic ash.		LV-S			NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Stipuled trefoil <i>Lotus stipularis</i>			SEN	SEN	Open forests, chaparral, disturbed sites.	Jackson	RO-S MD-D	RRS-D		NI	Not documented in Project vicinity.
Mt. Ashland lupine <i>Lupinus aridus</i> ssp. <i>ashlandensis</i> (<i>L. lepidus</i> var. <i>ashlandensis</i>)	SOC	C		SEN	Sandy or gravelly soils at low to alpine elevations.	Jackson		RRS-D		NI	No suitable habitat in Project area.
Nevada lupine <i>Lupinus nevadensis</i>			SEN		Sagebrush scrub.		LV-D			NI	Not documented in Project vicinity.
Kincaid's lupine <i>Lupinus oregonus</i> var. <i>kincaidii</i> (<i>Lupinus sulphureus</i> var. <i>kincaidii</i>)	T/CH	T			Native grasslands and open oak woodlands at low elevations in the Willamette and Umpqua Valleys. Also known to occur on roadsides.	Douglas	RO-D	UMP-D	3 populations documented in project area (2007, 2017): MP 57.84-57.92, MP 59.60, and MP 96.5-96.9 (2015 Stouts Creek fire eliminated most of this population; SBS 2016). Other documentations greater than 500 feet include 1.5 NE of MP 56.06 (Private: T28S,R7W,S31; 1999); 2.2 mi SW of MP 96.11 (RO/Private:T31S,R3W,S4,5,8,9; 2003); 1.5 mile E of MP 98.88 (UMP: T31S,R2W,S8; 1992).	LAA	Impacts to unidentified plants or to suitable habitats, which may be able to support species in the near future. Indirect impacts to documented or unidentified plants outside of ROW and along proposed access roads. All potential suitable habitat has not been surveyed due to landowner access denial.
Tracy's lupine <i>Lupinus tracyi</i>			SEN	SEN	Dry open montane forest.	Douglas Jackson Klamath	MD-S	RRS-D		NI	Not documented in Project vicinity.
Bog club-moss <i>Lycopodiella inundata</i>			SEN	SEN	Bogs, muddy depressions, and pond margins. On Fremont-Winema NF one site in Yoss Creek drainage on Chiloquin RD.	Coos Douglas Klamath	CB-D	FW-D		NI	Not documented in Project vicinity.
Lyrate malacothrix <i>Malacothrix sonchoides</i>			SEN		Usually on dunes or in deep, fine sand in arroyos and on plains in Joshua tree woodlands, grasslands, Ephedra-Coleogyne associations; 985-6,890 feet.		LV-D			NI	Not documented in Project vicinity.
White meconella (fairypoppy) <i>Meconella oregana</i>	SOC	C	SEN	SEN	Grows in open areas that are wet in the spring at low elevations. Known from sites in the Willamette Valley and the Columbia Gorge.	Douglas Jackson	RO-S MD-D	RRS-D		NI	Not documented in Project vicinity.
Coast microseris <i>Microseris bigelovii</i>			STR	STR	Open sandy soil or sandy pockets on rocky headlands.	Coos	CB-S			NI	No suitable habitat in survey area.
Douglas' microseris <i>Microseris douglasii</i> ssp. <i>douglasii</i>			STR		Grassy flats and hillsides in heavy hard packed soil.	Jackson	MD-S			NI	Not documented in Project vicinity.
Detling's microseris <i>Microseris laciniata</i> ssp. <i>detlingii</i>	SOC				In moist rocky meadows, open grasslands, and in clay soils.	Jackson	MD-D	RRS-D	Observed in MD BLM (>100 feet W of MP 140.56, 2000).	NI	Surveys conducted within the vicinity of the Pipeline project have not documented this species within 100 feet of proposed disturbance, including proposed access roads
Bolander's monkeyflower <i>Mimulus bolanderi</i> (<i>Diplacus bolanderi</i>)			SEN	SEN	Openings in chaparral, burns and disturbed areas. Applegate Valley.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
Congdon's monkeyflower <i>Mimulus congdonii</i> (<i>Diplacus congdonii</i>)			SEN	SEN	Openings in oak woodland and chaparral. Applegate Valley.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
Disappearing monkeyflower <i>Mimulus evanescens</i> (<i>Erythranthe inflatula</i>)	SOC	C	SEN	SEN	Vernally moist sites along perennial and intermittent streams; receding margins of lakes, ponds, and reservoirs within juniper/sagebrush habitats.	Klamath	LV-D	FW-D		NI	No suitable habitat in Project area.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Broad-toothed monkeyflower <i>Mimulus latidens</i> (<i>Erythranthe latidens</i>)			SEN		Valley grassland, foothill woodland, wetland-riparian; 0-2,500 feet. Occurs almost always under natural conditions in wetlands.		LV-D			NI	Not documented in Project vicinity.
Tri-colored monkeyflower <i>Mimulus tricolor</i> (<i>Diplacus tricolor</i>)			SEN	SEN	Grows at low elevations in clay soil, preferring vernal pools; scattered in Klamath County; late May through June.	Klamath	LV-D	FW-D		NI	Not documented in Project vicinity.
Siskiyou monardella <i>Monardella purpurea</i>			SEN	SEN	Mixed evergreen forest, yellow pine forest.		CB-D MD-D	RRS-D		NI	Not documented in Project vicinity.
Howell's montia <i>Montia howellii</i>		C				Douglas				NI	Not documented in Project vicinity.
Annual dropseed <i>Muhlenbergia minutissima</i>			SEN	SEN	Pinyon-juniper woodland, sagebrush scrub, yellow pine forest, wetland-riparian; between 4,000 and 7,500 feet.			FW-S		NI	Not documented in Project vicinity.
Sessile mousetail <i>Myosurus sessilis</i>		C	STR	STR	Vernal pools and alkalai flats; 30-5,250 feet.			FW-S		NI	Not documented in Project vicinity.
Sweet bayberry <i>Myrica gale</i>			STR	STR	Bogs, marshes, fens, and wet heathland in acid soils.		CB-S			NI	Not documented in Project vicinity.
Slender nemacladus <i>Nemacladus capillaris</i>			SEN	SEN	Dry slopes, burned areas.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
Wolf's evening primrose <i>Oenothera wolfii</i>	SOC	T	STR		Grows in coastal prairie, dunes, and coastal forest and woodland habitat.		CB-S			NI	Species has not been documented within Project area.
Adder's-tongue <i>Ophioglossum pusillum</i>			SEN	SEN	Open fens, wet meadows, grassy slopes, roadside ditches.	Coos Douglas	CB-S	UMP-D RRS-D		NI	Not documented in Project vicinity.
Slender Orcutt grass <i>Orcuttia tenuis</i>	T/CH				Vernal Pools with a very well developed soil profile.	Klamath				NI	Not documented in Project vicinity.
Coffee fern <i>Pellaea andromedifolia</i>			SEN	SEN	Rock outcrops, cliffs.	Coos Douglas Jackson	CB-D RO-D MD-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
Bird's-foot fern California birds-foot cliff-brake <i>Pellaea mucronata</i> ssp. <i>mucronata</i>			SEN	SEN	Grows in various types of rocky habitat		MD-D	RRS-S		NI	Not documented in Project vicinity.
Blue-leaved penstemon <i>Penstemon glaucinus</i>	SOC		SEN	SEN	Openings in mid to high elevation pine, fir, and mt hemlock communities. Well-drained volcanic soils along rocky points and ridges.	Klamath	LV-S	FW-D		NI	Not documented in Project vicinity.
Red-rooted yampah <i>Perideridia erythrorhiza</i>	SOC	C	SEN	SEN	Moist meadows, forest edges below 4500 feet.	Douglas Jackson Klamath	RO-D MD-D	UMP-S RRS-D FW-D		NI	Not documented in Project vicinity.
Silvery phacelia <i>Phacelia argentea</i>		T	SEN	SEN	Grows on unstabilized or semi-stabilized sand dunes, bluffs, and bases of coastal headlands.	Coos	CB-D			MIH	Species was not documented during surveys; however, suitable habitat remains to be surveyed.
Playa phacelia <i>Phacelia inundata</i>			SEN		Alkaline flats, dry lake margins. Elevation 4,800 – 6,400 feet.	Klamath	LV-D			NI	No suitable habitat in Project area.
Siskiyou phacelia <i>Phacelia leonis</i>			SEN	SEN	Red fir forest.		MD-S	RRS-D		NI	Not documented in Project vicinity.
American pillwort <i>Pilularia americana</i>			SEN	SEN	Vernal pools, mud flats, lake margins.	Jackson Klamath	MD-D	RRS-S FW-S		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Whitebark pine <i>Pinus albicaulis</i>	C		SEN	SEN	Although its role in the plant community is changing, whitebark pine historically dominated many of the upper subalpine plant communities of the western United States. It showed scattered occurrence on the Olympic Peninsula, the southern Cascades and other ranges of southern Oregon.	Douglas Jackson Klamath		UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
Gray Pine <i>Pinus sabiniana</i>			STR	STR	Infertile soils in mixed conifer and hardwood forests.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
White piperia <i>Piperia candida</i>			STR	STR	Grows in coniferous forests and other habitat in coastal and inland mountain ranges.		CB-D MD-D RO-D	RRS-S		NI	Not documented in Project vicinity.
Austin's plagiobothrys <i>Plagiobothrys austiniae</i>	SOC		SEN		Vernally wet areas, along road and trail edges.	Jackson	MD-D			NI	Not documented in Project vicinity.
Coral seeded allocarya <i>Plagiobothrys figuratus</i> var. <i>corallicarpus</i>	SOC	C	SEN	SEN	Low elevation meadows and moist clearings and fields.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
Greene's popcorn flower <i>Plagiobothrys greenei</i>	SOC		SEN	SEN	Vernal pools.	Jackson	MD-D	RRS-S		NI	Not documented in Project vicinity.
Rough popcorn flower <i>Plagiobothrys hirtus</i>	E	E			Grows in open, seasonal wetlands in poorly- drained clay or silty clay loam soils at elevations ranging from 100 to 900 ft.	Douglas	RO-D	UMP-S		NLAA	Species has not been documented where survey permission has been granted. Surveys in potentially suitable habitat that has not been surveyed due to lack of permission would occur prior to ground-disturbing activities; if plants are identified, conservation measures developed to avoid or minimize potential impacts to identified plants would be applied.
Shiny-fruited popcorn flower <i>Plagiobothrys lamprocarpus</i>			STR		Unknown.		MD-S			NI	Not documented in Project vicinity.
Desert allocarya <i>Plagiobothrys salsus</i>	SOC		SEN	SEN	Playas in alkali sink, wetland-riparian.	Klamath	LV-D	FW-S		NI	Not documented in Project vicinity.
Large round-leaved orchid <i>Platanthera orbiculata</i> var. <i>orbiculata</i>				S&M-C	Infrequent distribution. Generally found in mature to old-growth stands, primarily at lower to mid elevations up to 3,000 feet. Often in rich, damp humus in the deep shade of heavily forested (mature- to old-growth) areas.		RO			NI	Not documented in Project vicinity.
Oregon semaphoregrass <i>Pleuropogon oregonus</i>	SOC		SEN	SEN	Wet meadows, marshlands, and streambanks. Standing or flowing water, at least early in the growing season, is important where populations are present.		LV-D	FW-S		NI	Not documented in Project vicinity.
Timber bluegrass <i>Poa rhizomata</i>			SEN	SEN	Dry Douglas-fir/ponderosa pine forests.	Jackson	MD-D	UMP-S RRS-S		NI	Not documented in Project vicinity.
Profuse-flowered mesa mint <i>Pogogyne floribunda</i>			SEN	SEN	Vernal pools, seasonal lakes.	Klamath	LV-D	FW-S		NI	Not documented in Project vicinity.
California sword-fern <i>Polystichum californicum</i>			SEN	SEN	Creek banks and canyons in redwoods and mixed evergreen forests.	Coos Douglas	CB-D RO-D	UMP-D RRS-S		NI	Not documented in Project vicinity.
Rafinesque's pondweed <i>Potamogeton diversifolius</i>			SEN	SEN	Shallow water, ditches, ponds, lakes.	Klamath		FW-S		NI	Not documented in Project vicinity.
Siskiyou fairy bells <i>Prosartes parvifolia</i>			SEN	SEN	Roadsides, disturbed areas, and burned areas.		MD-S	RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Toothleaf pyrola <i>Pyrola dentata</i>			SEN	SEN	Dry, scrubby edge of coniferous forests.		CB-S	RRS-S		NI	Not documented in Project vicinity.
California chicory <i>Rafinesquia californica</i>			SEN	SEN	Chaparral, recent burns, in the Applegate Valley.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
Southern Oregon buttercup <i>Ranunculus austrooreganus</i>	SOC	C	SEN		Oak woodlands, chaparral and dry grasslands.	Jackson	MD-D			NI	Not documented in Project vicinity.
Redberry <i>Rhamnus ilicifolia</i>			SEN	SEN	Chaparral in Applegate Valley.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
White beakrush <i>Rhynchospora alba</i>			SEN	SEN	Marshes, bogs.	Jackson	CB-S MD-S	RRS-D		NI	Not documented in Project vicinity.
Brownish beakrush <i>Rhynchospora capitellata</i>			STR	STR	Coastal salt marsh, yellow pine forest, wetland-riparian. Occurs almost always under natural conditions in wetlands.		CB-S	RRS-S		NI	Not documented in Project vicinity.
Straggly gooseberry <i>Ribes divaricatum</i> var. <i>pubiflorum</i>			SEN	SEN	Coastal bluffs, forest edges; 0-4,920 feet.		MD-D	RRS-S		NI	Not documented in Project vicinity.
Thompson's mistmaiden <i>Romanzoffia thompsonii</i>			SEN	SEN	Sunny, vernal wet mossy rocks.	Douglas Jackson	CB-D RO-D MD-D	UMP-D RRS-D		NI	Not documented in Project vicinity.
Columbia cress <i>Rorippa columbiae</i>		C	SEN	SEN	Along intermittent and perennial streams and lakeshores: banks, sandbars, vernal pools, lakebeds, and ditches.	Klamath	MD-D LV-D	RRS-S FW-D		NI	Not documented in Project vicinity.
Serpentine dwarf rose <i>Rosa gymnocarpa</i> var. <i>serpentine</i>			STR	STR	Understory and edges of forests; shrubland		MD-S	RRS-D		NI	Not documented in Project vicinity.
Lowland toothcup <i>Rotala ramosior</i>			SEN	SEN	Open, wet gravelly soil around ponds (5-400 feet in western Oregon).		LV-S	UMP-S FW-S		NI	Not documented in Project vicinity.
Polished willow <i>Salix laevigata</i>				STR	Riparian forests along streams, seepage areas, springs, subalkaline or brackish lakeshores, canyons, ditches; 0-7,220 feet.	Klamath		FW-S		NI	Not documented in Project vicinity.
Wolf's willow <i>Salix wolfii</i>			SEN	SEN	Stream banks, springs, wet meadows, bogs; 650-12,470 feet (NOTE: this source lists <i>S. wolfii</i> var. <i>wolfii</i> as the variety occurring in Oregon.)		LV-S			NI	Not documented in Project vicinity.
Joint-leaved saxifrage <i>Saxifragopsis fragarioides</i>			SEN	SEN	Grows on dry cliffs in the high Siskiyou Mountains.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.
Scheuchzeria <i>Scheuchzeria palustris</i> ssp. <i>americana</i>			SEN	SEN	Grows in ponds and along streams in Oregon Cascades.	Douglas Klamath		UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
Water clubrush <i>Schoenoplectus subterminalis</i> (<i>Scirpus subterminalis</i>)			SEN	SEN	Lakes, ponds, marshes.	Coos Douglas Klamath	CB-D RO-S MD-S LV-S	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
Slender bulrush <i>Schoenoplectus heterochaetus</i> (<i>Scirpus heterochaetus</i>)			STR		Lake margins	Klamath	LV-S			NI	Not documented in Project vicinity.
Drooping bulrush <i>Scirpus pendulus</i>			SEN	SEN	Marshes, wet meadows, ditches.	Jackson	CB-S RO-S MD-D	RRS-D FW-S		NI	Not documented in Project vicinity.
California fetid adderstongue <i>Scoliopus bigelovii</i>				SEN	Redwood and coastal coniferous forests, mossy mountain stream banks, shaded slopes; 0--1,650 feet.			RRS-D		NI	Not documented in Project vicinity.

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/			Effect of Impact d/	Impact Reasoning	
	Federal	State	BLM	Forest Service		County	BLM	Forest Service			Within Vicinity of Project Area c/
Rogue River stonecrop <i>Sedum moranii</i>	SOC	C	SEN	SEN	Steep south to west facing slopes and rock outcrops (650-900 feet).		MD-D	RRS-D	NI	Not documented in Project vicinity.	
Bog groundsel <i>Senecio triangularis</i> var. <i>angustifolius</i>			STR		Sphagnum bogs near the coast.	Coos	CB-S		NI	Not documented in Project vicinity.	
Verrucose sea-purslane <i>Sesuvium verrucosum</i>			SEN	SEN	Valley grassland, coastal sage scrub, alkali sink, wetland riparian.		LV-D	FW-S	NI	Not documented in Project vicinity.	
Henderson sidalcea <i>Sidalcea hendersonii</i>			SEN	SEN	Wet meadows, tidal marshes and flats at low elevations.	Douglas	CB-D		NI	Not documented in vicinity of project.	
Hickman's checkerbloom (Neil Rock sidalcea) <i>Sidalcea hickmanii</i> ssp. <i>petraea</i>			SEN		Shallow soil in open rocky areas in areas with serpentine soils	Jackson	MD-D		NI	Not documented in vicinity of project.	
Maple-leaved sidalcea <i>Sidalcea malachroides</i>				STR	Disturbed habitat in coastal prairie, mixed evergreen forest, redwood forest.			RRS-S	NI	Not documented in Project vicinity.	
Coast checkermallow <i>Sidalcea malviflora</i> ssp. <i>patula</i>	SOC	C	SEN	SEN	Open coastal forest.	Coos	CB-D	RRS-D	NI	Not documented in Project vicinity.	
Bolander's catchfly <i>Silene hookeri</i> ssp. <i>bolanderi</i>			SEN	SEN	Oak and douglas fir woodlands; 330-3,280 feet.		MD-D	RRS-S	NI	Not documented in Project vicinity.	
Serpentine catchfly <i>Silene hookeri</i> ssp. <i>serpenticola</i>			STR	STR	Grassy, gravelly, or rocky openings in chaparral, woodlands, and coniferous forest on serpentine; of conservation concern; 300-2,600 feet.		MD-S	RRS-S	NI	Not documented in Project vicinity.	
Hitchcock's blue-eyed grass <i>Sisyrinchium hitchcockii</i>	SOC	C	SEN		Known in the Umpqua and southern Willamette valleys.	Douglas	RO-D		NI	Not documented in Project vicinity.	
Parish's horse-nettle <i>Solanum parishii</i>			SEN	SEN	Chaparral, dry conifer openings, recent burns.	Jackson	MD-D	RRS-D	NI	Not documented in Project vicinity.	
Western sophora <i>Sophora leachiana</i>	SOC	C	SEN	SEN	Dry, open areas, open mixed woodlands, roadcuts and clearcuts (460-1,500 feet).		MD-D	RRS-D	NI	Not documented in Project vicinity.	
Common jewel flower <i>Streptanthus glandulosus</i>			SEN	SEN	Serpentine areas. (Note: this source lists the subspecies <i>S. g. josephinensis</i> as occurring in Oregon.)		MD-D	RRS-D	NI	Not documented in Project vicinity.	
Howell's streptanthus <i>Streptanthus howellii</i>		C	SEN	SEN	Dry, serpentine slopes, mixed evergreen forests, open pine woods or brushy areas (1,590-4,000 feet).		CB-S MD-D	RRS-D	NI	Not documented in Project vicinity.	
Broadleaf pondweed <i>Stuckenia striata</i>			STR		Sagebrush scrub, wetland-riparian. Occurs almost always under natural conditions in wetlands.		LV-S		NI	Not documented in Project vicinity.	
Long-flowered snowberry <i>Symphoricarpos longiflorus</i>			SEN		Pinyon-juniper woodland.		LV-D		NI	Not documented in Project vicinity.	
Golden eggs <i>Taraxia ovata</i>			STR		Grows in clay soil.		RO-S		NI	Not documented in Project vicinity.	
Howell's tauschia <i>Tauschia howellii</i>	SOC	C		SEN	Granitic gravel ridgetops above 6,000 feet.	Jackson		RRS-D	NI	No suitable habitat in Project area.	
Short-podded thelypody <i>Thelypodium brachycarpum</i>			STR	STR	Alkaline flats, lake margins in shrub steppe and near edges of pine forests.	Klamath	LV-S	FW-S	NI	No suitable habitat in Project area.	

TABLE I-5 Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project											
Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
Howell's thelypody <i>Thelypodium howellii</i> <i>ssp. howellii</i>			STR	STR	Moist alkaline soils, open, wet or dry meadows and marshes (3,935-5,085 feet).	Klamath	LV-S			NI	Not documented in Project vicinity.
Leiberg's clover <i>Trifolium leibergii</i>	SOC	C	SEN		Grows on a distinct habitat characterized by a thin, gravelly soil layer consisting of decomposing (broken-down) volcanic ash "tuff." Underneath the thin layer of soil is the solid "tuff," which has deep cracks running through it.		LV-D			NI	Not documented in Project vicinity.
Siskiyou trillium <i>Trillium kurabayashii</i>			SEN	SEN	Rich, moist conifer-hardwood forest, slopes, especially lower slopes, predominantly deciduous flat woods along streams, edges of Sequoia groves, and alder, vine maple, and fern thickets along streams, especially older, higher flood terraces, not the lowest and wettest; at higher elevations, both in forests and in open grassy meadows with scattered oak trees.		CB-S	RRS-D		NI	Not documented in Project vicinity.
Leach's brodiaea <i>Triteleia hendersonii</i> <i>var. leachiae</i>	SOC	C			Open and wooded slopes in the Siskiyou Mountains of Josephine, Curry, and Douglas counties.	Coos	CB-D MD-S			NI	Not documented in Project vicinity.
Sierra brodiaea <i>Triteleia ixioides ssp. anilina</i>			STR		Coniferous forest edge, often in sand or gravel.	Jackson	MD-S			NI	Not documented in Project vicinity.
Golden triteleia <i>Triteleia ixioides ssp. scabra</i>			STR		Scrub edges, mixed conifer forest, in clay and granite soils.	Jackson	MD-S			NI	Not documented in Project vicinity.
Ithuriel's spear <i>Triteleia laxa</i>			STR		Open forests, mixed conifer or foothill woodlands, grasslands on clay soil; 0-4,920 feet.	Jackson	CB-S			NI	Not documented in Project vicinity.
Humped bladderwort <i>Utricularia gibba</i>			SEN	SEN	Shallow water, mud.	Coos Douglas	CB-D RO-S			NI	Not documented in Project vicinity.
Lesser bladderwort <i>Utricularia minor</i>			SEN	SEN	Shallow water.	Coos Douglas Jackson Klamath	CB-S RO-S MD-D	UMP-D RRS-D FW-D		NI	Not documented in Project vicinity.
Northern bladderwort <i>Utricularia ochroleuca</i>			SEN	SEN				UMP-S FW-S		NI	Not documented in Project vicinity.
Western bog violet <i>Viola primulifolia ssp. occidentalis</i>		C	SEN	SEN	Serpentine bogs.	Douglas	CB-S MD-D	RRS-D		NI	No suitable habitat in Project area.
Dotted water-meal <i>Wolffia borealis</i>			SEN	SEN	Freshwater ponds and slow flowing ditches in which water has somewhat high levels of organic material. Occurs in natural ponds as well as in log and sewage treatment ponds (350-1,500 feet).	Jackson	RO-S MD-D	UMP-S		NI	Not documented in Project vicinity.
Columbia water-meal <i>Wolffia columbiana</i>			SEN	SEN	Free floating in quiet water.	Douglas Jackson	RO-S MD-S	UMP-S RRS-S		NI	Not documented in Project vicinity.
Small-flowered death camas <i>Zigadenus fontanus</i>	SOC		SEN	SEN	Rocky openings in chaparral in Applegate Valley.	Jackson	MD-D	RRS-D		NI	Not documented in Project vicinity.

TABLE I-5

Special Status Plant (Vascular and Non-Vascular) and Fungi Species That May Occur Near the JCEP & PCGP Project

Common Name and/or Scientific Name	Status a/				Expected Habitat	Documented or Suspected Occurrence b/				Effect of Impact d/	Impact Reasoning
	Federal	State	BLM	Forest Service		County	BLM	Forest Service	Within Vicinity of Project Area c/		
<p>a/ Status Key: Federal Status: E = Endangered, T = Threatened, C = Candidate, SOC = Species of Concern, CH = Critical Habitat State Status: E = Endangered, T = Threatened, C = Candidate BLM and Forest Service Status: SEN = Sensitive, STR = Strategic, S&M = Survey and Manage species, letter after S&M = Survey and Manage Species Category (A – F; based on the 2003 S&M list); only species listed as S&M in OR included in table; MW = Medford BLM Watch species.</p> <p>b/ Occurrence Key: BLM: CB = Coos Bay District, RO = Roseburg District, MD = Medford District, LV = Lakeview District Forest Service: FW = Fremont-Winema National Forest, RRS = Rogue River-Siskiyou National Forest, UMP = Umpqua National Forest Other: STF = State Forest Lands; PRV = Private Lands.</p> <p>D = Documented occurrence: A species located on land administered by the BLM or the Forest Service based on historic or current known sites of a species reported by a credible source for which BLM and the Forest Service have knowledge of written, mapped or specimen documentation of the occurrence. S = Suspected occurrence: Species is not documented on land administered by the BLM or the Forest Service, but may occur on the unit because: 1) BLM District or National Forest is considered to be within the species' range and 2) appropriate habitat is present or 3) known occurrence of the species (historic or current) in vicinity such that the species could occur on BLM or Forest Service land.</p> <p>c/ Pacific Connector Pipeline Project: Botanical and fungi species documented within approximately 100 meters (328 feet) of the pipeline corridor and facilities, which generally included the Project ROW, TEWAs, and UCSAs plus a 100-foot buffer. The observations listed are based on project survey reports (SBS – biological survey data from 2008 to 2017), and may differ from the sites discussed in the Survey and Manage Report (appendix F.5 of this EIS).</p> <p>d/ Effect of Impact: Species federally listed or proposed for listing: NE = No Effect NLAA = Not Likely to Adversely Affect LAA = Likely to Adversely Affect</p> <p>All other species: NI = No Impact MIIH = May Impact Individuals or Habitat, but is not likely to contribute to a trend toward federal listing or loss of viability of the species WOFV = Will Impact Individuals or Habitat with a consequence that the action will contribute to a trend toward Federal listing or cause a loss of viability to the population or species</p> <p>e/ Special Consideration Species: These species are special consideration species, as directed in Instruction Memorandum No. OR-2014-037 (USDI 2014), and are assigned the Survey and Manage category under the 2001 species list for purposes of this analysis.</p> <p>f/ This species is not included in the Survey and Manage Report (appendix F.5 of this EIS) because this species was only located on BLM land and the current Resource Management Plans for BLM lands encompassed by the project area removes S&M measures (see appendix F.5 for further details).</p> <p>References <u>Status:</u> FWS 2017a, b; Forest Service 2015; BLM 2015; Forest Service and BLM 2001, 2004-2017; ORBIC 2016, 2017a, 2012; ODA 2017. <u>Expected Habitat:</u> Arora 1986; BLM 2004; British Columbia Ministry of Environment 2009; Brodo et al. 2001; Calflora 2013; CNPS 2013; Castellano et al. 1999; Castellano and O'Dell, 1997; Castellano et al. 2003; Center for Plant Conservation 2011; Christy and Wagner 1996; Cushman and Huff 2007; eFloras.org, 2013; Eastman 1990; Forest Service 2014; Fryer 2002; Goldenberg 2011; Helliwell 2007; Hibler et al. 2001; Hickman 1993; Hitchcock et al. 1969; Holthausen et al. 1994; Knorr 2007; Huff 2010; Lawton 1971; McCune and Geiser 1997; Nevada Natural Heritage Program 2001; Norris and Shevok 2004a and b; Norvell and Exeter 2008; ORBIC 2004, 2010a; ODA 2013; ODA 2013; Oregon Flora Project 2002, 2006, 2007; Oregon Wetlands Explorer 2013; Pojar and MacKinnon 1994; Stone 2007, 2012. The Global Fungal Red List Initiative 2017; Trappe, M.J. pers. comm. 2013; Washington Department of Natural Resources and BLM 2003. <u>Documented and Suspected Occurrences:</u> BLM 2006, 2010, 2012, 2017; ORBIC 2017; Forest Service 2017; Siskiyou BioSurvey various dates; Stantec 2018.</p>											

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)			Project Construction Impacts (Acres)						Project Operation Impacts (acres)			Area Impacted (acres) Within Associated LSR			
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
Coos Bay BLM District															
Conifers															
	10	FCO D1-=2007	0.94	0.80					1.74	0.31		0.51	1.74	0.31	0.51
		FCO D1RC1-=2010	1.46	0.22					1.68	0.65		1.06	1.68	0.65	1.06
		FCO D1-=1992		0.04					0.04				0.02		
		FCO D1-=1993	1.85	1.00				0.90	3.75	0.23		0.44	3.75	0.23	0.44
	20	FCO D1-=1994	7.02	3.38				0.78	11.18	2.39		3.92	7.60	1.56	2.58
		FCO D1-=1998	1.29	0.63				0.37	2.28	0.34		0.57			
		FCO D1H1RC1-=1996	2.58	0.10				1.06	3.74	0.83		1.41	3.17	0.71	1.21
		FCO D2-=1993	1.26	1.11				0.60	2.97	0.56		0.83	2.29	0.33	0.50
		FCO D1-=1988	5.37	2.91					8.28	1.39		2.53	3.57	0.58	1.04
		FCO D1-=1989		0.19					0.19				0.14		
		FCO D1-=1990	4.40	3.64				2.15	10.19	1.87		3.00	7.19	1.41	2.27
		FCO D3-=1981	1.97	0.20				0.66	2.84	0.70		1.16	2.84	0.70	1.16
	30	FCO D3-=1982	4.04	0.89				1.07	6.00	1.20		1.98	6.00	1.20	1.98
		FCO D3-=1983	1.07	0.12					1.18	0.27		0.46	0.94	0.26	0.42
		FCO D3-=1984	1.33					0.56	1.89	0.61		0.97			
		FCO D3-=1985	5.02	0.14				2.27	7.43	2.09		3.40			
		FCO D3S1-=1983	0.83	0.39				0.98	2.20	0.04		0.11			
		FCO D3-=1974	3.43	0.34				0.98	4.75	1.11		1.84			
		FCO D3-=1976	0.99	0.50					1.49	0.28		0.50	0.68	0.08	0.13
	40	FCO D3-=1977	0.09	0.19					0.27	0.01		0.02			
		FCO D3-=1978	6.23	0.82				0.72	7.77	1.92		3.21	5.49	1.33	2.22
		FCO D3-=1979	2.39	0.39				1.03	3.80	0.90		1.47	3.43	0.77	1.26
		FCO D3-=1980	0.28					0.29	0.57	0.14		0.24	0.57	0.14	0.24
		FCO D3-=1961	6.21	1.02				0.57	7.80	1.98		3.29			
	50	FCO D3-=1962					0.73		0.73						
		FCO D3=1964	2.64	2.46					5.10	0.86		1.43			

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)		Project Construction Impacts (Acres)								Project Operation Impacts (acres)			Area Impacted (acres) Within Associated LSR		
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
		FCO D3-=1964	0.15						0.15	0.06		0.11			
		FCO D3-=1966	3.83	0.93					4.76	1.21		2.02			
		FCO D3H2-=1967	9.63	3.27				2.33	15.23	3.02		5.02	1.32	0.26	0.43
		FCO D3H2-=1968	3.27	0.28					3.55	1.04		1.73			
		FCO D3PC2H3-=1965//H1-1965	0.51	0.06					0.57	0.17		0.29			
		FCO D3-=1953	1.32						1.32	0.79		1.32	0.45	0.26	0.45
		FCO D3-=1960	1.21	0.16					1.38	0.41		0.68	1.38	0.41	0.68
	60	FCO D3C3-=1951	4.20	0.31				0.88	5.39	1.34		2.21	5.39	1.34	2.21
		FCO D3GF3-=1951	6.48	2.14					8.62	2.03		3.34	7.92	1.88	3.10
		FCO D3H3-=1960//H1-1960					0.49		0.49			0.44			
		FCO D3=1940	0.47	0.08				0.36	0.91	0.13		0.22			
	80	FCO D3-=1940	18.81	3.20				4.97	26.97	6.00		10.02	26.97	6.00	10.02
		FCO D4=1940	6.80	1.88				0.53	9.22	2.17		3.62	6.79	1.56	2.60
		FCO D4=1940	8.62	0.94				0.65	10.22	2.77		4.61	8.66	2.25	3.77
	90	FCO D4-=1930	4.09	0.65				0.07	4.81	1.32		2.19	4.69	1.32	2.19
80-175	100	FCO D4-=1920	1.17	0.74				0.78	2.69	0.02		0.10	1.62		0.02
		FCO D3-=1890	4.97	0.02					4.98	1.58		2.63	4.98	1.58	2.63
	130	FCO D4=1890	5.53	0.27				1.70	7.50	1.72		3.05	7.50	1.72	3.05
		FCO D4-=1890	1.73	0.33				0.68	2.75	0.57		0.93	0.93	0.21	0.35
	140	FCO D4-=1880	2.23	0.58				1.95	4.76	0.50		0.85	4.75	0.50	0.85
	160	FCO D4=1860	0.14					0.09	0.23	0.07		0.11	0.23	0.07	0.11
		FCO D4-=1860	11.83	0.53				3.81	16.17	4.43		7.17	16.17	4.43	7.17
	190	FCO D4=1830					0.35		0.35			0.35			
175+	210	FCO D4=1810//D2=1920					0.07		0.07			0.07			
	240	FCO D4-=1780	3.90	0.09					3.99	1.21		2.02			
	320	FCO D5-=1700	0.89	0.13					1.02	0.28		0.47	1.02	0.28	0.47
		<i>Conifers Total</i>	<i>164.47</i>	<i>38.07</i>			<i>1.64</i>	<i>33.72</i>	<i>237.96</i>	<i>53.52</i>		<i>89.06</i>	<i>152.73</i>	<i>34.33</i>	<i>57.12</i>

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)			Project Construction Impacts (Acres)					Project Operation Impacts (acres)			Area Impacted (acres) Within Associated LSR				
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
<i>Hardwoods</i>															
80-175	100	FHD HD3=1920	2.65	0.43				1.68	4.77	0.93		1.57	4.77	0.93	1.57
	130	FHD D51780//MY4RA3=1890	1.34	0.42					1.76	0.43		0.71			
<i>Hardwoods Total</i>			3.99	0.85				1.68	6.53	1.36		2.28	4.77	0.93	1.57
<i>Mixed Conifer and Hardwood</i>															
	40	FMX D2RA1=1980	1.23	0.31				0.70	2.24	0.33		0.57			
		FMX D3RA3=1962	1.45	0.85					2.30	0.45		0.76			
<80	50	FMX D3RA3M3=1969	0.77					0.24	1.01	0.01		0.12	0.90	0.01	0.07
		FMX HD3D3=1961	0.17	0.04					0.21	0.04		0.12	0.15	0.02	0.08
80-175	60	FMX RA3D3=1957	2.58	1.04					3.63	0.66		1.12	3.63	0.66	1.12
	80	FMX RA3D3=1940	4.22	0.33				2.77	7.31	1.36		2.27	7.31	1.36	2.27
	130	FMX D4=1890//RA3=1920	0.68	0.62					1.30	0.19		0.31	1.30	0.19	0.31
	140	FMX D4=1880/RA3M3=1900	2.13	0.49				1.13	3.75	0.71		1.18	3.75	0.71	1.18
		FMX D4=1880/HD3=1910	6.74	0.76				1.79	9.30	2.43		4.00	9.27	2.43	4.00
<i>Mixed Conifer and Hardwood Total</i>			19.97	4.44				6.63	31.05	6.18		10.45	26.31	5.38	9.03
<i>Non-Forest / Other</i>															
	N/A	NA – Agriculture/Range	0.42	0.25		0.69			1.36	0.51		0.85	2.93	0.51	0.85
	N/A	NH – Roads/Maintenance					2.36		2.36	0.08		0.13	1.64		
	N/A	NR – Rock Outcrop	0.41	1.03				0.13	1.57	0.16		0.27	1.57	0.08	0.13
	N/A	NU – Utility Corridor	2.30	1.16				0.12	3.58	0.22		0.37	0.23	0.09	0.14
	N/A	Blank - Unknown	0.14	0.06				0.04	0.24	0.05		0.08	0.07	0.02	0.03
<i>Non-Forest / Other Total</i>			3.27	2.5		0.69	2.36	0.29	9.11	1.02		1.70	6.44	0.70	1.15
Coos Bay District Total			191.70	45.84		0.69	4.01	42.40	284.64	62.09		103.48	190.27	41.34	68.86
Roseburg BLM District															
<i>Conifers</i>															
<80	10	FCO D1=2006	0.91	0.31					1.22	0.30		0.48			
		FCO D1P1=2006	1.42	0.95				0.70	3.07	0.45		0.75			

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)		Project Construction Impacts (Acres)							Project Operation Impacts (acres)			Area Impacted (acres) Within Associated LSR			
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
		FCO D3IC3-1880//D1P1IC1SP1=2001	1.84	0.53				2.82	5.19	0.61		1.00			
		FCO D4D3-1860//D1SP1IC1-2002	0.15	0.42					0.57	0.02		0.09			
		FCO D4IC8-1830//D1SP1P1IC1-2001	3.27	0.88				0.50	4.66	0.94		1.56			
		FCO D1=1991	0.11	0.13				0.28	0.52	0.05		0.09			
		FCO D1=1991	5.08	0.97				3.40	9.45	1.75		2.92	3.79	1.15	1.91
		FCO D1=1992	2.40	0.16				0.14	2.70	0.93		1.53	2.70	0.93	1.53
	20	FCO D1IC1P1=1996	1.76	2.33				0.17	4.25	0.54		0.91			
		FCO D1P1=1994	2.97	3.33				0.61	6.91	0.96		1.63			
		FCO D1P1IC1=1995	1.73	0.49				2.46	4.68	0.55		0.91			
		FCO D1=1983	1.32	0.12					1.44	0.61		0.99	1.31	0.61	0.99
	30	FCO D1=1984	2.38	1.49				1.67	5.54	0.70		1.19			
		FCO D1=1986	2.75	0.61					3.36	0.83		1.39	3.36	0.83	1.39
		FCO D2=1975	0.32					1.85	2.17	0.11		0.24	0.90	0.06	0.14
		FCO D2=1976	5.01	0.81					5.83	1.53		2.51			
		FCO D2=1978	0.17						0.17						
		FCO D2=1980	0.71	0.02				2.87	3.59	0.35		0.59			
	40	FCO D3=1972	3.11	0.92					4.04	0.97		1.62			
		FCO D3=1975//D2MA1-1980	4.39	1.65				6.09	12.13	1.29		2.17			
		FCO IC2D2-1976	0.28						0.28	0.17		0.25			
		FCO P2D2=1977	1.43	0.63					2.06	0.43		0.72			
		FCO P2D2IC2=1975	2.18	0.62					2.80	0.57		0.95			
		FCO D2=1965					1.07		1.07						
		FCO D3=1963/D2=1975/D11975	1.22						1.22	0.38		0.64	1.22	0.38	0.64
	50	FCO D3=1968	1.18	0.15					1.33	0.42		0.72			
		FCO D3IC3=1964		1.03					1.03						

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)		Project Construction Impacts (Acres)							Project Operation Impacts (acres)		Area Impacted (acres) Within Associated LSR					
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement	
80-175		FCO D2-=1960					0.02		0.02							
	60	FCO D3-=1960	0.83	0.09				0.47	1.38	0.19		0.32				
		FCO D3GF3=1960	3.98	0.80	0.13				4.91	1.32	0.09	2.24				
		FCO D3P3-=1960	4.61	3.33					1.52	9.45	1.42	2.34	8.62	1.21	2.00	
		FCO D2=1950	0.66	0.68					1.35	0.01		0.09				
	70	FCO D3=1950	0.12	1.31				0.01	1.44	0.05		0.09				
		FCO D4=1945					1.74		1.74							
	110	FCO D3-=1910	0.25					0.83	1.07	0.06		0.09	0.47	0.06	0.09	
		FCO D3=1900	1.11	0.24				2.27	3.62	0.34		0.57				
		FCO D3-=1900	1.53	0.32				2.30	4.15	0.41		0.63				
		FCO D3-1900//D1-1987	2.13	0.10				5.12	7.35	0.69		1.14				
	120	FCO D3D4=1900	3.80	0.98				5.03	9.81	1.19		1.98				
		FCO D3D8=1900	6.26	2.53				0.42	9.22	2.03		3.39	8.24	1.82	3.06	
		FCO D4IC3-=1780//D3=1900	2.86	0.36					3.22	0.29		0.56	3.22	0.29	0.56	
		FCO D4IC4-1780//D3=1900	5.38	1.31				9.76	16.45	1.68		2.76	16.35	1.61	2.66	
		FCO D3D4-=1890	3.92	1.35				7.43	12.71	1.23		2.05		0.87	1.44	
		FCO D3IC3=1890	4.60	0.91					5.52	1.48		2.47		2.94	4.90	
	130	FCO D4-1780//D2IC2P2=1890	2.74	0.58					3.32	0.87		1.44	3.32			
		FCO D4-1870//D3=1890	9.31	2.89				3.98	16.18	2.94		4.90	16.18			
	140	FCO D3IC8-=1880	0.29						0.29	0.15		0.24				
		FCO D3=1870	1.09	0.25				2.04	3.38	0.32		0.53	3.38	0.32	0.53	
		FCO D3IC4-=1870	0.56					0.80	1.37			0.02	1.37		0.02	
	150	FCO D4-1870//D3=1870	1.66	0.53				1.55	3.75	0.28		0.46	3.71	0.27	0.43	
	FCO GF3D3=1870//D2GF2=1950	2.93						2.93	0.93		1.54	2.93	0.93	1.54		
	FCO D4-1860//D3IC3-1900						0.95	0.95				0.95				
175+	180	FCO D4D3-=1840	0.88	3.12	0.05		2.68	6.74	0.40	0.09	0.65	5.30	0.16	0.31		
	190	FCO D4=1830//D3-1870	0.01	0.05			0.10	0.16				0.16				

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)			Project Construction Impacts (Acres)							Project Operation Impacts (acres)		Area Impacted (acres) Within Associated LSR			
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
	200	FCO D4=1820	0.56	0.13				0.21	0.90	0.26		0.43	0.90	0.26	0.43
		FCO D4=1780	9.02	0.77				2.04	11.82	3.00		4.97	11.11	2.91	4.82
		FCO D4=1780	3.99	1.35					5.34	1.67		2.71	5.34	1.67	2.71
	240	FCO D4=1780//D2=1940	2.95	0.25					3.20	0.97		1.61	2.89	0.93	1.54
		FCO D4=1780//D3=1870						0.01	0.01				0.01		
		FCO D4=1780//H3D8-1890					0.15		0.15				0.14		0.15
		FCO D4D3=1780	0.20	0.11				0.67	0.99	0.07		0.15	0.99	0.07	0.15
		FCO D4IC4=1780//D3MA2-1880	5.55	1.80				11.34	18.69	1.63		2.73	14.80	1.44	2.31
		FCO D4MA8-1780//D1=1950	3.44	3.23					6.67	1.19		1.90	4.86	0.27	0.63
		FCO D4P8=1780		0.55					0.55				0.28		
		FCO D4WF8-1780	0.02					0.48	0.50			0.01	0.34		
		<i>Conifers Total</i>	<i>135.33</i>	<i>48.47</i>	<i>0.18</i>		<i>2.98</i>	<i>85.57</i>	<i>272.58</i>	<i>42.53</i>	<i>0.18</i>	<i>70.86</i>	<i>129.14</i>	<i>21.99</i>	<i>36.88</i>
<i>Mixed Conifer and Hardwood</i>															
<80	10	FMX P1D1=2005	1.59	0.78				3.38	5.75	0.49		0.81			
	50	FMX MA2D3=1969	2.46	0.68				1.78	4.92	0.79		1.31			
80-175	140	FMX D3MA2=1875	4.30	0.84				2.09	7.23	1.44		2.40			
175+	200	FMX D4IC4=1820//D3MA2=1910	6.20	0.13				12.87	19.21	1.95		3.24	19.21	1.95	3.24
		<i>Mixed Conifer and Hardwood Total</i>	<i>14.55</i>	<i>2.43</i>				<i>20.12</i>	<i>37.11</i>	<i>4.67</i>		<i>7.76</i>	<i>19.21</i>	<i>1.95</i>	<i>3.24</i>
<i>Non-Forest / Other</i>															
N/A		NG – Natural Grass	2.90	0.75					3.65	0.92		1.53			
N/A		NU – Utility Corridor	0.52	0.34				1.17	2.03	0.09		0.15			
N/A		Blank - Unknown	0.81	0.13				0.19	1.14	0.29		0.52	0.16	0.04	0.10
		<i>Non-Forest / Other Total</i>	<i>4.23</i>	<i>1.22</i>				<i>1.36</i>	<i>6.82</i>	<i>1.30</i>		<i>2.20</i>	<i>0.16</i>	<i>0.04</i>	<i>0.10</i>
		Roseburg District Total	154.11	52.12	0.18		2.98	107.05	316.51	48.47	0.17	80.84	148.52	23.99	40.20

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)			Project Construction Impacts (Acres)					Project Operation Impacts (acres)			Area Impacted (acres) Within Associated LSR				
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
Medford BLM District															
<i>Conifers</i>															
	20	FCO D3D2WF2IC2-1950//P1MA1D1WF1IC1-=1992	1.14	0.23					1.36	0.39		0.66			
		FCO D1CO1CH1WF1P1=1986	0.13	1.69				0.02	1.84	0.01		0.02	1.84	0.01	0.02
		FCO D1IC1NH1P1WF1-=1981	1.23	0.32					1.55	0.45		0.75	1.55	0.45	0.75
		FCO D1P1-=1987	0.84					0.61	1.45	0.44		0.68			
		FCO D1SP1IC1P1WF1-=1988		0.00					0.00						
		FCO P1D1CO1D2P2-=1989		0.03					0.03				0.03		
<80	30	FCO P1D1IC1WF1NH1-=1989	3.14	1.92					5.06	0.99		1.65	5.06	0.99	1.65
		FCO P1D1MA2=1988	5.79	2.12			0.42	8.33	1.80		2.99	5.62	1.28	2.14	
		FCO P1D1WF1LP1IC1-=1990	1.95	0.51				2.46	0.61		1.02	2.46	0.61	1.02	
		FCO P1NH1D1WF1IC1-=1988	0.21	0.28				0.49	0.10		0.16	0.49	0.10	0.16	
		FCO P1PD1IC1WF1D1-=1988	1.16					1.16	0.37		0.61	1.16	0.37	0.61	
		FCO P1WF1NH1D1IC1-=1988	2.86	0.77				3.63	0.90		1.50	3.63	0.90	1.50	
	60	FCO D3WF3MA3IC3=1955//D2WF2MA2IC2-=1980	1.69	0.84				0.13	2.66	0.53		0.89			
		FCO D4P4-1800//D2-=1940	0.24	0.24					0.48	0.07		0.17			
		FCO D4P4-1850//D2P2-=1940	1.00	0.01				0.63	1.64	0.29		0.48			
	80	FCO P4-1850//D2IC2-=1940	4.43	0.54				2.57	7.24	1.39		2.31			
		FCO D4D3D5WF3WF4-=1937//WF2D1-1989	2.22	0.33				0.86	3.41	0.70		1.16	3.41	0.70	1.16
80-175		FCO D3D4P4=1800//D2D1-1920	0.39	0.02				0.24	0.65	0.12		0.19			
	100	FCO D3WF3-1920//D3D2WF1MA2WF2-=1960	3.16	0.30				0.80	4.26	0.83		1.42			
		FCO D3WF4D4IC4P3-1913	1.19	0.23				0.02	1.43	0.42		0.69	1.43	0.42	0.69

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)		Project Construction Impacts (Acres)					Project Operation Impacts (acres)			Area Impacted (acres) Within Associated LSR					
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
		FCO P4D3-1800//D1-1920	3.80	1.00				1.38	6.19	1.20		2.01			
		FCO P4D4-1890//D2P2-=1920	0.93	0.36					1.30	0.29		0.49			
		FCO D4P4-1850//D2-=1910	2.53	0.72				0.94	4.19	0.65		1.12			
	110	FCO D4P4-1860//D3P3HD3SP3D2=1910	2.22	1.28					3.51	0.66		1.08			
		FCO D3P4-1850//D1-1900	4.69	1.46				1.73	7.88	1.58		2.61			
	120	FCO P4D3-1800//D2IC1D1=1900	1.06	0.58				0.15	1.79	0.28		0.46			
		FCO D3D4D2P2IC4=1888//OM1WF11C1D1-	1.59	0.32				3.02	4.94	0.82		1.32	4.94	0.82	1.32
		FCO P3D3-1890	1.04	0.90					1.94	0.30	0.01	0.54	1.94	0.30	0.54
	140	FCO D3-=1880		0.09					0.09						
		FCO D3P3-1880//D2HD3-1930	0.51	0.21					0.72	0.16		0.27			
		FCO D3=1850	0.05	0.04				0.05	0.14	0.03		0.04			
		FCO D4=1850	2.40	0.94				1.57	4.91	0.98		1.56			
	170	FCO P3D3=1850	1.77	0.95				0.15	2.87	0.45		0.76			
		FCO P3D3=1850//IC2=1940	1.57	0.33				0.67	2.56	0.39		0.68			
		FCO P3HD3D3-1850	1.78	0.63				0.58	3.00	0.55		0.92			
	220	FCO D4IC4=1800//D2IC2=1940	0.91	0.80				0.17	1.89	0.40		0.64			
	175+	FCO D4P4=1800//D2HD2=1940	2.16	0.96				0.91	4.04	0.68		1.13	4.04	0.68	1.13
	270	FCO P4D4=1750//D2IC2=1940	0.81	0.14					0.96	0.34		0.57			
	320	FCO D4=1700//D3D2-1880	3.08	0.80				1.07	4.96	0.99		1.65	4.96	0.99	1.65
		<i>Conifers Total</i>	65.67	22.89				18.69	107.01	21.16	0.01	35.20	42.56	8.62	14.34
<i>Hardwoods</i>															
	90	FHD WO2MA1CO1P2-1930	2.01						2.01	0.63		1.04			
	80-175	FHD WO2-1920	2.99	0.70				0.69	4.38	0.94		1.57			
		FHD WO2-1900	10.46	3.98				0.97	15.41	3.43		5.63			
	120	FHD WO2CO2=1900	2.45	0.02					2.47	0.79		1.31			

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)		Project Construction Impacts (Acres)							Project Operation Impacts (acres)		Area Impacted (acres) Within Associated LSR				
Age Range	Age Class a/	FOI Code b/, c/, d/, e/	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total f/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
	170	FHD WO2=1850	5.07	1.54				2.08	8.69	1.58		2.63			
	220	FHD WO2=1800		0.18					0.18						
		FHD WO2-1800	0.37	0.02					0.40	0.15		0.26			
		<i>Hardwoods Total</i>	23.35	6.44				3.74	33.54	7.52		12.44			
<i>Mixed Conifer and Hardwoods</i>															
<80	40	FMX NH1D1D2WF1P1-=1977	1.91	0.71					2.61	0.62		1.03	2.61	0.62	1.03
	60	FMX D1MA1-=1958	1.29	0.15				0.60	2.04	0.54		0.86			
	80	FMX D3P3-1850//D2HD2-=1940	1.98	0.83				0.72	3.53	0.22		0.50			
		FMX D4P4-1900//D2HD2=1940	2.48	1.31				0.97	4.75	0.79		1.31			
	100	FMX D3HD3=1915	2.56	0.42				3.30	6.28	1.00		1.60			
		FMX WO2P21920	4.85	1.83					6.69	1.52		2.54			
	110	FMX D3-1850//D2MA2-=1910	1.22	0.52					1.73	0.40		0.66			
		FMX WO2D1P2-1900	1.28	1.03					2.31	0.39		0.66			
	120	FMX WO2D2-1900	1.80	0.89				0.51	3.21	0.45		0.77			
		FMX WO2P3CO2D2-1895	10.89	6.20				2.69	19.78	3.14		5.28	19.78	3.14	5.28
	130	FMX P3HD3D3-1890	3.08	1.67					4.75	0.96		1.60			
		FMX P3D3-1880//HD2-1940	0.33	0.54					0.87	0.13		0.22			
	140	FMX P3WO2-1880//D2-1940	2.06	1.08				0.02	3.16	0.67		1.12			
		FMX WO2P2-1880	2.07	0.24					2.31	0.62		1.05			
		FMX WO2P3-1880	7.91	1.68					9.59	2.42		4.04			
		FMX WO3P3-1870//WO2IC1P1-1910	3.03	0.56				0.42	4.01	0.96		1.61			
	150	FMX WO3P3-1870//WO2P1IC1-1920	3.34	1.54					4.87	1.07		1.78			
	170	FMX HD3D4=1850	0.03	0.02				0.03	0.08	0.01		0.02			
		<i>Mixed Conifer and Hardwood Total</i>	52.11	21.22				9.26	82.57	15.91		26.65	22.39	3.76	6.31
<i>Non-forest / Other</i>															
	N/A	NG – Natural Grass	10.75	5.32				0.45	16.52	3.30		5.50	10.51	2.08	3.47

TABLE I-6

Forest Operations Inventory Impacted by the Pacific Connector Gas Pipeline Project

Forest Operations Inventory (FOI)		Project Construction Impacts (Acres)							Project Operation Impacts (acres)		Area Impacted (acres) Within Associated LSR				
Age Range	Age Class ^{a/}	FOI Code ^{b/, c/, d/, e/}	Construction Right-of-Way	Temporary Extra Work Space	Permanent Access Roads	Temporary Access Roads	Rock Source/Disposal	Uncleared Storage Area	Total ^{f/}	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	Pacific Connector Project Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
	N/A	NH – Roads/Maintenance	2.60	4.83	0.16			0.50	8.09	0.84	0.07	1.37	8.09	0.84	1.37
	N/A	NR – Rock Outcrop	18.44	3.88				1.96	24.28	5.94		9.90			
	N/A	NU – Utility Corridor	1.36	0.15					1.51	0.44		0.73			
	N/A	Blank - Unknown	0.02	0.01					0.04	0.01		0.01			
		<i>Non-forest / Other Total</i>	<i>33.17</i>	<i>14.19</i>	<i>0.16</i>			<i>2.91</i>	<i>50.44</i>	<i>10.53</i>	<i>0.07</i>	<i>17.51</i>	<i>18.60</i>	<i>2.92</i>	<i>4.84</i>
		Medford District Total	174.30	64.74	0.16			34.60	273.56	55.12	0.08	91.80	83.55	15.30	25.49
Lakeview BLM District															
<i>Conifers</i>															
		FCO J3-1918//NB1=1952	2.83	0.58					3.41	0.94		1.53			
	100	FCO WF3D3-1916/WF3D3=1934/WF1-1993	9.43	2.26					11.69	2.93		4.88			
	80-175	FCO P4=1883/P3-1948/WF1-1991	1.63	0.27					1.90	0.54		0.90			
	130	FCO WF3=1886/D2WF2-1956/WF1P1D2-1995	0.80	0.43					1.23	0.30		0.51			
		<i>Conifers Total</i>	<i>14.83</i>	<i>3.54</i>					<i>18.37</i>	<i>4.71</i>		<i>7.84</i>			
		Lakeview District Total	14.83	3.54					18.37	4.71		7.84			

Note: Totals do not necessarily sum correctly due to rounding.

^{a/} Age Class: Ten-year age class that is managed by BLM and covers a 10-year range. For example, Age 10 includes stands between ages 5-15, Age 20 includes stands between ages 16-25.

^{b/} Dominant Overstory codes: D = Douglas-fir, P = Ponderosa Pine, WH = Western Hemlock, GF = Grand Fir, WF = White Fir, IC = Incense Cedar, RC = Red Cedar, H = Hardwoods, MA = Pacific Madrone, WO = White Oak, CO = California Black Oak, C = Cherry, NH = Non-commercial hardwood, SP = Sugar Pine, PC = Port-Orford Cedar, J = Juniper, RA = Red Alder, LP = Lodgepole Pine

^{c/} DBH Class: 1 = 0-5 inch DBH (seedlings and saplings); 2 = 5-11inch DBH (pole timber); 3 = 11-21inch DBH (small sawtimber); 4 = 21+inch DBH (large sawtimber); 5 = 21+ DBH (large old-growth Douglas-fir); 8 = No data.

^{d/} Stand Stock Level: “-” = poorly stocked, “=” = medium stocked, “-=” = well stocked.

^{e/} Year corresponds with forest “birth date.”

^{f/} Total excludes “Associated LSR,” which is already included in the “PCGP Construction Impacts” acres.

Note: BLM FOI Coverage, June 2016

TABLE I-7

Plant Association Groups on the Umpqua, Rogue River-Siskiyou, and Fremont-Winema National Forests

USDA Forest Service Forest	Plant Association Groups (PAGs) a/	Project Construction Impacts (Acres)					Project Operation Impacts (acres)			Area Impacted (acres) within Associated LSR c/			
		Construction Right-of-Way	Temporary Extra Work Space	Temporary Access Road (TAR)	Rock Source/Disposal	Uncleared Storage Area	Total b/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	PCGP Construction	30-foot Maintenance Corridor	50-foot Permanent Easement'
Umpqua National Forest	Douglas fir/poison oak-warm, often low elevation	7.51	1.02		2.00	3.86	14.39	1.96		3.27	6.77	0.63	1.04
	Douglas fir-Canyon live oak-cool, dry - SW Oregon	24.75	5.45	0.24		9.19	39.63	7.60		12.65	9.63	1.93	3.23
	Douglas fir-chinquapin-salal-SW Oregon	32.30	5.12		0.79	7.63	45.84	10.73		17.84	40.95	9.75	16.21
	Douglas-fir-ultramific-SW Oregon	0.36	0.08				0.44	0.16		0.27			
	Grand fir/oceanspray-poison oak-westside low elevation	4.82	0.73			6.05	11.60	1.37		2.35	9.10	1.18	2.02
	Grand fir/warm-westside low elevation (may not be current)	2.86	0.73			1.46	5.05	0.77		1.27	4.95	0.76	1.24
	Grand fir-Canyon live oak	0.95	0.43				1.38	0.32		0.54	1.38	0.32	0.54
	Jeffrey pine/grass	10.46	1.66			5.85	17.97	3.39		5.65	0.29	0.07	0.14
	Western hemlock/rhododendron-SW Oregon Cascades	0.19					0.19	0.02		0.05	0.19	0.02	0.05
	Western hemlock/salal-Oregon grape-SW Oregon Cascades	2.75	0.23			1.37	4.35	0.80		1.34	2.43	0.71	1.19
	White fir/Oregon grape	25.45	21.81			5.12	52.44	8.20	0.06	13.67	3.97	0.74	1.27
	White fir-cool, dry	0.06					0.06	0.03		0.05	0.06	0.03	0.05
	White fir-Douglas fir-warm, dry	1.65	0.53			0.34	2.52	0.52		0.86	0.17		
	White fir-western hemlock/Oregon grape	3.94	1.34		0.84	0.87	6.99	1.50		2.47	1.41	0.24	0.38
Not currently in model d/	6.02	1.48		0.72	0.36	8.58	1.93		3.22	7.30	1.75	2.88	
	Umpqua National Forest Total	124.07	40.61	0.24	4.35	42.10	211.43	39.30	0.06	65.50	88.60	18.13	30.24
Rogue River-Siskiyou National Forest	Douglas fir-Canyon live oak-cool, dry-SW Oregon	20.06	4.18			10.24	34.48	6.11		10.18	34.42	6.10	10.16
	Mountain hemlock/grouse whortleberry-big huckleberry-cool, dry	2.85	0.52			1.45	4.82	1.03		1.72	4.82	1.03	1.72
	Mountain hemlock/rhododendron-warm	3.29	0.72			1.70	5.71	1.04		1.73	5.71	1.04	1.73
	Mountain hemlock/sidebells pyrola-high elevation-SW Oregon	0.07				0.07	0.14			0.14			
	Shasta red fir-Cascade Province, SW Oregon	19.60	5.89			7.90	33.39	6.16		10.27	33.38	6.16	10.27

TABLE I-7

Plant Association Groups on the Umpqua, Rogue River-Siskiyou, and Fremont-Winema National Forests

USDA Forest Service Forest	Plant Association Groups (PAGs) a/	Project Construction Impacts (Acres)					Project Operation Impacts (acres)		Area Impacted (acres) within Associated LSR c/				
		Construction Right-of-Way	Temporary Extra Work Space	Temporary Access Road (TAR)	Rock Source/Disposal	Uncleared Storage Area	Total b/	30-foot Maintenance Corridor	Aboveground Facilities	50-foot Permanent Easement	PCGP Construction	30-foot Maintenance Corridor	50-foot Permanent Easement
USDA Forest Service Forest	White fir/Oregon grape	51.14	11.33		4.63	24.74	91.84	16.28		27.13	86.95	16.25	27.09
	White fir-Douglas fir-warm, dry	5.86	8.12			2.14	16.12	1.93		3.15	16.12	1.93	3.15
	White fir-Shasta red fir	49.39	19.32		0.28	19.93	88.92	15.71		26.25	88.65	15.71	26.25
	Not currently in model d/	0.20	0.02			0.01	0.23	0.07		0.11	0.22	0.07	0.11
	Rogue River National Forest Total	152.46	50.10		4.91	68.18	275.65	48.33		80.54	270.42	48.29	80.48
Fremont-Winema National Forest	Lodgepole pine	30.53	3.75			6.49	40.77	10.03		16.66			
	Mountain hemlock/Alaska huckleberry	1.22				0.35	1.57	0.41		0.67	1.57	0.41	0.67
	Mountain hemlock/grouse whortleberry-big huckleberry-cool, dry	0.06					0.06				0.06		
	Mountain hemlock/rhododendron-warm	0.04				0.07	0.11			0.03	0.11		0.03
	Shasta red fir-Cascade Province, SW Oregon	1.89	0.01			0.39	2.29	0.62		1.04	2.29	0.62	1.04
	White fir	37.65	7.78			5.04	50.47	11.83		19.77			
	White fir/Oregon grape	0.49	0.03			0.15	0.67	0.20		0.34	0.67	0.20	0.34
	White fir-Shasta red fir	0.80	0.45			0.27	1.52	0.32		0.53	1.52	0.32	0.53
	Not currently in model d/	0.55	0.03			0.13	0.71	0.16		0.26	0.20		
	Fremont-Winema National Forest Total	73.23	12.05			12.89	98.17	23.57		39.29	6.42	1.55	2.61
Overall Total	349.76	102.76	0.24	9.26	123.17	585.25	111.20	0.06	185.33	365.42	67.99	113.33	

Note: Totals do not necessarily sum correctly due to rounding.

a/ Description of PAGs can be found within Section 3.3.1.2 in Pacific Connector's Resource Report 3.

b/ Total includes impacted area in "Associated LSR".

c/ Acres of LSR impacted are also included in the total "Pipeline Construction Impacts".

d/ Not all acreages in National Forests crossed by the Pipeline were defined in the GIS PAG data (Forest Service 2003, 2010)

TABLE I-8

Total Terrestrial Habitat (acres) Affected/Removed (a/) by Construction within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Lands Crossed by and Adjacent to (b/) the Pacific Connector Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat <u>c/</u>					Other Habitat <u>c/</u>						Total Riparian Zone Impact (acres)
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest	Forest Total	Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat	Other Total	
Coos Bay Frontal Pacific Ocean (HUC 1710030403)												
BLM-Coos Bay District	2.57	0.29	3.9	0	6.76	0	0	0	0	1.91	1.91	8.66
Non-Federal	0.84	5.57	10.29	2.36	19.06	0	30.82	0	0	5.18	36.01	55.07
Watershed Total	3.41	5.85	14.19	2.36	25.82	0	30.82	0	0	7.09	37.91	63.74
North Fork Coquille River (HUC 1710030504)												
BLM-Coos Bay District	1.22	2.86	0.26	0	4.34	0	0.03	0	0	0.15	0.19	4.53
Non-Federal	0	1.91	1.1	0	3	0	0	0	0.25	0.28	0.53	3.53
Watershed Total	1.22	4.76	1.36	0	7.34	0	0.03	0	0.25	0.44	0.72	8.06
East Fork Coquille River(HUC 1710030503)												
BLM-Coos Bay District	0.25	0	1.16	0	1.4	0	0	0	0	0.4	0.4	1.8
Non-Federal	0	2.9	11.43	3.3	17.63	0	0.02	0	2	0.82	2.84	20.47
Watershed Total	0.25	2.9	12.59	3.3	19.03	0	0.02	0	2	1.22	3.24	22.27
Middle Fork Coquille River (HUC 1710030501)												
BLM-Coos Bay District	2.47	0.67	5.08	0	8.21	0	0	0	0	1.4	1.4	9.62
BLM-Roseburg District	0.96	2.25	0.1	0	3.31	0	0.01	0	0	0	0.01	3.32
Non-Federal	0.4	3.05	2.1	0.25	5.79	0.07	0	1.18	1.81	0.22	3.27	9.06
Watershed Total	3.82	5.96	7.28	0.25	17.31	0.07	0.01	1.18	1.81	1.62	4.69	22
Olalla Creek-Lookingglass Creek (HUC 1710030212)												
Non-Federal	1.4	2.5	1.24	0.18	5.32	0	0.6	0.73	0	0.29	1.63	6.95
Watershed Total	1.4	2.5	1.24	0.18	5.32	0	0.6	0.73	0	0.29	1.63	6.95
Clark Branch-South Umpqua River (HUC 1710030211)												
Non-Federal	0	5.49	1.27	0	6.76	0	0.28	20.61	0	0.51	21.41	28.17
Watershed Total	0	5.49	1.27	0	6.76	0	0.28	20.61	0	0.51	21.41	28.17
Myrtle Creek (HUC 1710030210)												
Non-Federal	3.78	7.03	0.44	0.08	11.33	0	0.2	6.88	3.41	0.7	11.2	22.53
Watershed Total	3.78	7.03	0.44	0.08	11.33	0	0.2	6.88	3.41	0.7	11.2	22.53
Days Creek-South Umpqua River (HUC 1710030205)												

TABLE I-8

Total Terrestrial Habitat (acres) Affected/Removed (a) by Construction within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Lands Crossed by and Adjacent to (b) the Pacific Connector Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat <u>c/</u>					Other Habitat <u>c/</u>						Total Riparian Zone Impact (acres)
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest	Forest Total	Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat	Other Total	
BLM-Roseburg District	0.36	0	0.24	0.09	0.69	0	0	0	0	0.11	0.11	0.8
Non-Federal	0.54	8.43	1.34	2.08	12.39	0	0.43	4.41	0	1.8	6.64	19.03
Watershed Total	0.9	8.43	1.58	2.17	13.08	0	0.43	4.41	0	1.91	6.75	19.82
Upper Cow Creek (HUC 1710030206)												
Forest Service-Umpqua National Forest	2.08	2.9	2	0	6.97	0	0.16	0	0	0.62	0.78	7.75
Watershed Total	2.08	2.9	2	0	6.97	0	0.16	0	0	0.62	0.78	7.75
Trail Creek (HUC 1710030706)												
BLM-Medford District	1.24	0.64	0	0	1.88	0	0	0.2	0	0	0.21	2.09
Forest Service-Umpqua National Forest	0	1.47	0	0	1.47	0	0	0	0	2.45	2.45	3.92
Non-Federal	0.86	1.93	0.02	0	2.82	0	0	1.48	0	0.47	1.96	4.77
Watershed Total	2.1	4.04	0.02	0	6.17	0	0	1.69	0	2.93	4.61	10.78
Shady Cove-Rogue River (HUC 1710030707)												
BLM-Medford District	2.74	0.12	0	0	2.86	0	0	0.75	0	0	0.75	3.62
Non-Federal	1.19	3.48	0.48	0	5.15	0	0.32	7.68	0	0.35	8.35	13.5
Watershed Total	3.93	3.6	0.48	0	8.01	0	0.32	8.43	0	0.35	9.1	17.12
Big Butte Creek (HUC 1710030704)												
BLM-Medford District	3.97	0.07	0	0	4.04	0	0	0.88	0	0.04	0.92	4.96
Non-Federal	0	1.7	0	0	1.7	0.08	0.29	2.2	0	0.72	3.3	5
Watershed Total	3.97	1.77	0	0	5.74	0.08	0.29	3.08	0	0.77	4.22	9.96
Little Butte Creek (HUC 1710030708)												
BLM-Medford District	3.8	0	0	0	3.8	0	0	4.12	0	0.2	4.32	8.12
Forest Service-Rogue River National Forest	0.63	0.12	1.07	0	1.82	0	0	0.19	0	0	0.19	2.01
Non-Federal	5.82	8.45	1.79	0	16.06	0	4.31	24.77	0	0.92	30.01	46.07
Watershed Total	10.24	8.56	2.87	0	21.67	0	4.31	29.09	0	1.12	34.53	56.2

TABLE I-8

Total Terrestrial Habitat (acres) Affected/Removed (a) by Construction within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Lands Crossed by and Adjacent to (b) the Pacific Connector Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat <u>c/</u>				Forest Total	Other Habitat <u>c/</u>						Total Riparian Zone Impact (acres)
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest		Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat	Other Total	
Spencer Creek (HUC 1801012601)												
BLM-Lakeview District	1.22	0	0	0	1.22	0	0	0.10	0	0	0.11	1.32
Forest Service-Fremont-Winema National Forest	1.59	0.34	1.82	0	3.74	0	0.26	0.04	0	0.13	0.42	4.16
Non-Federal	0	0.55	0.74	0	1.29	0	0.24	0	0	0.02	0.26	1.55
Watershed Total	2.80	0.89	2.56	0	6.25	0	0.50	0.14	0	0.15	0.79	7.04
J.C. Boyle Reservoir-Klamath River (HUC 1801012602)												
Non-Federal	0	0.69	0	0	0.69	0	0	6.17	0	0.54	6.71	7.40
Watershed Total	0	0.69	0	0	0.69	0	0	6.17	0	0.54	6.71	7.40
Lake Ewauna-Klamath River (HUC 1801020412)												
Non-Federal	0	0.70	0	0	0.70	0	0.95	0	5.57	0.12	6.63	7.33
Watershed Total	0	0.70	0	0	0.70	0	0.95	0	5.57	0.12	6.63	7.33
Mills Creek-Lost River (HUC 1801020409)												
Non-Federal	0	2.74	0	0	2.74	0	0.02	2.09	1.38	0.01	3.49	6.23
Watershed Total	0	2.74	0	0	2.74	0	0.02	2.09	1.38	0.01	3.49	6.23
All Fifth Field Watersheds and Jurisdictions												
BLM-Coos Bay District	6.51	3.82	10.40	0.00	20.71	0.00	0.03	0.00	0.00	3.86	3.90	24.61
BLM-Roseburg District	1.32	2.25	0.34	0.09	4.00	0.00	0.01	0.00	0.00	0.11	0.12	4.12
BLM-Medford District	11.75	0.83	0.00	0.00	12.58	0.00	0.00	5.95	0.00	0.24	6.20	18.79
BLM-Lakeview District	1.22	0.00	0.00	0.00	1.22	0.00	0.00	0.10	0.00	0.00	0.11	1.32
Forest Service-Umpqua National Forest	2.08	4.37	2.00	0.00	8.44	0.00	0.16	0.00	0.00	3.07	3.23	11.67
Forest Service-Rogue River-Siskiyou National Forest	0.63	0.12	1.07	0.00	1.82	0.00	0.00	0.19	0.00	0.00	0.19	2.01
Forest Service-Fremont-Winema National Forest	1.59	0.34	1.82	0.00	3.74	0.00	0.26	0.04	0.00	0.13	0.42	4.16
Federal Subtotal	25.10	11.73	15.63	0.09	52.51	0.00	0.46	6.28	0.00	7.41	14.17	66.68
Non-Federal Subtotal	14.83	57.12	32.24	8.25	112.43	0.15	38.48	78.20	14.42	12.95	144.24	256.66

TABLE I-8

Total Terrestrial Habitat (acres) Affected/Removed (a) by Construction within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Lands Crossed by and Adjacent to (b) the Pacific Connector Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat <u>c/</u>					Other Habitat <u>c/</u>						Total Riparian Zone Impact (acres)
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest	Forest Total	Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat	Other Total	
Overall Total	39.93	68.85	47.87	8.34	164.94	0.15	38.94	84.48	14.42	20.36	158.41	323.34

a/ Project components considered in calculation of habitat "Removed:" Pipeline project construction right-of-way, temporary extra work areas, aboveground facilities, and permanent and temporary access roads (PAR, TAR).

b/ Includes riparian zones of adjacent streams within the construction right-of-way that are not crossed and streams off the right-of-way.

c/ Habitat Types within Riparian Zones generally categorized as: Late Successional (Mature) or Old Growth Forest (coniferous, deciduous, mixed ≥80 years old); Mid-Seral Forests (coniferous, deciduous, mixed ≥40 but ≤80 years old); Regenerating Forest (coniferous, deciduous, mixed ≥5 but ≤40 years old); Clearcut Forests; Forested and Nonforested Wetland, Unaltered Nonforested Habitat (grasslands, sagebrush, shrublands), Agriculture and Altered Habitats (urban, industrial, residential, roads, utility corridors, quarries).

TABLE I-9

Total Terrestrial Habitat (acres) (a) Within the 30-Foot-Wide Corridor Maintained During the Pacific Connector Pipeline Project Within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Land Crossed by and Adjacent to (b) the Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat c/					Other Habitat c/					Total Riparian Zone Impact (acres)	
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest	Forest Total	Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat		Other Total
Coos Bay Frontal Pacific Ocean (HUC 1710030403)												
BLM-Coos Bay District	0.48	0.07	1.23	0	1.78	0	0	0	0	0.42	0.42	2.2
Non-Federal	0.28	1.09	2.22	0.69	4.29	0	5.47	0	0	0.73	6.2	10.49
Watershed Total	0.75	1.17	3.46	0.69	6.07	0	5.47	0	0	1.15	6.62	12.68
North Fork Coquille River (HUC 1710030504)												
BLM-Coos Bay District	0.3	0.91	0.02	0	1.23	0	0.01	0	0	0.02	0.03	1.26
Non-Federal	0	0.49	0.48	0	0.97	0	0	0	0.03	0.08	0.11	1.09
Watershed Total	0.3	1.4	0.5	0	2.2	0	0.01	0	0.03	0.1	0.14	2.34
East Fork Coquille River (HUC 1710030503)												
BLM-Coos Bay District	0.11	0	0.31	0	0.42	0	0	0	0	0	0	0.42
Non-Federal	0	0.73	2.78	0.93	4.44	0	0.01	0	0.23	0.22	0.45	4.89
Watershed Total	0.11	0.73	3.09	0.93	4.86	0	0.01	0	0.23	0.22	0.45	5.31
Middle Fork Coquille River (HUC 1710030501)												
BLM-Coos Bay District	0.8	0.17	0.81	0	1.78	0	0	0	0	0.75	0.75	2.53
BLM-Roseburg District	0.27	0.57	0.05	0	0.89	0	0	0	0	0	0	0.89
Non-Federal	0.14	0.97	0.46	0.06	1.64	0.03	0	0.27	0.57	0.04	0.91	2.55
Watershed Total	1.22	1.71	1.32	0.06	4.31	0.03	0	0.27	0.57	0.79	1.66	5.97
Olalla Creek-Lookingglass Creek (HUC 1710030212)												
Non-Federal	0.24	0.69	0.15	0.07	1.15	0	0.2	0.16	0	0.07	0.44	1.59
Watershed Total	0.24	0.69	0.15	0.07	1.15	0	0.2	0.16	0	0.07	0.44	1.59
Clark Branch-South Umpqua River (HUC 1710030211)												
Non-Federal	0	1.11	0.26	0	1.37	0	0.08	4.08	0	0.1	4.26	5.62
Watershed Total	0	1.11	0.26	0	1.37	0	0.08	4.08	0	0.1	4.26	5.62
Myrtle Creek (HUC 1710030210)												
Non-Federal	1.2	2.1	0.24	0	3.53	0	0.09	0.8	0.78	0.06	1.73	5.26
Watershed Total	1.2	2.1	0.24	0	3.53	0	0.09	0.8	0.78	0.06	1.73	5.26
Days Creek-South Umpqua River (HUC 1710030205)												
BLM-Roseburg District	0.06	0	0.08	0.02	0.16	0	0	0	0	0.09	0.09	0.25
Non-Federal	0	1.84	0.29	0.54	2.67	0	0.1	0.6	0	0.17	0.88	3.54
Watershed Total	0.06	1.84	0.37	0.56	2.82	0	0.1	0.6	0	0.26	0.97	3.79
Upper Cow Creek (HUC 1710030206)												
Forest Service-Umpqua National Forest	0.67	0.69	0.6	0	1.96	0	0.03	0	0	0.08	0.11	2.07
Watershed Total	0.67	0.69	0.6	0	1.96	0	0.03	0	0	0.08	0.11	2.07

TABLE I-9

Total Terrestrial Habitat (acres) (a/) Within the 30-Foot-Wide Corridor Maintained During the Pacific Connector Pipeline Project Within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Land Crossed by and Adjacent to (b/) the Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat c/				Forest Total	Other Habitat c/					Other Total	Total Riparian Zone Impact (acres)
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest		Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat		
Trail Creek (HUC 1710030706)												
BLM-Medford District	0.35	0.2	0	0	0.55	0	0	0.06	0	0	0.06	0.61
Forest Service-Umpqua National Forest	0	0	0	0	0	0	0	0	0	0	0	0
Non-Federal	0.23	0.62	0	0	0.85	0	0	0.29	0	0.13	0.42	1.27
Watershed Total	0.58	0.83	0	0	1.41	0	0	0.35	0	0.13	0.48	1.89
Shady Cove-Rogue River (HUC 1710030707)												
BLM-Medford District	0.72	0.01	0	0	0.73	0	0	0.33	0	0	0.33	1.06
Non-Federal	0.42	0.5	0.13	0	1.05	0	0.09	0.68	0	0.02	0.79	1.84
Watershed Total	1.14	0.51	0.13	0	1.78	0	0.09	1.01	0	0.02	1.12	2.9
Big Butte Creek (HUC 1710030704)												
BLM-Medford District	0.75	0.01	0	0	0.76	0	0	0.16	0	0.01	0.17	0.92
Non-Federal	0	0.39	0	0	0.39	0.02	0.1	0.5	0	0.07	0.69	1.08
Watershed Total	0.75	0.4	0	0	1.15	0.02	0.1	0.66	0	0.07	0.85	2
Little Butte Creek (HUC 1710030708)												
BLM-Medford District	0.93	0	0	0	0.93	0	0	1.06	0	0.02	1.09	2.01
Forest Service-Rogue River National Forest	0.18	0.04	0.36	0	0.58	0	0	0.06	0	0	0.06	0.64
Non-Federal	1.45	2	0.74	0	4.18	0	0.79	6.28	0	0.17	7.24	11.42
Watershed Total	2.55	2.04	1.09	0	5.68	0	0.79	7.41	0	0.19	8.39	14.08
Spencer Creek (HUC 1801012601)												
BLM-Lakeview District	0.34	0	0	0	0.34	0	0	0.00	0	0	0.00	0.34
Forest Service-Fremont-Winema National Forest	0.65	0.09	0.46	0	1.20	0	0.10	0.00	0	0.02	0.12	1.32
Non-Federal	0	0.20	0.28	0	0.48	0	0.08	0	0	0.00	0.08	0.56
Watershed Total	0.99	0.29	0.74	0	2.02	0	0.18	0.00	0	0.02	0.21	2.22
J.C. Boyle Reservoir-Klamath River (HUC 1801012602)												
Non-Federal	0	0.17	0	0	0.17	0	0	1.92	0	0	1.92	2.10
Watershed Total	0	0.17	0	0	0.17	0	0	1.92	0	0	1.92	2.10
Lake Ewauna-Klamath River (HUC 1801020412)												
Non-Federal	0	0.17	0	0	0.17	0	0.11	0	1.28	0	1.39	1.56
Watershed Total	0	0.17	0	0	0.17	0	0.11	0	1.28	0	1.39	1.56
Mills Creek-Lost River (HUC 1801020409)												
Non-Federal	0	0.76	0	0	0.76	0	0.01	0.56	0.17	0	0.74	1.49
Watershed Total	0	0.76	0	0	0.76	0	0.01	0.56	0.17	0	0.74	1.49

TABLE I-9

Total Terrestrial Habitat (acres) (a/) Within the 30-Foot-Wide Corridor Maintained During the Pacific Connector Pipeline Project Within Riparian Zones (One Site-Potential Tree Height Wide) Adjacent to Perennial and Intermittent Waterbodies on Federal and Non-Federal Land Crossed by and Adjacent to (b/) the Pipeline Project

Fifth-Field Watershed (Hydrologic Unit Code [HUC]) and Landowner	Forest Habitat <u>c/</u>				Forest Total	Other Habitat <u>c/</u>						Total Riparian Zone Impact (acres)
	Late Successional Old Growth Forest	Mid-Seral Forest	Regenerating Forest	Clearcut, Forest		Forested Wetland	Nonforested Wetland	Unaltered Nonforested Habitat	Agriculture	Altered Habitat	Other Total	
All Fifth Field Watersheds and Jurisdictions												
BLM-Coos Bay District	1.69	1.15	2.37	0.00	5.21	0.00	0.01	0.00	0.00	1.19	1.20	6.41
BLM-Roseburg District	0.33	0.57	0.13	0.02	1.05	0.00	0.00	0.00	0.00	0.09	0.09	1.14
BLM-Medford District	2.75	0.22	0.00	0.00	2.97	0.00	0.00	1.61	0.00	0.03	1.65	4.60
BLM-Lakeview District	0.34	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.34
Forest Service-Umpqua National Forest	0.67	0.69	0.60	0.00	1.96	0.00	0.03	0.00	0.00	0.08	0.11	2.07
Forest Service-Rogue River-Siskiyou National Forest	0.18	0.04	0.36	0.00	0.58	0.00	0.00	0.06	0.00	0.00	0.06	0.64
Forest Service-Fremont-Winema National Forest	0.65	0.09	0.46	0.00	1.20	0.00	0.10	0.00	0.00	0.02	0.12	1.32
Federal Subtotal	6.61	2.76	3.92	0.02	13.31	0.00	0.14	1.67	0.00	1.41	3.23	16.52
Non-Federal Subtotal	3.96	13.83	8.03	2.29	28.11	0.05	7.13	16.14	3.06	1.86	28.25	56.35
Overall Total	10.57	16.59	11.95	2.31	41.42	0.05	7.27	17.81	3.06	3.27	31.48	72.87

a/ Considers terrestrial habitats that were present prior to construction within the 30-foot-wide maintenance corridor.

b/ Includes riparian zones of adjacent streams within the construction right-of-way that are not crossed and streams off the right-of-way.

c/ Habitat Types within Riparian Zones generally categorized as: Late Successional (Mature) or Old Growth Forest (coniferous, deciduous, mixed ≥80 years old); Mid-Seral Forests (coniferous, deciduous, mixed ≥40 but ≤80 years old); Regenerating Forest (coniferous, deciduous, mixed ≥5 but ≤40 years old); Clearcut Forests; Forested and Nonforested Wetland, Unaltered Nonforested Habitat (grasslands, sagebrush, shrublands), Agriculture and Altered Habitats (urban, industrial, residential, roads, utility corridors, quarries).

Subbasin and Fifth-Field Watersheds	Total Number of Streams, Width Data	Total Streams Crossed with Salmonids ^{a/}	Number by Width Class and Duration			
			≤10 ft 2 hours	>10 to ≤25 ft 4 hours	>25 to ≤50 ft 5 hours	>50 ft 6 hours
Coos						
Coos Bay-Frontal Pacific Ocean	10	10	7	3	0	0
Coquille						
North Fork Coquille River	7	5	3	2	2	0
East Fork Coquille River	14	8	8	5	0	1
Middle Fork Coquille River	16	4	13	1	2	0
South Umpqua						
Olalla Creek-Lookingglass Creek	17	5	13	2	1	1
Clark Branch-South Umpqua River	12	4	6	4	1	1
Myrtle Creek	14	5	9	3	2	0
Days Creek-South Umpqua River	15	6	5	8	1	1
Upper Cow Creek	8	0	4	2	2	0
Upper Rogue						
Trail Creek	6	3	4	2	0	0
Shady Cove-Rogue River	10	2	9	1	0	0
Big Butte Creek	8	2	6	1	1	0
Little Butte Creek	46	4	30	11	5	0
Upper Klamath						
Spencer Creek	6	2	4	2	0	0

^{a/} Includes streams with known and assumed fish presence.

TABLE I-11

Maximum Distances Downstream to Attain SEV Scores 1 to 8 with TSS Concentrations and Durations due to Wet Open-Cut, Flume, and Dam-and-Pump Crossing Procedures in Each Fish-bearing Watershed to be Crossed by the Pacific Connector Pipeline

Construction Method Stream Widths	Duration <u>a/</u>	Concentration	SEV=1	SEV=2	SEV=3	SEV=4	SEV=5	SEV=6	SEV=7	SEV=8
Wet Open Cut										
All Stream Widths	6 hours	TSS (mg/L) =	0.11	0.41	1.60	6.21	24.1	93.2	361	1,399
Watersheds: Maximum Distance (m) to Equal SEV Level with Duration and Concentration <u>b/</u>										
Coos Bay-Frontal Pacific Ocean			1,346	1,345	1,341	1,326	1,268	1,065	542	40
North Fork Coquille River			4,701	4,695	4,674	4,593	4,290	3,295	1,185	23
East Fork Coquille River			9,092	9,081	9,035	8,862	8,223	6,152	1,999	26
Middle Fork Coquille River			7,867	7,856	7,814	7,655	7,066	5,182	1,559	15
Olalla Creek-Lookingglass Creek			8,743	8,731	8,681	8,490	7,790	5,582	1,534	10
Clark Branch-South Umpqua River			7,107	6,065	5,023	3,981	2,940	1,898	856	0
Myrtle Creek			4,946	4,941	4,923	4,850	4,579	3,663	1,544	54
Days Creek-South Umpqua River			6,731	6,697	6,565	6,078	4,508	1,417	16	0
Upper Cow Creek			8,474	7,243	6,012	4,781	3,549	2,318	1,087	0
Trail Creek			21,279	17,893	14,507	11,122	7,736	4,351	965	0
Shady Cove-Rogue River			16,763	14,055	11,346	8,638	5,929	3,221	512	0
Big Butte Creek			10,970	9,278	7,585	5,892	4,199	2,506	813	0
Little Butte Creek			12,638	10,704	8,769	6,834	4,900	2,965	1,030	0
Spencer Creek			17,116	14,407	11,699	8,990	6,282	3,573	865	0
Fluming										
Widths ≤10 ft =	2 hours	TSS (mg/L) =	0.26	1.02	3.95	15.3	59.4	230	9,520	12,906
Watersheds: Maximum Distance (m) to Equal SEV Level with Duration and Concentration <u>b/</u>										
Coos Bay-Frontal Pacific Ocean			1,323	1,257	1,031	478	24	0	0	0
North Fork Coquille River			4,578	4,236	3,135	977	11	0	0	0
East Fork Coquille River			8,830	8,107	5,824	1,617	11	0	0	0
Middle Fork Coquille River			7,625	6,960	4,887	1,243	6	0	0	0
Olalla Creek-Lookingglass Creek			8,454	7,664	5,241	1,202	4	0	0	0
Clark Branch-South Umpqua River			3,881	2,839	1,797	755	0	0	0	0
Myrtle Creek			4,836	4,529	3,512	1,312	29	0	0	0
Days Creek-South Umpqua River			5,991	4,262	1,139	7	0	0	0	0
Upper Cow Creek			4,661	3,430	2,199	968	0	0	0	0
Trail Creek			10,794	7,409	4,023	637	0	0	0	0
Shady Cove-Rogue River			8,376	5,667	2,958	250	0	0	0	0
Big Butte Creek			5,728	4,035	2,342	649	0	0	0	0
Little Butte Creek			6,647	4,712	2,778	843	0	0	0	0
Spencer Creek			8,728	6,020	3,311	602	0	0	0	0

TABLE I-11

Maximum Distances Downstream to Attain SEV Scores 1 to 8 with TSS Concentrations and Durations due to Wet Open-Cut, Flume, and Dam-and-Pump Crossing Procedures in Each Fish-bearing Watershed to be Crossed by the Pacific Connector Pipeline

Construction Method Stream Widths	Duration a/	Concentration	SEV=1	SEV=2	SEV=3	SEV=4	SEV=5	SEV=6	SEV=7	SEV=8
Widths >10 ft to ≤25 ft =	4 hours	TSS (mg/L) =	0.15	0.58	2.24	8.67	33.6	130	504	1,952
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration <u>b/</u>							
Coos Bay-Frontal Pacific Ocean			1,333	1,295	1,158	749	139	0	0	0
North Fork Coquille River			4,632	4,433	3,739	1,934	150	0	0	0
East Fork Coquille River			8,945	8,523	7,068	3,424	206	0	0	0
Middle Fork Coquille River			7,731	7,342	6,011	2,770	138	0	0	0
Olalla Creek-Lookingglass Creek			8,581	8,117	6,547	2,847	113	0	0	0
Clark Branch-South Umpqua River			4,319	3,277	2,235	1,193	152	0	0	0
Myrtle Creek			4,885	4,707	4,076	2,335	270	0	0	0
Days Creek-South Umpqua River			6,307	5,202	2,466	137	0	0	0	0
Upper Cow Creek			5,179	3,948	2,717	1,486	255	0	0	0
Trail Creek			12,218	8,833	5,447	2,061	0	0	0	0
Shady Cove-Rogue River			9,515	6,806	4,098	1,389	0	0	0	0
Big Butte Creek			6,440	4,747	3,054	1,362	0	0	0	0
Little Butte Creek			7,461	5,526	3,591	1,657	0	0	0	0
Spencer Creek			9,867	7,159	4,450	1,742	0	0	0	0
Widths >25 ft to ≤50 ft =	5 hours	TSS (mg/L) =	0.12	0.48	1.86	7.21	28	108	419	1,625
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration <u>b/</u>							
Coos Bay-Frontal Pacific Ocean			1,335	1,304	1,187	826	203	1	0	0
North Fork Coquille River			4,644	4,477	3,885	2,244	268	0	0	0
East Fork Coquille River			8,970	8,616	7,374	4,033	389	0	0	0
Middle Fork Coquille River			7,754	7,428	6,289	3,299	271	0	0	0
Olalla Creek-Lookingglass Creek			8,608	8,220	6,873	3,436	234	0	0	0
Clark Branch-South Umpqua River			4,460	3,418	2,376	1,334	293	0	0	0
Myrtle Creek			4,895	4,746	4,211	2,648	439	0	0	0
Days Creek-South Umpqua River			6,378	5,433	2,919	263	0	0	0	0
Upper Cow Creek			5,346	4,115	2,884	1,652	421	0	0	0
Trail Creek			12,677	9,291	5,905	2,520	0	0	0	0
Shady Cove-Rogue River			9,881	7,173	4,464	1,756	0	0	0	0
Big Butte Creek			6,669	4,976	3,284	1,591	0	0	0	0
Little Butte Creek			7,723	5,788	3,853	1,919	0	0	0	0
Spencer Creek			10,234	7,525	4,817	2,108	0	0	0	0
Widths >50 ft =	6 hours	TSS (mg/L) =	0.11	0.41	1.60	6.21	24.1	93.2	361	1,399
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration <u>b/</u>							
Coos Bay-Frontal Pacific Ocean			1,337	1,310	1,208	885	264	2	0	0

TABLE I-11

Maximum Distances Downstream to Attain SEV Scores 1 to 8 with TSS Concentrations and Durations due to Wet Open-Cut, Flume, and Dam-and-Pump Crossing Procedures in Each Fish-bearing Watershed to be Crossed by the Pacific Connector Pipeline

Construction Method Stream Widths	Duration a/	Concentration	SEV=1	SEV=2	SEV=3	SEV=4	SEV=5	SEV=6	SEV=7	SEV=8
North Fork Coquille River			4,652	4,508	3,990	2,487	399	0	0	0
East Fork Coquille River			8,987	8,682	7,592	4,516	604	0	0	0
Middle Fork Coquille River			7,770	7,488	6,488	3,724	433	0	0	0
Olalla Creek-Lookingglass Creek			8,628	8,291	7,107	3,913	387	0	0	0
Clark Branch-South Umpqua River			4,575	3,533	2,491	1,450	408	0	0	0
Myrtle Creek			4,903	4,774	4,306	2,889	615	2	0	0
Days Creek-South Umpqua River			6,428	5,599	3,280	413	0	0	0	0
Upper Cow Creek			5,482	4,251	3,020	1,789	557	0	0	0
Trail Creek			13,051	9,666	6,280	2,894	0	0	0	0
Shady Cove-Rogue River			10,181	7,473	4,764	2,055	0	0	0	0
Big Butte Creek			6,857	5,164	3,471	1,778	0	0	0	0
Little Butte Creek			7,937	6,002	4,067	2,133	198	0	0	0
Spencer Creek			10,534	7,825	5,117	2,408	0	0	0	0
Dam-and-Pump										
Widths ≤10 ft =	2 hours	TSS (mg/L) =	0.26	1.02	3.95	15.3	59.4	230	9520	12,906
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration b/							
Coos Bay-Frontal Pacific Ocean			1,246	996	419	15	0	0	0	0
North Fork Coquille River			4,180	2,978	801	5	0	0	0	0
East Fork Coquille River			7,989	5,503	1,299	5	0	0	0	0
Middle Fork Coquille River			6,851	4,600	983	2	0	0	0	0
Olalla Creek-Lookingglass Creek			7,536	4,911	935	2	0	0	0	0
Clark Branch-South Umpqua River			2,747	1,705	663	0	0	0	0	0
Myrtle Creek			4,478	3,363	1,108	15	0	0	0	0
Days Creek-South Umpqua River			4,020	909	3	0	0	0	0	0
Upper Cow Creek			3,322	2,090	859	0	0	0	0	0
Trail Creek			7,118	3,733	347	0	0	0	0	0
Shady Cove-Rogue River			5,422	2,714	5	0	0	0	0	0
Big Butte Creek			3,886	2,193	500	0	0	0	0	0
Little Butte Creek			4,542	2,607	672	0	0	0	0	0
Spencer Creek			5,781	3,072	363	0	0	0	0	0
Widths >10 ft to ≤25 ft =	4 hours	TSS (mg/L) =	0.15	0.58	2.24	8.67	33.6	130	504	1,952
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration b/							
Coos Bay-Frontal Pacific Ocean			1,289	1,136	695	104	0	0	0	0
North Fork Coquille River			4,400	3,632	1,727	97	0	0	0	0
East Fork Coquille River			8,451	6,845	3,024	128	0	0	0	0

TABLE I-11

Maximum Distances Downstream to Attain SEV Scores 1 to 8 with TSS Concentrations and Durations due to Wet Open-Cut, Flume, and Dam-and-Pump Crossing Procedures in Each Fish-bearing Watershed to be Crossed by the Pacific Connector Pipeline

Construction Method Stream Widths	Duration a/	Concentration	SEV=1	SEV=2	SEV=3	SEV=4	SEV=5	SEV=6	SEV=7	SEV=8
Middle Fork Coquille River			7,276	5,808	2,426	82	0	0	0	0
Olalla Creek-Lookingglass Creek			8,040	6,310	2,468	65	0	0	0	0
Clark Branch-South Umpqua River			3,185	2,143	1,102	60	0	0	0	0
Myrtle Creek			4,676	3,977	2,122	186	0	0	0	0
Days Creek-South Umpqua River			5,032	2,170	83	0	0	0	0	0
Upper Cow Creek			3,839	2,608	1,377	146	0	0	0	0
Trail Creek			8,542	5,157	1,771	0	0	0	0	0
Shady Cove-Rogue River			6,562	3,853	1,144	0	0	0	0	0
Big Butte Creek			4,598	2,905	1,212	0	0	0	0	0
Little Butte Creek			5,355	3,421	1,486	0	0	0	0	0
Spencer Creek			6,920	4,211	1,503	0	0	0	0	0
Widths >25 ft to ≤50 ft =	5 hours	TSS (mg/L) =	0.12	0.48	1.86	7.21	28	108	419	1,625
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration b/							
Coos Bay-Frontal Pacific Ocean			1,298	1,168	777	160	0	0	0	0
North Fork Coquille River			4,449	3,793	2,043	186	0	0	0	0
East Fork Coquille River			8,556	7,178	3,637	261	0	0	0	0
Middle Fork Coquille River			7,373	6,111	2,955	177	0	0	0	0
Olalla Creek-Lookingglass Creek			8,155	6,665	3,051	148	0	0	0	0
Clark Branch-South Umpqua River			3,326	2,284	1,243	201	0	0	0	0
Myrtle Creek			4,721	4,125	2,446	323	0	0	0	0
Days Creek-South Umpqua River			5,285	2,624	174	0	0	0	0	0
Upper Cow Creek			4,006	2,775	1,544	313	0	0	0	0
Trail Creek			9,001	5,615	2,229	0	0	0	0	0
Shady Cove-Rogue River			6,928	4,220	1,511	0	0	0	0	0
Big Butte Creek			4,827	3,134	1,441	0	0	0	0	0
Little Butte Creek			5,617	3,683	1,748	0	0	0	0	0
Spencer Creek			7,287	4,578	1,869	0	0	0	0	0
Widths >50 ft =	6 hours	TSS (mg/L) =	0.11	0.41	1.60	6.21	24.1	93.2	361	1,399
Watersheds:			Maximum Distance (m) to Equal SEV Level with Duration and Concentration b/							
Coos Bay-Frontal Pacific Ocean			1,305	1,192	839	215	1	0	0	0
North Fork Coquille River			4,484	3,908	2,294	292	0	0	0	0
East Fork Coquille River			8,629	7,419	4,131	428	0	0	0	0
Middle Fork Coquille River			7,440	6,330	3,386	300	0	0	0	0
Olalla Creek-Lookingglass Creek			8,235	6,922	3,533	261	0	0	0	0
Clark Branch-South Umpqua River			3,441	2,400	1,358	316	0	0	0	0

TABLE I-11

Maximum Distances Downstream to Attain SEV Scores 1 to 8 with TSS Concentrations and Durations due to Wet Open-Cut, Flume, and Dam-and-Pump Crossing Procedures in Each Fish-bearing Watershed to be Crossed by the Pacific Connector Pipeline

Construction Method Stream Widths	Duration a/	Concentration	SEV=1	SEV=2	SEV=3	SEV=4	SEV=5	SEV=6	SEV=7	SEV=8
Myrtle Creek			4,752	4,231	2,698	472	1	0	0	0
Days Creek-South Umpqua River			5,467	2,992	290	0	0	0	0	0
Upper Cow Creek			4,142	2,911	1,680	449	0	0	0	0
Trail Creek			9,375	5,990	2,604	0	0	0	0	0
Shady Cove-Rogue River			7,228	4,519	1,811	0	0	0	0	0
Big Butte Creek			5,014	3,322	1,629	0	0	0	0	0
Little Butte Creek			5,831	3,897	1,962	27	0	0	0	0
Spencer Creek			7,586	4,878	2,169	0	0	0	0	0

a/ Durations for wet open-cut indicate time to repair isolation structures after failure. Durations for dry open-cut from Table 3.2-25.
 b/ Maximum downstream distances derived by solving SEV equation $(Y = e^{((z - a) - b (\log_e x)) / c})$ for concentration (Y) by minimizing SEV scores (Z -0.5)
 c/ Maximum downstream distances derived by solving SEV equation $(Y = e^{((z - a) - b (\log_e x)) / c})$ for concentration (Y) by minimizing SEV scores (Z -0.5) and using durations (hours) from table I-10.

TABLE I-12

Waterbodies with ESA Critical Habitat and Known or Assumed to Support ESA-Listed and Non-Listed Juvenile and Adult Salmonids with Risks of TSS Effects Downstream Generated during Crossing and Risks of TSS Effects Generated by Crossing Nearest Neighbor Waterbodies

Waterbodies Supporting ESA Critical Habitat and Known or Assumed Habitat for Salmonids							Nearest Neighbor with Risk of Downstream Effects to Fish Habitat					
Waterbodies Crossed and Waterbody ID	Pipeline Milepost (MP)	Critical Habitat	Habitat for Salmonids	Proposed Crossing Method	Stream Width (feet)	Risk of TSS Downstream During Crossing (rationale) a/	Maximum Distance (m) Downstream from Crossing with Highest SEV Score b/	Crossing Distance (m) from Salmonid Stream c/	Proposed Crossing Method	Stream Width (feet)	Risk of TSS at Confluence by Crossing Nearest Neighbor (rationale) a/	Maximum Distance (m) Downstream from Nearest Neighbor with Highest SEV Score b/
Coos Subbasin (HUC 17100304), Coos Bay-Frontal Pacific Ocean (HUC 1710030403) Fifth-Field Watershed, Coos County												
Coos Bay (NE-26)	0.28 to 1.00	Yes	Known	HDD	N/A	None (HDD)	N/A	N/A	N/A	N/A	None (distance)	N/A
Coos Bay (NE-26)	1.46 to 3.02	Yes	Known	HDD	N/A	None (HDD)	N/A	N/A	N/A	N/A	None (distance)	N/A
Trib to Coos Bay (NW-117/EE-6)	6.39R	No	Known	Fluming	11	Moderate-High (perennial)	139 SEV=5	3,026	Fluming	24	None-Low (distance)	>1,333 SEV=0
Willanch Slough (EE-7)	8.27R	Yes	Known	Fluming	24	Moderate-High (perennial)	139 SEV=5	338	Fluming	13	None-Low (intermittent)	749 SEV=4
Trib. to Cooston Channel (Echo Creek) (SS-100-002)	10.21R	No	Known	Fluming	9	None-Low (intermittent)	24 SEV=5	1,481	HDD	650	None (HDD)	N/A
Coos River (BSP-119)	11.13R	Yes	Known	HDD	650	None (HDD)	N/A	676	Fluming	6	Moderate-High (perennial)	1,031 SEV=3
Vogel Creek (SS-100-005)	11.55BR	Yes	Known	Fluming	6	Moderate-High (perennial)	24 SEV=5	531	Fluming	10	None-Low (intermittent)	1,031 SEV=3
Trib. to Vogel Creek (BR-S-06)	12.11BR	No	Assumed	Fluming	2	None-Low (intermittent)	24 SEV=5	370	Fluming	10	None-Low (intermittent)	478 SEV=4
Stock Slough (BR-S-36)	15.11BR	Yes	Known	Fluming	8	None-Low (intermittent)	24 SEV=5	338	Fluming	9	None-Low (intermittent)	478 SEV=4
Stock Slough (EE-SS-9068)	15.32BR	Yes	Known	Fluming	9	None-Low (intermittent)	24 SEV=5	338	Fluming	8	None-Low (intermittent)	478 SEV=4
Coquille Subbasin (HUC 17100305), North Fork Coquille River (HUC 1710030504) Fifth-Field Watershed, Coos County												
Steinnon Creek (SS-500-003; BR-S-63)	20.20BR	No	Assumed	Fluming	8	Moderate-High (perennial)	11 SEV=5	6,632	Fluming	17	None (distance)	>4,632 SEV=0
Steinnon Creek (BR-S-63)	24.32BR	Yes	Known	Fluming	17	Moderate-High (perennial)	150 SEV=5	6,632	Fluming	8	None (distance)	>4,578 SEV=0
Trib to NF Coquille River (NW-40)	22.78	No	Assumed	Fluming	17	None-Low (intermittent)	150 SEV=5	451	Fluming	47	Moderate-High (perennial)	2,244 SEV=4
North Fork Coquille River (BSP-207)	23.06	Yes	Known	Fluming	47	Moderate-High (perennial)	268 SEV=5	451	Fluming	17	None-Low (intermittent)	1,934 SEV=4
Middle Creek (BSP-133)	27.04	Yes	Known	Fluming	48	Moderate-High (perennial)	268 SEV=5	48	Fluming	7	None-Low (intermittent)	977 SEV=4
Coquille Subbasin (HUC 17100305), East Fork Coquille River (HUC 1710030503) Fifth-Field Watershed, Coos County												
Trib. To E. Fork Coquille (BSP-77)	28.86	No	Assumed	Dam-and-Pump	8	None-Low (bedrock)	5 SEV=4	708	Fluming	6	None-Low (intermittent)	1,617 SEV=4
Trib. To E. Fork Coquille (BSP-74)	29.30	No	Assumed	Fluming	6	None-Low (intermittent)	11 SEV=5	274	Dam-and-Pump	4	None-Low (bedrock)	1,299 SEV=3
Trib. To E. Fork Coquille (BSI-76)	29.47	No	Assumed	Dam-and-Pump	4	None-Low (intermittent)	5 SEV=4	274	Fluming	6	None-Low (intermittent)	1,617 SEV=4
East Fork Coquille River (BSP-71)	29.85	Yes	Known	Fluming	75	Moderate-High (perennial)	604 SEV=5	596	Fluming	10	Moderate-High (perennial)	1,617 SEV=4
Trib. To E. Fork Coquille (AA-003-007B)	30.29	No	Assumed	Fluming	10	Moderate-High (perennial)	11 SEV=5	113	Fluming	10	Moderate-High (perennial)	1,617 SEV=4
Elk Creek (BSP-57)	32.40	No	Assumed	Fluming	10	Moderate-High (perennial)	11 SEV=5	64	Dam-and-Pump	5	None-Low (bedrock)	1,299 SEV=3
Trib. To Elk Creek (BSP-55)	32.44	No	Assumed	Dam-and-Pump	5	None-Low (bedrock)	5 SEV=4	64	Dam-and-Pump	10	None-Low (bedrock)	1,299 SEV=3
South Fork Elk Creek (CSP-5)	34.46	Yes	Known	Dam-and-Pump	15	None-Low (bedrock))	128 SEV=4	1,690	Fluming	4	None-Low (intermittent)	1,617 SEV=4
Coquille Subbasin (HUC 17100305), Middle Fork Coquille River (HUC 1710030501) Fifth-Field Watershed, Coos County												
Upper Rock Creek (BSP-41)	44.21	No	Assumed	Fluming	25	Moderate-High (perennial)	138 SEV=5	3,783	Fluming	5	Moderate-High (perennial)	4,887 SEV=3
Deep Creek (BSP-257)	48.27	No	Known	Fluming	40	Moderate-High (perennial)	271 SEV=5	96	Fluming	5	None-Low (intermittent)	1,243 SEV=4
Middle Fork Coquille River (BSP-30)	50.28	No	Known	Dam-and-Pump	30	None-Low (bedrock))	177 SEV=4	273	Fluming	4	None-Low (intermittent)	1,243 SEV=4

TABLE I-12

Waterbodies with ESA Critical Habitat and Known or Assumed to Support ESA-Listed and Non-Listed Juvenile and Adult Salmonids with Risks of TSS Effects Downstream Generated during Crossing and Risks of TSS Effects Generated by Crossing Nearest Neighbor Waterbodies

Waterbodies Supporting ESA Critical Habitat and Known or Assumed Habitat for Salmonids							Nearest Neighbor with Risk of Downstream Effects to Fish Habitat					
Waterbodies Crossed and Waterbody ID	Pipeline Milepost (MP)	Critical Habitat	Habitat for Salmonids	Proposed Crossing Method	Stream Width (feet)	Risk of TSS Downstream During Crossing (rationale) a/	Maximum Distance (m) Downstream from Crossing with Highest SEV Score b/	Crossing Distance (m) from Salmonid Stream c/	Proposed Crossing Method	Stream Width (feet)	Risk of TSS at Confluence by Crossing Nearest Neighbor (rationale) a/	Maximum Distance (m) Downstream from Nearest Neighbor with Highest SEV Score b/
Belieu Creek (BSP-61/GSI-37)	50.71	No	Known	Fluming	6	Moderate-High (perennial)	6 SEV=5	418	Fluming	4	None-Low (intermittent)	1,243 SEV=4
South Umpqua (HUC 17100302) Subbasin, Olalla Creek-Lookingglass Creek (HUC 1710030212) Fifth-Field Watershed, Douglas County												
Trib. to Shields Creek (BSI-202)	55.90	No	Assumed	Fluming	20	None-Low (intermittent)	113 SEV=5	64	Fluming	8	None-Low (intermittent)	1,202 SEV=4
Trib. to Olalla Creek (BSI-138)	57.31	No	Assumed	Fluming	8	None-Low (intermittent)	4 SEV=5	274	Dam-and-Pump	5	None-Low (bedrock)	935 SEV=3
Olalla Creek (BSP-155)	58.78	Yes	Known	Fluming	87	Moderate-High (perennial)	387 SEV=5	370	Dam-and-Pump	11	None-Low (bedrock)	2,468 SEV=3
Trib. to Olalla Creek (BSI-129)	59.65	No	Assumed	Fluming	16	None-Low (intermittent)	113 SEV=5	579	Fluming	8	None-Low (intermittent)	1,202 SEV=4
McNabb Creek (NSP-13)	60.48	Yes	Known	Dam-and-Pump	12	None-Low (bedrock)	65 SEV=4	563	Dam-and-Pump	6	None-Low (bedrock)	935 SEV=3
South Umpqua (HUC 17100302) Subbasin, Clark Branch-South Umpqua River (HUC 1710030211) Fifth-Field Watershed, Douglas County												
Kent Creek (BSP-240)	63.97	Yes	Known	Fluming	17	Moderate-High (perennial)	1,285 SEV=4	2,881	Dam-and-Pump	25	None-Low (bedrock)	4,162 SEV=1
Rice Creek (S2-04; BSP-227)	65.76	Yes	Known	Dam-and-Pump	25	None-Low (bedrock)	1,152 SEV=3	1,916	Dam-and-Pump	30	None-Low (bedrock)	2,861 SEV=2
Willis Creek (BSP-168)	66.95	Yes	Known	Dam-and-Pump	30	None-Low (bedrock)	1,356 SEV=3	80	Dam-and-Pump	3	None-Low (bedrock)	519 SEV=3
South Umpqua River (BSP-26)	71.27	Yes	Known	Direct Pipe	35	None (Direct Pipe)	N/A	129	Fluming	3	None-Low (intermittent)	652 SEV=4
South Umpqua (HUC 17100302) Subbasin, Myrtle Creek (HUC 1710030210) Fifth-Field Watershed, Douglas County												
Rock Creek (EE-SS-9032)	75.33	No	Assumed	Fluming	17	Moderate-High (perennial)	270 SEV=5	11	Fluming	16	Moderate-High (perennial)	270 SEV=5
Trib. to Rock Creek (EE-SS-9033)	75.34	No	Assumed	Fluming	16	Moderate-High (perennial)	270 SEV=5	11	Fluming	17	Moderate-High (perennial)	270 SEV=5
Bilger Creek (BSP-1)	76.38	Yes	Known	Fluming	6	Moderate-High (perennial)	29 SEV=5	1,674	Fluming	21	Moderate-High (perennial)	2,335 SEV=4
North Myrtle Creek (NSP-37)	79.12	Yes	Known	Dam-and-Pump	31	None-Low (bedrock)	323 SEV=4	48	Dam-and-Pump	8	None-Low (bedrock)	1,108 SEV=3
South Myrtle Creek (BSP-172)	81.19	Yes	Known	Dam-and-Pump	41	None-Low (bedrock)	323 SEV=4	306	Fluming	2	None-Low (intermittent)	1,312 SEV=4
South Umpqua (HUC 17100302) Subbasin, Days Creek-South Umpqua River (HUC 1710030205) Fifth-Field Watershed, Douglas County												
Wood Creek (BSP-226)	84.17	No	Known	Dam-and-Pump	8	None-Low (bedrock)	3 SEV=3	1,948	Fluming	14	None-Low (intermittent)	2,466 SEV=3
Trib. to Wood Creek (EE-SS-9041)	85.69	No	Known	Fluming	20	None-Low (intermittent)	137 SEV=4	32	Fluming	23	Moderate-High (perennial)	137 SEV=4
Fate Creek (BSP-232)	88.48	Yes	Known	Dam-and-Pump	20	None-Low (bedrock)	83 SEV=3	193	Dam-and-Pump	23	None-Low (bedrock)	2,170 SEV=2
Days Creek (BSP-233)	88.60	Yes	Known	Dam-and-Pump	23	None-Low (bedrock)	83 SEV=3	193	Dam-and-Pump	20	None-Low (bedrock)	2,170 SEV=2
Saint John Creek (ASP-303)	92.62	Yes	Known	Fluming	15	Moderate-High (perennial)	137 SEV=4	3,880	Diverted Open-Cut	160	Moderate-High (perennial)	N/A
South Umpqua River (ASP-196)	94.73	Yes	Known	Diverted Open-Cut	160	Moderate-High (perennial)	N/A	193	Fluming	10	None-Low (intermittent)	1,139 SEV=3
South Umpqua (HUC 17100302) Subbasin, Upper Cow Creek (HUC 1710030206) Fifth field Watershed, Douglas County												
None												
Upper Rogue (HUC 17100307) Subbasin, Trail Creek (HUC 1710030706) Fifth-Field Watershed, Jackson County												
West Fork Trail Creek (ASP-202)	118.89	Yes	Known	Dam-and-Pump	24	None-Low (bedrock)	1,771 SEV= 3	145	Fluming	2	None-Low (intermittent)	637 SEV= 4
Canyon Creek (NSP-11)	120.45	Yes	Known	Dam-and-Pump	4	None-Low (bedrock)	347 SEV= 3	724	Fluming	5	None-Low (intermittent)	4,023 SEV= 3

TABLE I-12

Waterbodies with ESA Critical Habitat and Known or Assumed to Support ESA-Listed and Non-Listed Juvenile and Adult Salmonids with Risks of TSS Effects Downstream Generated during Crossing and Risks of TSS Effects Generated by Crossing Nearest Neighbor Waterbodies

Waterbodies Supporting ESA Critical Habitat and Known or Assumed Habitat for Salmonids							Nearest Neighbor with Risk of Downstream Effects to Fish Habitat					
Waterbodies Crossed and Waterbody ID	Pipeline Milepost (MP)	Critical Habitat	Habitat for Salmonids	Proposed Crossing Method	Stream Width (feet)	Risk of TSS Downstream During Crossing (rationale) a/	Maximum Distance (m) Downstream from Crossing with Highest SEV Score b/	Crossing Distance (m) from Salmonid Stream c/	Proposed Crossing Method	Stream Width (feet)	Risk of TSS at Confluence by Crossing Nearest Neighbor (rationale) a/	Maximum Distance (m) Downstream from Nearest Neighbor with Highest SEV Score b/
Trib. to Trail Creek (ASI-206)	121.57	Yes	Known	Fluming	8	None-Low (intermittent)	637 SEV= 4	1,079	Fluming	5	None-Low (intermittent)	4,023 SEV= 3
Upper Rogue (HUC 17100307) Subbasin, Shady Cove-Rogue River (HUC 1710030707) Fifth-Field Watershed, Jackson County												
Rogue River (ASP-235)	122.65	Yes	Known	HDD	50	None (HDD)	N/A	5,248	Fluming	4	None-Low (intermittent)	5,667 SEV= 2
Indian Creek (AW-278)	128.61	No	Assumed	Fluming	12	Moderate-High (perennial)	1,389 SEV= 4	113	Dam-and-Pump	15	None-Low (bedrock)	1,144 SEV= 3
Upper Rogue (HUC 17100307) Subbasin, Big Butte Creek (HUC 1710030704) Fifth field Watershed, Jackson County												
Neil Creek (ASP-252)	132.12	Yes	Spawning, Rearing	Dam-and-Pump	5	None-Low (bedrock)	500 SEV = 3	145	Fluming	2	None-Low (intermittent)	649 SEV = 4
Quartz Creek (ASI-265)	132.75	Yes	Spawning, Rearing	Dam-and-Pump	1	None-Low (bedrock)	500 SEV = 3	32	Dam-and-Pump	1	None-Low (bedrock)	500 SEV = 3
Upper Rogue (HUC 17100307) Subbasin, Little Butte Creek (HUC 1710030708) Fifth field Watershed, Jackson County												
Salt Creek (ESP-34)	142.57	Yes	Known	Fluming	40	Moderate-High (perennial)	1,919 SEV = 4	129	Fluming	1	None-Low (intermittent)	843 SEV = 4
Trib. to Long Branch Ck. (ESI-38)	144.11	No	Known	Fluming	1	None-Low (intermittent)	843 SEV = 4	48	Fluming	3	None-Low (intermittent)	843 SEV = 4
NF Little Butte Creek (ESP-66)	145.69	Yes	Known	Fluming	49	Moderate-High (perennial)	1,919 SEV = 4	193	Fluming	2	None-Low (intermittent)	843 SEV = 4
Trib. to NF Little Butte Ck. (ESI-56)	146.05	No	Assumed	Fluming	17	None-Low (intermittent)	1,657 SEV = 4	531	Fluming	3	None-Low (intermittent)	843 SEV = 4
SF Little Butte Creek (ASP-165)	162.45	No	Known	Fluming	30	Moderate-High (perennial)	1,919 SEV=4	6,053	Fluming	26	None-Low (intermittent)	7,723 SEV=1
Daley Creek (ESI-76/ ESI-84)	166.21	No	Known	Fluming	26	None-Low (intermittent)	1,919 SEV=4	6,053	Fluming	30	Moderate-High (perennial)	7,723 SEV=1
Upper Klamath River (HUC 18010206) Subbasin, Spencer Creek (HUC 1801020601) Fifth field Watershed, Klamath County												
Clover Creek (SS-502-EW-103)	177.76	No	Known	Fluming	5	None-Low (intermittent)	602 SEV=4	57	Fluming	5	None-Low (intermittent)	602 SEV=4
Clover Creek (GSI-11)	177.76	No	Known	Fluming	5	None-Low (intermittent)	602 SEV=4	57	Fluming	5	None-Low (intermittent)	602 SEV=4

a/ Risks from downstream TSS by crossing all streams with bedrock substrate are considered None to Low; risks of downstream TSS crossing intermittent streams are considered None to Low; risks from downstream TSS by crossing perennial streams are considered Moderate to High.
 b/ Highest SEV scores for each given crossing method and stream width category in specific watershed provided in table I-11.
 c/ Distance for confluence of nearest neighbor with fish-bearing stream is assumed to be the same as the distance between the two stream crossing sites, forming an equilateral triangle.

TABLE I-13

Numbers of Migratory Birds Potentially Nesting in Habitats Affected by the Pacific Connector Pipeline in Construction Spreads 1 through 5

Estimate	Migratory Bird Nesting Habitats Present in the Pipeline Project Area													Total Birds	Total Nests c/
	Westside Lowland Conifer-Hardwood-Forest	Montane Mixed Conifer Forest	Southwest Oregon Mixed Conifer-Hardwood Forest	Ponderosa Pine Forest and Woodlands	Westside Oak, Dry Douglas-fir Forest and Woodlands	Western Juniper/Mountain Mahogany Woodlands	Shrub-Steppe	Westside Grasslands	Eastside Grasslands	Herbaceous Wetlands	Westside Riparian-Wetlands-Eastside Riparian-Wetlands	Developed—Urban and Mixed Environs	Agriculture, Pastures, and Mixed Environs		
Construction Spread 1															
Miles of Habitat Affected	33.6	0	5.1	0	0	0	0	0.2		1.7	0.1	0.7	3.3	$\Sigma = 44.7$ miles	
Total Birds in Habitat, All Species	593		87					0		2	0	1	42	725	389
Total with Adequate Data a/	561		87					0		2	0	1	42	693	365
Total Birds Likely Nesting b/	443		69					0		2	0	1	33	548	288
Total Birds Possible Nesting c/	5		1					0		0	0	0	0	6	3
Total Birds Likely or Possible	448	0	70	0	0	0	0	0	0	2	0	1	33	554	291
Construction Spread 2															
Miles of Habitat Affected	24.3	0	3.7	0	0	0	1.1	5.0	0	0.5	0.1	0.1	4.4	$\Sigma = 39.2$ miles	
Total Birds in Habitat, All Species	425		64				1	27		0	0	0	61	578	312
Total with Adequate Data a/	404		64				1	27		0	0	0	61	557	296
Total Birds Likely Nesting b/	320		51				0	22		0	0	0	46	439	233
Total Birds Possible Nesting c/	4		1				0	0		0	0	0	0	5	3
Total Birds Likely or Possible	324	0	52	0	0	0	0	22	0	0	0	0	46	444	236

TABLE I-13 (continued)

Numbers of Migratory Birds Potentially Nesting in Habitats Affected by the Pacific Connector Pipeline in Construction Spreads 1 through 5

Estimate	Migratory Bird Nesting Habitats Present in the Pipeline Project Area													Total Birds	Total Nests c/
	Westside Lowland Conifer-Hardwood-Forest	Montane Mixed Conifer Forest	Southwest Oregon Mixed Conifer-Hardwood Forest	Ponderosa Pine Forest and Woodlands	Westside Oak, Dry Douglas-fir Forest and Woodlands	Western Juniper/Mountain Mahogany Woodlands	Shrub-Steppe	Westside Grasslands	Eastside Grasslands	Herbaceous Wetlands	Westside Riparian-Wetlands-Eastside Riparian-Wetlands	Developed—Urban and Mixed Environs	Agriculture, Pastures, and Mixed Environs		
Construction Spread 3															
Miles of Habitat Affected	2.2	0	22.8	2.7	2.2	0	2.9	1.5	0	0.3	<0.1	0.1	0.1	∑ = 34.8 miles	
Total Birds in Habitat, All Species	30		407	33	32		6	3		0	0	0	0	511	281
Total with Adequate Data a/	29		393	33	31		6	3		0	0	0	0	495	267
Total Birds Likely Nesting b/	23		312	25	24		2	3		0	0	0	0	389	209
Total Birds Possible Nesting c/	0		4	0	0		0	0		0	0	0	0	4	2
Total Birds Likely or Possible	23	0	316	25	24	0	2	3	0	0	0	0	0	393	211
Construction Spread 4															
Miles of Habitat Affected	0.1	5.1	13.0	6.0	2.2	0	4.0	5.1	<0.1	0.5	<0.1	0	<0.1	∑ = 36.1 miles	
Total Birds in Habitat, All Species	0	27	229	84	30		11	29	0	0	0		0	410	223
Total with Adequate Data a/	0	25	224	84	29		11	29	0	0	0		0	391	210
Total Birds Likely Nesting b/	0	19	183	61	23		5	24	0	0	0		0	307	166
Total Birds Possible Nesting c/	0	1	2	1	1		0	0	0	0	0		0	4	2
Total Birds Likely or Possible	0	20	185	62	24	0	5	24	0	0	0	0	0	311	168

TABLE I-13 (continued)

Numbers of Migratory Birds Potentially Nesting in Habitats Affected by the Pacific Connector Pipeline in Construction Spreads 1 through 5

Estimate	Migratory Bird Nesting Habitats Present in the Pipeline Project Area													Total Birds	Total Nests <i>c/</i>
	Westside Lowland Conifer-Hardwood-Forest	Montane Mixed Conifer Forest	Southwest Oregon Mixed Conifer-Hardwood Forest	Ponderosa Pine Forest and Woodlands	Westside Oak, Dry Douglas-fir Forest and Woodlands	Western Juniper/Mountain Mahogany Woodlands	Shrub-Steppe	Westside Grasslands	Eastside Grasslands	Herbaceous Wetlands	Westside Riparian-Wetlands-Eastside Riparian-Wetlands	Developed—Urban and Mixed Environs	Agriculture, Pastures, and Mixed Environs		
Construction Spread 5															
Miles of Habitat Affected	0	1.1	4.8	5.4	0	8.1	9.8	0	4.4	2.6	0	1.3	18.8	$\Sigma = 56.3$ miles	
Total Birds in Habitat, All Species		29	193	233		317	357		162	143		57	1070	2,561	1,315
Total with Adequate Data <i>a/</i>		28	184	221		301	339		152	103		54	988	2,370	1,209
Total Birds Likely Nesting <i>b/</i>		11	91	110		143	127		45	42		22	450	1,041	536
Total Birds Possible Nesting <i>c/</i>		0	2	3		2	41		28	20		4	139	239	121
Total Birds Likely or Possible	0	11	93	113	0	145	168	0	73	62	0	26	589	1,280	657

a/ Adequate data determined for a species if observed (Pardieck et al. 2017) on an average of 5 or more BBS routes per year with an average of 1 bird or more counted per route per year during the 20-year period, 1996 to 2015.

b/ Species nesting on right-of-way likelihood based on proportion of the home range/territory area (Johnson and O'Neil 2001; Rodewald 2015) that would overlap the pipeline right-of-way, high proportions for small home ranges, low proportions for large home ranges. Nesting on the right-of-way would be "Likely" if home range is <10 ha, "Possible" if the home range (for species) was from ≥1 to ≤100 hectares. Bird species with larger home ranges were assumed to be unlikely to nest in the pipeline right-of-way.

c/ Number of nests present is assumed to be equivalent to half the number of birds present (assuming equal sex ratio and equal visibility of sexes regardless of plumage dimorphism or territorial behavior).

Table I-1

No references

Table I-2

GeoEngineers. 2013. Channel Migration and Scour Analysis for the PCGP Project.

ODFW (Oregon Department of Fish and Wildlife). 2012. Fish Distribution Data, 1:24,000 Scale. Oregon Department of Fish and Wildlife Natural Resources Information Management Program. Website: <https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=fishdistdata>

PFMC (Pacific Fishery Management Council). 1999. Appendix A - identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. Amendment 14 to the Pacific Coast Salmon Plan. August. Website: <http://www.pcouncil.org/Salmon/a14efh/efhindex.html>

Table I-3

BLM (U.S. Department of the Interior, Bureau of Land Management). 2006. Geographical Information System (GIS) databases provided to Pacific Connector.

BLM. 2006. GIS Database provided to Edge Environmental, Inc. July.

BLM. 2010. GIS Database provided to Edge Environmental, Inc.

BLM. 2012. GIS Database provided to Edge Environmental, Inc.

BLM. 2017. Geographical Information System (GIS) databases provided to Pacific Connector.

Csuti, B., T.A. O'Neil, M.M. Shaughnessy, E.P. Gaines, and J.C. Hak. 2001. *Atlas of Oregon Wildlife: Distribution, Habitat, and Natural History – Second Edition*. Oregon State University Press, Corvallis, OR.

Forest Service (U.S. Department of Agriculture Forest Service) and BLM. 2011. 2011 Settlement Agreement in Litigation over the Survey and Manage Mitigation Measure in Conservation Northwest et al. v. Sherman et al., Case No. 08-1067-JCC (W.D. Wash.). FS-Memorandum and BLM-Instruction Memorandum No. OR-2011-063. July.

Forest Service. 2006. GIS Database provided to Edge Environmental, Inc. August.

Forest Service. 2017. GIS database provided to Edge Environmental, Inc.

FWS (U.S. Fish and Wildlife Service). 2013. Post-Delisting Monitoring Report (2003-2012): Douglas County Distinct Population Segment of the Columbian White-tailed Deer (*Odocoileus virginianus leucurus*). November. Website: <https://www.fws.gov/oregonfwo/Species/Data/ColumbianWhiteTailedDeer/Documents/CWTD.PDM.Report.Nov2013.pdf>.

- FWS. 2017a. List of threatened and endangered species that may occur in the Pacific Connector Gas Pipeline Project: Coos, Douglas, Jackson, and Klamath counties. Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, Oregon. Coos County, Event Code: 01EOFW00-2017-E-00496, Consultation Code: 01EOFW00-2017-SLI-0337; Douglas County Part 1, Event Code: 01EOFW00-2017-E-00516, Consultation Code: 01EOFW00-2017-SLI-0347; Douglas County Part 2, Event Code: 01EOFW00-2017-E-00518, Consultation Code: 01EOFW00-2017-SLI-0348; Jackson County, Event Code: 01EOFW00-2017-E-00512, Consultation Code: 01EOFW00-2017-SLI-0345; and Klamath County, Event Code: 01EOFW00-2017-E-00514, Consultation Code: 01EOFW00-2017-SLI-0346. April 2017.
- Gilligan, J., M. Smith, D. Rodgers, A. Contreras (Editors). 1994. *Birds of Oregon: Status and Distribution*. Cinculus Publications, McMinnville, OR.
- Janes, S., J. Kemper, N. Barrett, R. Cronberg, J. Harleman, J. Livaudais, M. Moore, D. Niebuhr, T. Phillips, G. Ragsine, H. Sands, G. Shaffer, J. Shelton, and P. Trail. 2005. *Birds of Jackson County, Oregon: Distribution and Abundance including the Rogue Valley, Siskiyou, and Cascades*. Rogue Valley Audubon Society, Medford, OR.
- Kozloff, E. 1976. *Plant and Animals of the Pacific Northwest: an Illustrated Guide to the Natural History of Western Oregon, Washington, and British Columbia*. University of Washington Press, Seattle, WA.
- NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Website: <http://www.natureserve.org/explorer>. Accessed: March 14, 2013.
- NatureServe. 2017. NatureServe Explorer: An Online Encyclopedia of Life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Website: <http://explorer.natureserve.org/>
- ODFW. 2016. Sensitive Species List. Website: http://www.dfw.state.or.us/wildlife/diversity/species/sensitive_species.asp
- ORBIC (Oregon Biodiversity Information Center). 2006a. Oregon Threatened and Endangered Animal Field Guide. Website: <http://oregonstate.edu/ornhic/animal/index.html>.
- ORBIC. 2006b. Personal Sensitive Species Data Request, May 3.
- ORBIC. 2012. Rare, Threatened, and Endangered Plants and Animals in the Vicinity of Portions of Coos, Douglas, Josephine, Jackson, Klamath, and Lane Counties. Database Output for Proposed Natural Gas Pipeline, SW Oregon Project. Institute for Natural Resources, Portland State University, Portland, Oregon.
- ORBIC. 2016. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon. 130 pp.
- ORBIC. 2017. Personal Sensitive Species Data Request (01/27/2017).
- ORBIC. 2017. Personal Sensitive Species Data Request January 27, 2017.
- Oregon Fish and Wildlife Office. 2016. Federally Listed, Proposed, Candidate, Delisted Species and Species of Concern under the Jurisdiction of the Fish and Wildlife Service Which May

- occur within Oregon. Website:
<https://www.fws.gov/oregonfwo/Documents/OregonSpeciesStateList.pdf>. October.
- Siskiyou BioSurvey, Inc. 2016. *Lupinus oregonus* (*Lupinus sulphureus* ssp. *kincaidii*), MP 96.5-96.9: 2016 Post-Fire Site Monitoring. Prepared by Richard Brock, June 5, 2016.
- Siskiyou BioSurvey, Inc. 2017. *Calochortus coxii* GIS data from July 13, 2017 survey efforts.
- Siskiyou BioSurvey, LLC. 2008. 2008 Biological Survey Report (Botanical, Northern Spotted Owl, Great Gray Owl, Mollusks, Marbled Murrelet, and Red Tree Vole). Prepared for Pacific Connector Gas Pipeline, LP and Edge Environmental, Inc. November.

Table I-4

- BLM. 2015. Final Oregon/Washington State Director's Special Status Species List; Final 6840 Final SSS list, 20150713. Available online: <https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>. FWS 2017
- Forest Service. 2015. Final Region 6 Regional Forester's Special Status Species List. Available online: <https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>.
- FWS. 2017. List of threatened and endangered species that may occur in the Pacific Connector Gas Pipeline Project: Coos, Douglas, Jackson, and Klamath counties. Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, Oregon. Coos County, Event Code: 01EOFW00-2017-E-00496, Consultation Code: 01EOFW00-2017-SLI-0337; Douglas County Part 1, Event Code: 01EOFW00-2017-E-00516, Consultation Code: 01EOFW00-2017-SLI-0347; Douglas County Part 2, Event Code: 01EOFW00-2017-E-00518, Consultation Code: 01EOFW00-2017-SLI-0348; Jackson County, Event Code: 01EOFW00-2017-E-00512, Consultation Code: 01EOFW00-2017-SLI-0345; and Klamath County, Event Code: 01EOFW00-2017-E-00514, Consultation Code: 01EOFW00-2017-SLI-0346. April 2017.
- Kostow, K. 1995. Biennial Report on the Status of Wild Fish in Oregon. Oregon Department of Fish and Wildlife. Salem, OR.
- Laufle, J.C., G.B. Pauley, and M.F. Shepard. 1986. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) – Coho Salmon. U.S. Fish and Wildlife Service Biological Report 82(11.48), U.S. Army Corps of Engineers, TR EL-82-4.
- NatureServe. 2017. NatureServe Explorer: An Online Encyclopedia of Life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Website: <http://explorer.natureserve.org/>
- NMFS (National Marine Fisheries Service). 2012. Species of Concern. NOAA Fisheries Office of Protected Resources. Website: <http://www.nmfs.noaa.gov/pr/species/concern/>
- ODFW. 2005. Oregon Native Fish Status Report. Fish Division, Oregon Department of Fish and Wildlife, Salem, Oregon.
- ORBIC. 2017. Personal Sensitive Species Data Request (01/27/2017).

Pauley, G.B., B.M. Bortz, and M.F. Shepard. 1986. Species profiles, Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) – Steelhead Trout. U.S. Fish and Wildlife Service Biological Report 82(11.62).

Table I-5

- Arora, D. 1986. *Mushrooms Demystified*. First Edition. Ten Speed Press.
- BLM. 2004. California BLM Special Status Plants. Available Online. Accessed August 15, 2006.
- BLM. 2006. Geographical Information System (GIS) databases provided to Pacific Connector.
- BLM. 2010b. GIS Database provided to Edge Environmental, Inc.
- BLM. 2012. GIS Database provided to Edge Environmental, Inc.
- BLM. 2015. Final Oregon/Washington State Director’s Special Status Species List; Final 6840 Final SSS list, 20150713. Website: <https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>.
- BLM. 2017b. Geographical Information System (GIS) databases provided to Pacific Connector.
- British Columbia Ministry of Environment. 2009. Recovery Strategy for Cliff Paintbrush (*Castilleja rupicola*) in British Columbia. Website: http://www.env.gov.bc.ca/wld/documents/recovery/rcvrystrat/cliff_paintbrush_rcvry_strat250309.pdf
- Brodo, I.M., S.D. Sharnoff, and S. Sharnoff. 2001. *Lichens of North America*. Yale University Press, New Haven, CT.
- Calflora. 2013. Information on Wild California Plants for Conservation, Education, and Appreciation. Website: <http://www.calflora.org>
- Castellano, M.A., and T. O’Dell. 1997. Management Recommendations for Survey and Manage Fungi. Attachment – USDI-Bureau of Land Management BLM-Instruction Memorandum No. OR-98-003. Website: <http://www.blm.gov/or/plans/surveyandmanage/MR/Fungi/toc.htm>
- Castellano, M.A, J.E. Smith, T. O’Dell, E. Cazares, and S. Nugent. 1999. Handbook to Strategy 1 Fungal Species in the Northwest Forest Plan. USDI-Forest Service.
- Castellano, M., E. Cazares, B. Fondrick, and T. Dreisbach. 2003. Handbook to additional fungal species of concern in the Northwest Forest Plan. (General Technical Report PNW-GTR-572.) U.S. Forest Service, Pacific Northwest Research Station. Portland, Oregon.
- Center for Plant Conservation. 2011. *Trifolium leibergii*. Available online.
- Christy, J.A, and D.H. Wagner. 1996. Guide for the Identification of Rare, Threatened, or Sensitive Bryophytes in the Range of the Spotted Owl, Western Washington, Western Oregon, and Northwestern California. USDI Bureau of Land Management, USDA Forest Service, The Nature Conservancy, and Northwest Botanical Institute.

- CNPS (California Native Plant Society). 2013. Inventory of Rare and Endangered Species. Available online at: <http://www.rareplants.cnps.org/>.
- Eastman, D.C. 1990. Rare and Endangered Plants of Oregon. Beautiful America Publishing Company, Wilsonville, OR.
- eFloras.org. 2013. Flora of North America. Available online at: http://www.efloras.org/flora_page.aspx?flora_id=1.
- Forest Service. 2015. Final Region 6 Regional Forester's Special Status Species List. Available online: <https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>.
- Forest Service. 2017. GIS database provided to Edge Environmental, Inc.
- Forest Service and BLM. 2014. Species Fact Sheet, *Pseudorhizina californica* (W. Phillips) Harmaja 1973. Interagency Special Status / Sensitive Species Program (ISSSSP). Website: <https://www.fs.fed.us/r6/sfpnw/issssp/species-index/flora-fungi.shtml>.
- Forest Service and BLM. 2004-2017. Interagency Special Status / Sensitive Species Program (ISSSSP) Fact Sheets. Website: bryophyte (<https://www.fs.fed.us/r6/sfpnw/issssp/speciesindex/flora-bryophytes.shtml>), fungi (<https://www.fs.fed.us/r6/sfpnw/issssp/speciesindex/flora-fungi.shtml>), lichen (<https://www.fs.fed.us/r6/sfpnw/issssp/speciesindex/flora-lichens.shtml>), and vascular (<https://www.fs.fed.us/r6/sfpnw/issssp/speciesindex/flora-vascular-plants.shtml>).
- Forest Service and BLM. 2001. Record of Decision and Standards and Guidelines For Amendments to Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines. USDA-Forest Service and USDI-Bureau of Land Management, Portland, Oregon. Accessed online: <http://www.reo.gov/s-m2006/2001/RODjan01.pdf>
- Fryer, J.L. 2002. *Pinus albicaulis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Website: <http://www.fs.fed.us/database/feis/plants/tree/pinalb/all.html#DistributionAndOccurrence>
- FWS. 2017a. List of threatened and endangered species that may occur in the Pacific Connector Gas Pipeline Project: Coos, Douglas, Jackson, and Klamath counties. Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, Oregon. Coos County, Event Code: 01EOFW00-2017-E-00496, Consultation Code: 01EOFW00-2017-SLI-0337; Douglas County Part 1, Event Code: 01EOFW00-2017-E-00516, Consultation Code: 01EOFW00-2017-SLI-0347; Douglas County Part 2, Event Code: 01EOFW00-2017-E-00518, Consultation Code: 01EOFW00-2017-SLI-0348; Jackson County, Event Code: 01EOFW00-2017-E-00512, Consultation Code: 01EOFW00-2017-SLI-0345; and Klamath County, Event Code: 01EOFW00-2017-E-00514, Consultation Code: 01EOFW00-2017-SLI-0346. April 2017.
- FWS. 2017b. ECOS Environmental Conservation Online System, Species Proposed for Status Change or Delisting, Listing Statuses: Species of Concern. Website: <https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report?status=SC&header=Species+Proposed+for+Status+Change+or+Delisting&fleadreg=on&fstatus=on&finvpop=on>. Accessed 4/27/2017

- Goldenberg, D.M. 2011. Final Report, Interagency Special Status/Sensitive Species Program Inventory and Conservation Planning, Siuslaw Resource Area 2010 Special Status Fungi Inventory Surveys, Eugene District BLM. October 11, 2011. Website: <http://www.fs.fed.us/r6/sfpnw/issssp/documents/inventories/inv-rpt-fu-eug-surveys-2011.pdf>.
- Helliwell, R. 2007. Species fact sheet: *Cetrelia cetrarioides* (Duby) Culb. & C. Culb. Website: <https://www.blm.gov/or/plans/surveyandmanage/files/sfs-li-cetrelia-cetrarioides-2007-06.pdf>.
- Hibler, C., J.E. Smith, T. Dreisbach, M. Castellano, B. Fondrick, and C. Mayrsohn. 2001b. 2001 Species review process, step 2 worksheet. Fungi species: RAAR7, RAAU3, RACE4, RARU5, RARU6, RAST5.
- Hickman, J.C., editor. 1993. *The Jepson Manual: Higher Plant of California*. University of California Press, Berkeley, CA.
- Hitchcock, L.C, A. Cronquist, M. Ownbey, and J.W. Thompson. 1969. Vascular Plants of the Pacific Northwest, Part 1. Vascular Cryptogams, Gymnosperms, and Monocotyledons. University of Washington Press, Seattle, WA.
- Holthausen, R.S., R. Anthony, K. Aubry, K. Burnett, N. Fredricks, J. Furnish, R. Leshner, E.C. Meslow, M. Raphael, R. Rosentreter, and E.E. Starkey. 1994. Appendix J2: results of additional species analysis. *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*. U.S. Forest Service and U.S. Bureau of Land Management.
- Huff, R. 2010. Species fact sheet: *Chaenotheca subroscida*. Interagency Special Status/Sensitive Species Program (ISSSSP). U.S. Forest Service and U.S. Bureau of Land Management. Available at: <http://www.fs.fed.us/r6/sfpnw/issssp/species-index/flora-lichens.shtml>. Account last updated May 2010.
- Knorr, J. 2007. Biological Assessment/Evaluation for Sensitive, Threatened, and Endangered Plant Species – Klamath National Forest. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm8_049249.pdf
- Lawton, E. 1971. *Moss Flora of the Pacific Northwest*. Hattori Botanical Laboratory.
- McCune, B. and L. Geiser. 1997. *Macrolichens of the Pacific Northwest*. Oregon State University Press, Corvallis, OR.
- Norris, D.H. and J.R. Shevock. 2004a. Contributions toward a bryoflora of California. I. A specimen-based catalogue of mosses. *Madroño, A West American Journal of Botany* 51(1): 1-131.
- Norris, D.H., and J.R. Shevock. 2004b. Contributions toward a bryoflora of California II. A key to the mosses. *Madroño, A West American Journal of Botany* 51(2): 132-269.
- Norvell, L.L., and R.L. Exeter. 2008. Phaeocollybia of Pacific Northwest North America. USDI BLM/OR/WA/GI-08/100-1792. Salem, Oregon. 228 pp.
- ODA (Oregon Department of Agriculture). 2017. Oregon Listed Plants. Accessed online: <http://www.oregon.gov/ODA/PLANT/CONSERVATION/Pages/statelist.aspx>.

- ODA. 2013. Oregon Listed Plants. Website: <http://www.oregon.gov/ODA/programs/PlantConservation/Pages/AboutPlants.aspx>
- ORBIC. 2012. Rare, Threatened, and Endangered Plants and Animals in the Vicinity of Portions of Coos, Douglas, Josephine, Jackson, Klamath, and Lane Counties. Database Output for Proposed Natural Gas Pipeline, SW Oregon Project. Institute for Natural Resources, Portland State University, Portland, Oregon.
- ORBIC. 2004. Survey and Manage Assessment Species Reports from 2004. Available online.
- ORBIC. 2007. Vascular Plant Rankings 2007. Available online.
- ORBIC. 2010a. Field Guide to Threatened and Endangered Plants of Oregon. Available online.
- ORBIC. 2016. Rare, Threatened and Endangered Species of Oregon. Portland, Oregon. August.
- ORBIC. 2017. Personal Sensitive Species Data Request (01/27/2017).
- Oregon Department of Agriculture. 2013a. ODA Plant Programs, Plant Conservation, Grimy ivesia (*Ivesia rhypara* var. *rhypara*). Website: http://www.oregon.gov/ODA/PLANT/CONSERVATION/pages/profile_ivrhrh.aspx
- Oregon Flora Project. 2002, 2006, 2007. Rare Plant Guide, several species. Available online at: <http://www.oregonflora.org/>
- Oregon Wetlands Explorer. 2013. At-Risk Wetland Plants by Habitat. Available online at: <http://oregonexplorer.info/wetlands/atriskspecies/at-riskwetlandplants>
- Pojar, J., and A. MacKinnon. 1994. *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska*. Lone Pine Publishing, Vancouver, British Columbia.
- Siskiyou BioSurvey, various dates (summarized in biological survey reports including unpublished data).
- Stantec. 2018. Jordan Cove Natural Gas Liquefaction and Pacific Connector Gas Pipeline Project Draft EIS. Appendix K. Survey and Manage Species Persistence Evaluation. Prepared for U.S. Forest Service Agency Review.
- Stone, D. 2007. Species fact sheet: *Peltigera pacifica*. Interagency Special Status/Sensitive Species Program (ISSSSP). U.S. Forest Service and U.S. Bureau of Land Management. Website: <http://www.fs.fed.us/r6/sfpnw/issssp/species-index/flora-lichens.shtml>. Account last updated December 2007. Accessed November 2018.
- Stone, D. 2012. Species fact sheet: *Chaenotheca ferruginea*. Interagency Special Status/Sensitive Species Program (ISSSSP). U.S. Forest Service and U.S. Bureau of Land Management. Website: <http://www.fs.fed.us/r6/sfpnw/issssp/species-index/flora-lichens.shtml>. Account last updated February 2012. Accessed November 2018.
- The Global Fungal Red List Initiative. 2017. *Sarcodon fuscoindicus*. Website: http://iucn.ekoo.se/iucn/species_view/338804/. Accessed September 2017.
- Trappe, M.J. 2013. Pers. Comm. Fungi records and background information for select fungi. Personal communication with Leslie Perry, North State Resources.

Washington Department of Natural Resources and BLM. 2003. *Lipocarpa aristulata*. Available online.

Table I-6

BLM. 2016. Bureau of Land Management, Oregon, Forest Cover Operations Inventory Coverage. Accessed online: <https://www.blm.gov/or/gis/data-details.php?id=15304>. January.

Table I-7

Forest Service. 2003. Raster Grid: Plant Association Groups (PAG) in the SW Oregon province, Draft. Available online: <http://ecoshare.info/2009/12/07/sw-oregon-plant-association-gr/>.

Forest Service. 2010. GIS shapefile: Plant Association. U.S. Department of Agriculture, Forest Service, Fremont-Winema National Forest, Pacific Northwest Region. Available online: <https://www.fs.fed.us/r6/data-library/gis/frewin/index.shtml>

Tables I-8 through I-12

No references.

Table I-13

Johnson, D.H., and T.A. O'Neil (managing directors). 2001. *Wildlife-Habitat Relationships in Oregon and Washington*. Corvallis, OR: Oregon State University Press.

Pardieck, K.L., D.J. Ziolkowski Jr., M. Lutmerding, K. Campbell and M.-A.R. Hudson. 2017. North American Breeding Bird Survey Dataset 1966 - 2016, version 2016.0. U.S. Geological Survey, Patuxent Wildlife Research Center. <www.pwrc.usgs.gov/BBS/RawData/>

Rodewald, P. (editor). 2015. *The Birds of North America*. Cornell Laboratory of Ornithology, Ithaca, NJ. Website: <https://birdsna.org/>

EFFECTS OF THE PROJECT ON ESSENTIAL FISH HABITAT

EFFECTS OF THE PROJECT ON ESSENTIAL FISH HABITAT

INTRODUCTION

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult on all actions or proposed actions authorized, funded, or undertaken by that agency, which could adversely affect essential fish habitat (EFH). The MSA defines EFH as “those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity” (50 Code of Federal Regulations [CFR] 600). For the purposes of this definition, “waters” means aquatic areas and their associated physical, chemical, and biological properties; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and healthy ecosystem; and “spawning, feeding, and breeding” is meant to encompass the complete life cycle of a species (50 CFR 600). The MSA establishes guidelines for Regional Fisheries Management Councils to describe and identify EFH in Fisheries Management Plans (FMP) to managed exploited fish and invertebrate species in federal waters. The Pacific Fishery Management Council has developed four FMPs that address the EFH for managed species that occur in portions of the Jordan Cove Liquefied Natural Gas (LNG) Project and Pacific Connector Pipeline Project (Project) action area.

Generally, the EFH consultation process includes the following steps.

1. Notification – The action agency should clearly state the process being used for EFH consultations (e.g., incorporating EFH consultation into an environmental impact statement [EIS]).
2. EFH Assessment – The action agency should prepare an EFH Assessment that includes both identification of affected EFH and an assessment of impacts. Specifically, the EFH Assessment should include:
 - a. a description of the proposed action;
 - b. an analysis of the effects (including cumulative effects) of the proposed action on EFH, managed fish species, and major prey species;
 - c. the federal agency’s views regarding the effects of the action on EFH; and
 - d. proposed mitigation, if applicable.
3. EFH Conservation Recommendations – After reviewing the EFH Assessment, the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) should provide recommendations to the action agency regarding measures that can be taken by that agency to conserve EFH.
4. Agency Response – Within 30 days of receiving the recommendations, the action agency must respond to NMFS. The action agency may notify NMFS that a full response to the conservation recommendations would be provided by a specified completion date agreeable to all parties. The response must include a description of measures proposed by the agency to avoid, mitigate, or offset the impact of the activity on EFH. For any

conservation recommendation that is not adopted, the action agency must explain its reason to NMFS for not following the recommendation.

The Federal Energy Regulatory Commission (FERC) proposes to incorporate EFH consultation for the Project with the interagency coordination procedures required under the National Environmental Policy Act (NEPA). For the Jordan Cove LNG Project, we have determined that EFH may be affected, and we will be submitting this EFH Assessment to NMFS to begin consultation.

EFH has been designated in or near areas where Project activities would occur under the following FMPs:

- Highly Migratory Species (PFMC 2007),
- Pacific Coast Groundfish (PFMC 2008),
- Coastal Pelagic Species (PFMC 2006a), and
- Pacific Coast Salmon (PFMC 1999).

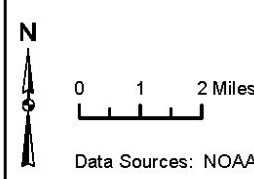
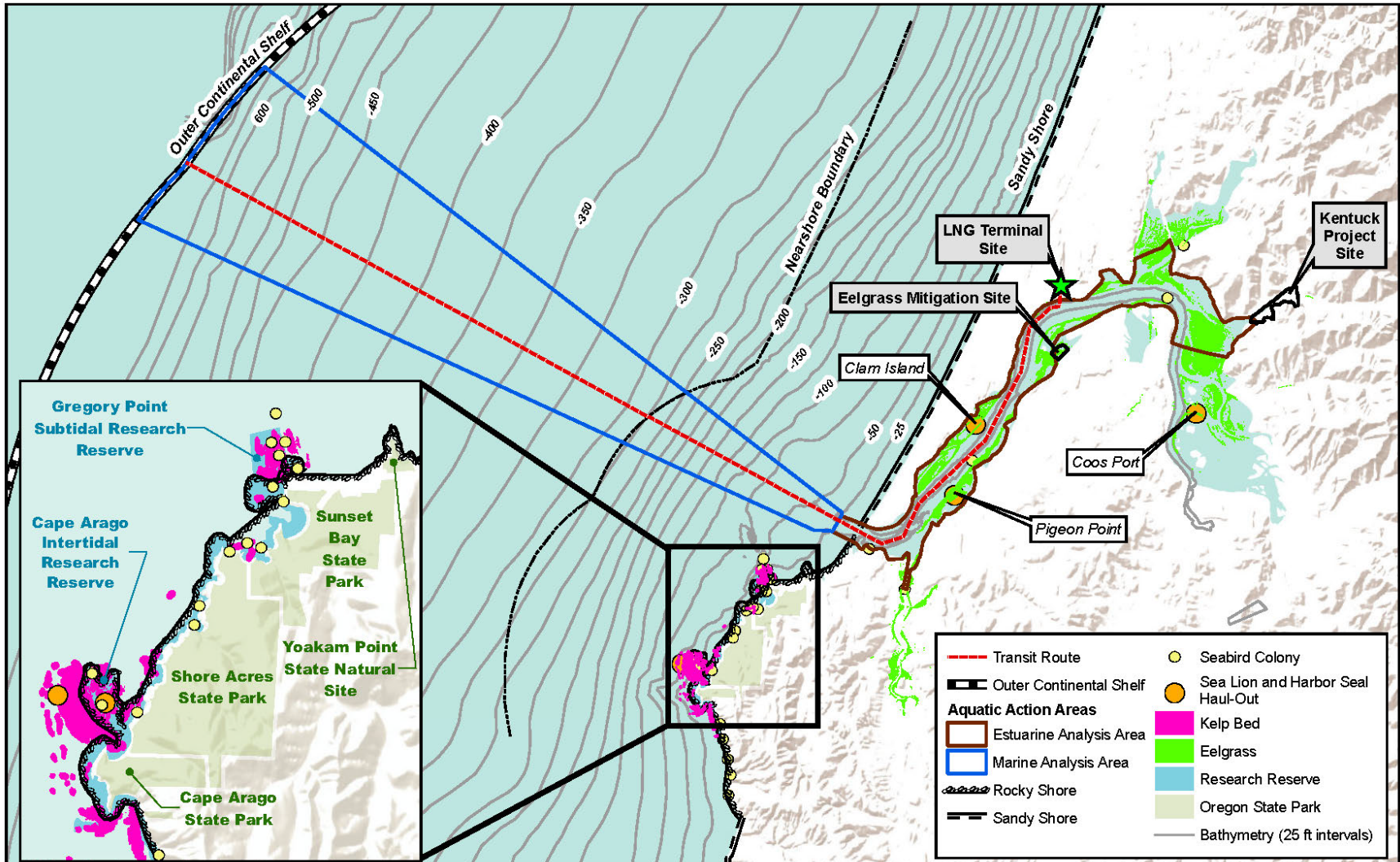
The EFH Assessment will be included with the Biological Assessment (BA) that is being developed and will be submitted in conjunction with that BA. The EFH Assessment summary included here is presented in three subsections that are characterized as three major Project areas and components:

- Waterway for LNG Carrier Traffic
- Jordan Cove LNG Project
- Pacific Connector Gas Pipeline

Each subsection will include a description of the EFH in that Project area and the effect of that Project component on EFH in that area, including a determination of effects to EFH to the relevant FMP species groups.

ESSENTIAL FISH HABITAT AND EFFECTS AT THE WATERWAY FOR LNG CARRIER TRAFFIC

Within the waterway, EFH occurs in both the Pacific Ocean off the southwestern Oregon coast and in Coos Bay, including the Kentuck Slough development. The aquatic analysis area within the waterway for LNG carrier transit to the Jordan Cove LNG terminal includes EFH and is illustrated in figure 1. The area of greatest concern for potential effects to EFH from LNG carrier-related actions is along the nearshore marine and Coos Bay route to and from the LNG terminal. Additional EFH habitat of concern would occur along the potential LNG carrier transit route extending out to the 200-mile economic exclusion zone (EEZ). Species with EFH in the area affected by the Project are summarized below.



Data Sources: NOAA, Oregon GEO, USACE, ODFW

Figure 1

Aquatic Analysis Areas Along the Waterway, Including Essential Fish Habitat

Pacific Coast Groundfish EFH

The groundfish group includes 82 species. For the Pacific coast groundfish fishery, the EFH determination is based on habitat use by life stage for all 82 species in each composite EFH shown in Appendices B-1 and B-3 of the Pacific Coast Groundfish Management Plan (PFMC 2008). The life history descriptions and maps showing species distributions are also available in Appendices B-2 and B-4, respectively, of the Management Plan (PFMC 2008). The EFH of groundfish species is listed and effects assessed in the pending EFH assessment that will be part of our pending BA.

Coastal Pelagic Species EFH

The EFH for coastal pelagic species is defined by the species' temperature and geographic range during all life stages in the past, present, and where they could occur in the future. In addition to all marine and estuarine waters off the Pacific Coast to the limits of the EEZ, EFH for coastal pelagic species also includes portions of the water column where sea surface temperatures range between 50 degrees Fahrenheit (°F; near the U.S./Mexico maritime boundary) and 79°F (seasonally and annually variable) (PFMC 2006a). The coastal pelagic species fishery management plans include five species: northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*), and market squid (*Loligo opalescens*). Of these, two species (market squid and Pacific sardine) are known to occur in estuaries (PFMC 1998). The others would be found in the marine waters off the Oregon Coast along the shipping route. The EFH of coastal pelagic species is listed and effects assessed in the pending EFH assessment that will be provided as part of our pending BA.

Pacific Coast Salmon EFH

For the Pacific salmon fishery, the PFMC identified EFH using U.S. Geological Survey hydrologic units as well as habitat association tables and life history descriptions for each life stage (PFMC 1999, Appendix A, Amendment 14 to the Pacific Coast Salmon Plan). These areas encompass all streams, lakes, ponds, wetlands, and other currently viable waterbodies and most of the habitat historically accessible to salmon in Washington, Oregon, Idaho, and California. In estuarine and marine areas, EFH for Pacific salmon extends from the nearshore and tidal submerged environments within state waters out to the full extent of the EEZ (200 nautical miles). Three species are included in the PFMC management plan: coho (*Oncorhynchus kisutch*), Chinook (*O. tshawytscha*), and pink salmon (*O. gorbuscha*). The EFH of salmon will be listed and effects assessed in the pending EFH assessment that will be provided as part of our pending BA.

Highly Migratory Species EFH

Highly migratory fish EFH may exist along the outer portion of the transit route for LNG marine traffic. This EFH is found in temperate waters in the Pacific Council's region. Variations in the distribution and abundance of these species are affected by ever-changing oceanic environmental conditions including water temperature, current patterns, and the availability of food. Sea surface temperatures and habitat boundaries vary seasonally and from year to year, with some of the species much more abundant from northern California to Washington waters during the summer and warm water years than during winter and cold water years, due to increased habitat availability in the EEZ. The species include five species of shark, tuna, striped marlin (*Kajikia audax*), swordfish (*Xiphias gladius*), and dolphinfish (*Coryphaena hippurus*). Based on the EFH habitat defined for these species, few if any of

these species are off the Coos Bay at coastal depths less than 100 fathoms (100 fathoms is the approximate edge of the shipping route defined area in Oregon coastal waters to three miles offshore). However, in waters farther offshore, some habitat is available for some of these species and life stages out to the 200-mile EEZ. Overall, little EFH for these managed species would be present along the shipping route to the EEZ near Coos Bay. However, depending on the shipping route traveled, additional EFH of the highly migratory species may occur in southern west coast waters where more of these species' habitat may be present. The EFH of highly migratory species is listed and effects assessed in the pending EFH assessment as part of our pending BA.

Project Area–Specific EFH Species Characteristics

Within or near Coos Bay, a subset of these managed species is present including 2 salmon (Chinook and coho salmon), 3 pelagic (northern anchovy, Pacific sardine, and Pacific mackerel), and 29 groundfish species, based on typical habitat use of these species. The general life history and expected habitat use will be shown in our pending BA and EFH assessment.

Based on sampling (e.g., Oregon Department of Fish and Wildlife [ODFW] data from 1996 to 2000), 13 groundfish, 2 salmon, and 1 pelagic species would be considered common. The information below provides details on most of these fish species use of the bay, relative to the Project site.

Managed groundfish and coastal pelagic species are not estuarine resident species and therefore utilize Coos Bay seasonally, primarily in summer months. During the summer, the estuary may be utilized as a forage area for juveniles and adults and as a nursery area for larvae and juveniles. Starry flounder spawn near river mouths and sloughs. Juvenile starry flounder (*Platichthys stellatus*) are found exclusively in estuaries. Sampling in upper Coos Bay from 1979 to 1990 showed that young-of-the-year flounder are present at least in the spring and summer months (Wagoner et al. 1990). Flounder and sole are found in sandy or muddy substrate, and juveniles are found in shallow water near rivers and in estuaries in eelgrass beds. Adults generally are found in deeper waters in the winter and migrate to shallower water in the spring. English sole (*Parophrys vetulus*) juveniles depend heavily on inter-tidal areas, estuaries, and shallow nearshore waters for food and shelter.

Adult Chinook and coho salmon may utilize habitat in the transit route in Coos Bay for migration and offshore for migration and feeding. Adults would return to the rivers in late summer and fall. Juveniles and smolts may use the transit route in Coos Bay for resting and foraging during emigration in the spring and summer, and offshore for migration and feeding. ODFW (2005) has captured coho and Chinook salmon, starry flounder, northern anchovy, and sand sole (*Psettichthys melanostictus*) in the Jordan Cove area adjacent to the Project site.

The black rockfish (*Sebastes melanops*) is the only member of the rockfish family that is consistently caught in Coos Bay (Wagoner et al. 1990). The copper (*S. caurinus*), blue (*S. mystinus*), grass (*S. rastrelliger*), and canary rockfishes (*S. pinniger*), as well as bocaccio (*S. paucispinis*), are occasionally caught. The rockfishes are in the lower areas of Coos Bay, mainly during the late spring and summer months (Wagoner et al. 1990). Black rockfish are not known to spawn in estuaries. Rockfish recruit to seagrass beds in shallow, soft bottom embayments (Love et al. 1991). Johnson et al. (2003) reported that juveniles of many commercially important species utilize eelgrass habitat in Southeastern Alaska. Rockfish juveniles settle into shallow, vegetated

habitats for rearing. Vegetated habitats (eelgrass and kelp) provide refuge from predators and access to prey. Juvenile rockfish may also be closely associated with seagrass drift for both feeding and refugia while they move between pelagic and near shore habitat (Nightingale and Simenstad 2001a). Rockfish have not been seined by ODFW in or near the immediate Project slip area, indicating that this area is not likely utilized by rockfish.

Black rockfish and cabezon (*Scorpaenichthys marmoratus*) were the most abundant juvenile rockfish species captured in Coos Bay (near the entrance) between June 2003 and December 2005 (Schlosser and Bloeser 2006). Trap sites were in eelgrass beds, along dock pilings and in sandy bottom habitat near the entrance to Coos Bay. Juvenile chilipepper (*Sebastes goodei*), coppergrass, yellowtail (*Sebastes flavidus*), and kelp greenling were also captured near the entrance.

Lingcod begin life in near-surface marine waters and estuarine areas. Juvenile lingcod primarily use estuaries, entering to feed, while adults are usually found in marine waters of 100 to 150 meters (328 to 492 feet) deep. Lingcod lay eggs in rocky, marine subtidal areas. Larvae are found in the near-surface marine waters and estuarine areas. In this life stage, lingcod feed primarily on copepods, eggs, and other crustaceans. As it matures, lingcod are commonly found in shallow, inter-tidal areas of bays near algae and seagrass beds.

Phillips (1984) described northern anchovy to be transient users of eelgrass. Eelgrass provides indirect benefits to these species as well through contributions to productivity in the estuary, and eelgrass drift may provide cover for coastal pelagic species (Nightingale and Simenstad 2001b).

Other species managed by the PFMC that occur in Coos Bay include sand sole and big skate (*Beringraja binoculata*). Sand sole require a sand-mud-eelgrass type of habitat; however, they have not been captured in or near the area affected by the Project. Big skate occur nearshore and occasionally in the bay (Wagoner et al. 1990).

In offshore waters, along the shipping route out to the 200-mile EEZ, additional species and life stages of groundfish, coastal pelagic species, Pacific Coast salmon and highly migratory species would be present. The details of the species and life stages and likelihood of being present in the EEZ analysis area will be provided in our pending BA.

Food Web Importance to EFH

Prey species that are important for local EFH fish species rely on many of the same habitat conditions as the EFH fish species. The food web components including phytoplankton, zooplankton, detritus, epiphyton, and submerged aquatic vegetation (SAV; e.g., eelgrass, macrophytic algae) are all important in supplying the habitat and food base for EFH species in Coos Bay. For example, submerged grasses or SAV are important habitat for small prey species of adult lingcod (in Appendix B-2 of PFMC 2008). Forage items that are habitat components for the managed species do depend to some extent on estuarine systems. Many species of groundfish and salmonids occupy inshore areas of the lower bay during juvenile stages (e.g., Chinook salmon, coho salmon, English sole) where they feed on estuarine-dependent prey, including shrimp, small fishes, and crabs. As they mature and move offshore, their diets in many cases change to include fish, although estuarine-dependent species (e.g., shrimp, crabs) can still constitute an important dietary component.

A variety of habitats of importance occurs along the transit route for LNG marine traffic. They include fresh, estuarine, and marine waters. Coos Bay contains estuarine environments of freshwater streams and slough. The habitat in the marine environment includes shallow sandy shorelines, and nearshore and offshore rocky environments. The coasts also contain rocky reefs and kelp forest regions but pelagic and deep ocean waters with soft bottoms habitats are most common directly along the route outside of the bay (ODFW 2005). The fish and other aquatic organisms along this route are highly diverse and abundant containing very important EFH habitat for many species.

Effects on EFH Along the Waterway for LNG Carrier Transit and Measures to be Implemented to Avoid or Reduce Effects on Aquatic Resources

A summary of potential effects on EFH is shown in table 1. The details of the effects on EFH and aquatic species that occupy that habitat from ship grounding, propeller wash, wake waves, fish strandings, introduction of non-native species, and cargo, fuel, and oil spills related to LNG carrier transit in the waterway, as well as measures that would be implemented to minimize these effects, are discussed above.

TABLE 1 Potential Effects to EFH due to LNG Carrier Traffic Along the Transit Route			
EFH	Description of EFH <u>a/</u>	Project Actions and Potential Effects	Determination of Effects
Groundfish	All waters from the extent of the high tide line (and parts of estuaries) to offshore to the 3,500-meter (1,914-fathom) depth.	Accidental spills of hazardous substances, entrainment	Minimal adverse effects or less than substantial effects to multiple groundfish species EFH (see section 4.5.2.1 in the EIS for effects and mitigation)
Coastal Pelagic Species	All marine and estuarine waters from the coast to the limits of the EEZ and above the thermocline where sea surface temperatures range between 50°F and 79°F.	Accidental spills of hazardous substances, entrainment	Minimal adverse effects or less than substantial effects to coastal pelagic species (northern anchovy, Pacific sardine) EFH (see section 4.5.2.1 of the EIS for effects and mitigation)
Pacific Coast Salmon	All streams, lakes, ponds, wetlands, and other waterbodies currently and historically accessible to salmon. Estuaries and marine areas extending to the EEZ and beyond.	Accidental spills of hazardous substances, entrainment	Minimal adverse effects or less than substantial effects to Pacific coastal salmon species (coho and Chinook salmon) EFH (see section 4.5.2.1 of the EIS for effects and mitigation)
Highly Migratory Species	EFH is defined by temperature ranges, salinity, oxygen levels, currents, shelf edges, and sea mounts. Based on species characteristics closest EFH would be beyond the 40-fathom depth off Coos Bay. <u>b/</u>	Accidental spills of hazardous substances	Minimal adverse effects or less than substantial effects to highly migratory species EFH (see section 4.5.2.1 of the EIS for effects and mitigation)

a/ PFMC (2006b; fact sheet, update version, July 24, 2006)
b/ PFMC (2007)

ESSENTIAL FISH HABITAT AND EFFECTS AT THE JORDAN COVE LNG TERMINAL

EFH and species present in Coos Bay, including near the LNG terminal, are described in detail in subsection above on the waterway. EFH effects from construction and operation of the LNG

terminal and maintenance dredging are summarized in table 2. Three habitat types occur in the slip site that would be affected by the slip, access channel, and navigation channel that are tidally influenced and function as EFH: the shoreline habitat, SAV, and the open water of Coos Bay. The effects of the LNG terminal, navigation channel widening, Eelgrass Mitigation site, Kentuck project site, and road widening on aquatic resources as described above also apply to EFH species.

TABLE 2			
Potential Effects to EFH due to LNG Terminal Construction and Operations			
EFH	Description of EFH ^{a/}	Project Actions and Potential Effects	Determination of Effects
Groundfish	All waters from the extent of the high tide line (and parts of estuaries) to offshore to the 3,500-meter (1,914-fathom) depth.	<ul style="list-style-type: none"> • Dredging of 64 acres of estuarine habitat in Coos Bay • Potential food and larval organism impingement/entrainment • Periodic channel dredging • Acoustic noise from pile driving • Accidental spills of hazardous substances 	Substantial adverse effects to multiple groundfish species (e.g., rockfish, English soul, Starry flounder) EFH (see section 4.5.2.2 of the EIS for effects and mitigation)
Coastal Pelagic Species	All marine and estuarine waters from the coast to the limits of the EEZ and above the thermocline where sea surface temperatures range between 50°F and 79°F.	<ul style="list-style-type: none"> • Dredging of 64 acres of estuarine habitat in Coos Bay • Accidental spills of hazardous substances • Periodic channel dredging • Acoustic noise from pile driving • Potential food and larval organism impingement/entrainment 	Substantial adverse effects to coastal pelagic species (northern anchovy, Pacific sardine) EFH (see section 4.5.2.2 of the EIS for effects and mitigation)
Pacific Coast Salmon	All streams, lakes, ponds, wetlands, and other waterbodies currently and historically accessible to salmon. Estuaries and marine areas extending to the EEZ and beyond.	<ul style="list-style-type: none"> • Dredging of 64 acres of estuarine habitat in Coos Bay • Accidental spills of hazardous substances • Periodic channel dredging • Acoustic noise from pile driving • Potential food organism and juvenile fish impingement/entrainment 	Substantial adverse effects to Pacific coastal salmon species (coho and Chinook salmon) EFH (see section 4.5.2.2 of the EIS for effects and mitigation)

^{a/} PFMC (2006b; updated version July 24, 2006)

Approximately 77 acres of EFH in Coos Bay would be affected by construction-related activities (table 4.5.2.2-2 of the EIS). This would include about 37 acres from development of the slip, access channel, MOF, and pile rock dike apron and 40 acres from the marine waterway modifications; there would also be another 6 acres affected by development of the eelgrass and Kentuck mitigation sites, Trans-Pacific Parkway widening, and dredge pipelines used for transport of dredged material to storage areas. Habitat affected includes about 5 acres of shallow subtidal, 14 acres of intertidal unvegetated muds and sands, and 2 acres eelgrass, most of which is from the slip and access channel development. The remaining 56 acres of habitat affected is deep subtidal, which, while disturbed from dredging or tailings transmission pipelines, would remain as deepwater habitat. However, most of the non-deepwater habitat affected would be converted to deepwater habitat (about 19 acres at the access channel and slip). While Project construction would adversely affect EFH primarily from conversion of intertidal and shallow water habitat to deepwater habitat, including the loss of a narrow band of about 2 acres of eelgrass (figure 4.5-3 of the EIS), the potential adverse effects on EFH would not be substantial as most habitat types affected would remain similar to pre-Project habitat types.

Several of the EFH species known for Coos Bay are not present near the Jordan Cove LNG terminal. Rockfish and lingcod have not been seined by ODFW near the terminal location;

however, they are known to be present in the bay. Juvenile chilipepper, copper, grass, yellowtail, and kelp greenling were captured near the mouth of Coos Bay only, so habitat they utilize in the bay would be unlikely to be disturbed by the terminal.

During operation of the terminal, LNG carriers at the berth could entrain or impinge aquatic species while taking in engine cooling water. This could result in mortality to early life stages and juvenile species and their local food organisms. Effects on EFH species would not be substantial and would be similar to those described above for other species during the operation of the Jordan Cove terminal.

All associated activities, including construction and operation of the LNG terminal, dredging of the slip and navigation channel widening, maintenance dredging of the channel, and docking and loading of marine vessels, carry the risk of accidental spills or leaks of hazardous substances occurring. Should these occur, they could have adverse effects to coastal pelagic, groundfish, or Pacific Coast salmon species that may be present near the spill. Effects would be slight because of the procedures that would be in place in Jordan Cove's Spill Prevention, Containment, and Countermeasures (SPCC) Plan to reduce the chance of spills occurring and magnitude of a spill should one occur.

EFH Conservation and Mitigation Measures for LNG Terminal Construction and Operation

The following measures would be implemented to minimize effects on EFH from construction and operation of the Jordan Cove terminal:

- the bulk of the slip construction would take place in isolation from Coos Bay by maintaining a portion of the existing shoreline as a berm;
- all dredging in Coos Bay during construction of the marine slip, access channel, and marine waterway modifications would occur during the ODFW preferred work windows (October 1 through February 15) to minimize effects on vulnerable life stages of important fish species;
- an SPCC Plan would be implemented;
- Jordan Cove would develop about 8 acres of new eelgrass habitat at a site in Coos Bay near the Southwestern Oregon Regional Airport to mitigate for the loss of 2 acres of eelgrass removed during construction of the access channel to the terminal;
- about 91 acres of intertidal habitats, would be restored at the Kentuck project site, with the goal of producing 71 acres of final estuarine habitat to mitigate for about 12 acres of intertidal mudflats, 4 acres of shallow subtidal habitat, less than 1 acre of salt marsh, and other Coos Bay sites affected by construction of the Jordan Cove LNG Project; and
- acoustic noise-dampening methods would be implemented for sheetpile and piling installation locations where they were likely to exceed NMFS criteria.

ESSENTIAL FISH HABITAT AND EFFECTS AT THE PACIFIC CONNECTOR GAS PIPELINE ROUTE

EFH and species present in Coos Bay are described in the earlier section addressing the Waterway. In Coos Bay, there are no planned disturbance of the estuarine environment from either right-of-way construction or TEWAs. However, should frac-out occur at either of the two Coos Bay crossings, some burial of non-mobile organisms such as clams, oysters, and worms would occur.

Additional areas would be affected from sediment and turbidity from frac-out if it occurred during HDD pipeline installation at river crossings. The directly disturbed areas would likely be small as monitoring would detect this issue and the process would be shut down until corrections could be made. Flowing tidal water would dilute and disperse turbidity plumes.

The PFMC EFH species groups that may be in the pipeline area at waterbody crossings are summarized in table 3. These species will be described in more detail in our pending BA and EFH assessment. Construction-related effects on the estuarine region of Coos Bay and its EFH would be reduced by Pacific Connector following its HDD construction plans and *Drilling Fluid Contingency Plan for Horizontal Directional Drilling Operations*, which includes the in-water work window developed by ODFW and other measures discussed above.

TABLE 3
Potential Effects to EFH due to Pipeline Construction and Operation

EFH	Description of EFH ^{a/}	Project Actions and Potential Effects	Determination of Effects
Groundfish	All waters from the extent of the high tide line (and parts of estuaries) to offshore to the 3,500-meter (1,914 fathoms) depth.	<ul style="list-style-type: none"> • Potential frac-out of HDD of 2.3-mile pipeline route in Coos Bay • Accidental spills of hazardous substances 	Unsubstantial adverse effects to multiple groundfish species (e.g., rockfish, English sole, Starry flounder) EFH (see sections 4.5.2.3 of the EIS for effects and mitigation)
Coastal Pelagic Species	All marine and estuarine waters from the coast to the limits of the EEZ and above the thermocline where sea surface temperatures range between 50°F and 79°F	<ul style="list-style-type: none"> • Potential frac-out of 2.3-mile pipeline route in Coos Bay • Accidental spills of hazardous substances 	Unsubstantial adverse effects to coastal pelagic species (northern anchovy, Pacific sardine) EFH (see sections 4.5.2.3 for effects and mitigation)
Pacific Coast Salmon	All streams, lakes, ponds, wetlands, and other waterbodies currently and historically accessible to salmon. Estuaries and marine areas extending to the EEZ and beyond.	<ul style="list-style-type: none"> • Potential frac-out of 2.3-mile HDD pipeline route in Coos Bay and other HDDs in rivers • Accidental spills of hazardous substances • Pipeline construction at waterbody crossings elevating suspended sediment downstream • Loss of riparian habitat along streams • Fish salvage during stream crossings 	Substantial adverse effects to Pacific coastal salmon species (coho and Chinook salmon) EFH (see sections 4.5.2.3 and 4.6.1.3 of the EIS for effects and mitigation)

^{a/} PFMC 2006b (update version 7/24/2006)

A list of the waterbodies crossed by the proposed pipeline route and EFH assumed or known for coho and Chinook salmon species is shown in table I-2 in appendix I. Sixty-one of the stream and estuary crossing areas (either directly crossed or near the pipeline) contain or are assumed to contain EFH for either one or both species. Coos Bay would be crossed by HDD, while all streams that would be directly crossed would have all construction work done in the dry (four would be passed by HDD, one with conventional bore, and one using a diverted open cut [South Umpqua River]). In-water work for the pipeline crossings would temporarily affect EFH in approximately 51 streams that would be crossed using dry open-cut methods that are potentially designated as EFH for Chinook and/or coho salmon. Waterbody crossings that involve open trenching would be constructed during established in-water work windows. However, some streams may have spawning Chinook salmon present during the crossing period, which would increase the risk of spawning effects from turbidity and sediment.

In freshwater, EFH for Chinook and coho salmon includes habitats for spawning, rearing, and migration corridors (PFMC 2003). Components of the pipeline with the potential to adversely

affect designated EFH include removal of terrestrial and riparian vegetation, in-water pipeline construction increasing turbidity and sediment, accidental spills and leaks of hazardous materials, and hydrostatic testing. Construction adjacent to EFH could also result in increased stormwater runoff and/or an inadvertent spill of hazardous materials, either of which could result in substantial adverse effects on EFH. A detailed discussion of measures that would be implemented to avoid or minimize effects on aquatic resources (including EFH) because of pipeline construction is presented in section 4.5 of the EIS.

The determinations of effect on EFH resulting from the Pacific Connector Pipeline Project are described below. For actions in the estuary, effects to EFH would be similar to those described for the LNG terminal slip. Additional adverse effects would occur at freshwater crossings that would affect Pacific Coast salmon. For coastal pelagic, groundfish, and Pacific coast salmon, effects would be similar although magnitude would vary (table I-3).

The FERC, as the lead federal agency, is consolidating the EFH and the ESA process for all portions of the Project. This includes development of an EFH Assessment and BA together for submittal to NMFS and U.S. Fish and Wildlife Service with a request to initiate formal consultation.

REFERENCES

- Johnson, S.W., M.L. Murphy, D.J. Csepp, P.M. Harris, and J.F. Thedinga. 2003. A survey of fish assemblages in eelgrass and kelp habitats of southeastern Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-139, 39 pp.
- Love, M.S., M.H. Carr, and L.J. Haldorson. 1991. The Ecology of Substrate-associated Juveniles of the Genus *Sebastes*. *Environmental Biology of Fishes* 30:225–243.
- Nightingale, B.J., and C.A. Simenstad. 2001a. Overwater Structures: Marine Issues. Washington State Transportation Center (TRAC). Washington Department of Fish and Wildlife. Washington Department of Ecology.
- Nightingale, B., and C.A. Simenstad. 2001b. Dredging Activities: Marine Issues. White Paper. Submitted to: WDFW, WDOE, WDOT. University of Washington, WA.
- PFMC (Pacific Fishery Management Council). 1998. Amendment 8 to the Northern Anchovy Fishery Management Plan: The Coastal Pelagic Species Fishery Management Plan. Pacific Fishery Management Council, Portland, Oregon.
- PFMC. 1999. Appendix A - identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. Amendment 14 to the Pacific Coast Salmon Plan. August. Website: <http://www.pcouncil.org/Salmon/a14efh/efhindex.html>
- PFMC. 2003. Pacific Coast Salmon Plan, Fishery Management Plan for Commercial and Recreational Salmon Fisheries Off the Coasts of Washington, Oregon, and California as Revised through Amendment 14. National Oceanic and Atmospheric Administration Award Number NA03NMF4410067. September.
- PFMC. 2006a. Status of Pacific Coast Coastal Pelagic Species Fishery and Recommended Acceptable Biological Catches. Stock Assessment and Fishery Evaluation 2006. Pacific Fishery Management Council, Portland Oregon.

- PFMC. 2006b. Pacific Fish Management Council Backgrounder: Essential Fish Habitat. Portland, Oregon. Website: <http://www.pcouncil.org/facts/habitat.pdf>. Accessed: January 2007.
- PFMC. 2007. Fishery Management, Habitat Background, Essential Fish Habitat for Highly Migratory Species. Website: <http://www.pcouncil.org/habitat/habback.html#hms/>. Accessed: January 2007.
- PFMC. 2008. Pacific Coast Groundfish Management Plan for California, Oregon, and Washington Groundfish Fishery, as Amended through Amendment 19, including Amendment 15. Portland, Oregon.
- Phillips, R.C. 1984. The Ecology of Eelgrass Meadows in the Pacific Northwest: A community Profile. U.S. Fish and Wildlife Service. FWS/OBS-84/24. 85 pp.
- Schlosser, S., and J. Bloeser. 2006. The Collaborative Study of Juvenile Rockfish, Cabezon, and Kelp Greenling Habitat Associations between Morro Bay, California and Newport, Oregon. February. Final Report to Pacific States Marine Fisheries Commission Summarizing data for 2003, 2004, and 2005.
- Wagoner, L.J., K.K. Jones, R.E. Bender, J.A. Butler, D.E. Demory, T.F. Gaumer, J.A. Hurtado, W.G. Mullarky, P.E. Reimers, N.T. Richmond and T.J. Rumreich. 1990. Coos River Fish Management Plan. Oregon Department of Fish and Wildlife.