3.4 FISH AND AQUATIC SPECIES AND HABITAT

The chapter addresses fish and aquatic resources, which include fish, aquatic species, and their habitats, as well as marine mammals. Terrestrial and marine birds are discussed in Chapter 3.6 – Vegetation and Terrestrial Wildlife. The marine nearshore is the transition zone between terrestrial, freshwater, and marine ecosystems. A wide range of resources depend upon the nearshore because of its physical complexity, high productivity, complex food webs, diverse habitats, and organisms (Kozloff 1973).

STUDY AREA AND METHODOLOGY

Jurisdictional ditches are upland ditches carrying relatively permanent flow to traditionally navigable waters that are under the jurisdiction of the Clean Water Act and regulated by the U.S. Army Corps of Engineers (USACE).

The study area used to evaluate impacts on fish and aquatic species and habitat includes the *jurisdictional ditches*, streams, sloughs, and marine shorelines associated with Padilla and Fidalgo bays that are crossed by, or could receive runoff and stormwater discharge from, the proposed project site, the proposed wetland mitigation site, and the Anacortes Subdivision. This is the same study area used for the analysis of surface water resources as project construction and operations affecting surface waters could affect fish and aquatic species and habitat. Rail transport beyond the Anacortes Subdivision was not included in the study area because incremental increases in transport activities beyond this area are not anticipated to affect fish and aquatic species. Potential impacts from an accidental release of crude oil along the rail corridor are discussed in Chapter 4 – Environmental Health and Risk. Because the potential impacts associated with fish and aquatic species and habitat are localized, the cumulative impacts study area would be the same as that described above for direct and indirect impacts. It includes the ditches, streams, sloughs, wetlands, and marine shorelines associated with Padilla and Fidalgo bays.

Select laws, regulations, and guidance applicable to fish and aquatic species and habitat associated with the proposed project are summarized in Table 3.4-1.

Table 3.4-1 Laws, Regulations, and Guidance for Project-Related Fish and Aquatic Species and Habitat

Laws, Regulations, and Guidance	Description
Federal	
Clean Water Act (CWA) (33 USC 1251 et seq.)	Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulates quality standards for surface water. Section 404 (33 USC 1344) establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands.
The Federal Coastal Zone Management Act	Through the Federal Coastal Zone Management Act, coastal states with approved Coastal Zone Management Programs (CZMP) require projects operating under a federal permit or license to demonstrate consistency with the CZMPs. Federal Consistency allows states to review those projects that are likely to affect state coastal resources or uses.
Endangered Species Act (ESA) (16 USC 1531 et seq.)	Requires that applicants seeking a federal action undergo consultation with U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS). This ensures the federal action is not likely to jeopardize the continued existence of any listed threatened or endangered animal species or result in the destruction or adverse modification of designated critical habitat. The USFWS and the NMFS share responsibility for implementing the ESA. The USFWS is responsible for terrestrial and freshwater species. The NMFS is responsible for marine species. Both NMFS and USFWS are responsible for designating critical habitat for ESA-listed species.
Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 94-265)	Addresses needs for improved fishery monitoring, enhanced research, greater consideration of fishing communities, identification of essential fish habitat, formation of constituent advisory panels, and analysis of fishing capacity, among other activities.
State	
State Environmental Policy Act (SEPA) (RCW 43.21c; WAC 197-11)	Helps state and local agencies in Washington identify possible environmental impacts that could result from a proposed action, alternatives to the proposed action, and potential impact minimization and mitigation measures. Information learned through the review process can be used to change a proposal to reduce likely impacts and inform permitting decisions at the state and local levels.

Laws, Regulations, and Guidance	Description
Washington State Coastal Zone Management Program (WCZMP)	Under Washington's Coastal Zone Management Program (WCZMP), projects that are likely to affect state coastal resources or uses must be consistent with the WCZMP's enforceable policies found in the Shoreline Management Act, the Ocean Resource Management Act, the Water Pollution Control Act, and the Clean Air Act and all state regulations that implement those Acts.
Washington State Growth Management Act (RCW 36.70A)	Requires state and local governments to manage Washington's growth by identifying and protecting critical areas and natural resource lands, designating urban growth areas, and preparing comprehensive plans and implementing them through capital investments and development regulations.
Washington State Shoreline Management Act (RCW 90.58)	Provides a statewide framework for managing, accessing and protecting shorelines of the state and reflects the strong interest of the public in shorelines and waterways for recreation, protection of natural areas, aesthetics, and commerce.
Washington State Hydraulic Code (WAC 220-660; RCW 77.55)	A hydraulic project is the construction or performance of work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state. Unless otherwise provided, any person who wants to conduct a hydraulic project must get a construction permit called the hydraulic project approval (HPA) from the Washington Department of Fish and Wildlife (WDFW). The purpose of the HPA is to ensure that construction or performance of work is done in a manner that protects fish life.
Water Pollution Control Act (RCW 90.48)	Maintains the highest possible standards to ensure the purity of all waters of Washington State are consistent with public health and public enjoyment, the propagation and protection of wildlife, birds, game, fish, and other aquatic life and industrial development of the state. To that end, requires the use of all known available and reasonable methods by industries and others to prevent and control the pollution of state waters.
Local	
Skagit County Critical Areas Ordinance (SCC 14.24)	This ordinance was developed under the directives of the Growth Management Act to designate and protect critical areas and to assist in conserving the value of property, safeguarding the public welfare and providing protection for these areas. Critical areas are defined as wetlands, aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas.

Laws, Regulations, and Guidance	Description
Skagit County Grading Permit	A Fill and Grade Permit may be required for any grading work involving substantial ground-disturbing activity (either fill or excavation) or any additional activity that affects drainage in the area.
Skagit County Shoreline Master Program (SMP) (SCC 14.26)	The Shoreline Master Program (SMP) is comprised of local land use policies and regulations designed to manage shoreline use. The SMP protects natural resources for future generations, provides for public access to public waters and shores, and plans for water-dependent uses. It was created in partnership with the local community and the Washington State Department of Ecology (Ecology) and must comply with the Shoreline Management Act and Shoreline Master Program Guidelines.

Direct impacts on fish and aquatic resources were identified at the proposed project site by reviewing the stream and ditch delineations conducted in 2013 (URS 2013), and overlaying the project footprint onto the identified aquatic resources. Marine resources in Padilla Bay were identified by reviewing available literature (Fresh 1979; Bulthuis 2013) and by conducting a site visit. Planned construction and mitigation activities were reviewed with Shell's representatives during a visit to both the proposed project and the wetland mitigation sites on December 8, 2015.

Existing available information was used to determine potential impacts on fish and aquatic resources at the proposed wetland mitigation site, including Shell's impact assessment, the draft mitigation plan (AECOM 2016b), draft biological evaluation (AECOM 2016a), and an analysis completed by a regional restoration planning project (PSNERP 2012).

To evaluate potential impacts associated with structures, streams, and ditches near the Anacortes Subdivision, maps identifying streams and county studies of stream resources were reviewed (Skagit County 2016).

AFFECTED ENVIRONMENT

Proposed Project Site

Streams and ditches were delineated within the project site (Figure 3.4-1). To differentiate between streams and ditches, certain watercourse characteristics were used: the origin or source water, the downstream connectivity of a watercourse to a significant watercourse or water body, the presence of characteristics common to natural watercourses such as having a channel with a defined bed and bank, and the presence of historical evidence of a stream (RCW 77.55 and WAC 220-660).

Based on these criteria, one stream (Stream S) and 13 ditch segments were identified in the project site and waterway determinations were confirmed during a field visit with Washington Department of Fish and Wildlife (WDFW) biologists (Thompson, personal communication). These watercourses flow in an easterly direction and drain into Padilla Bay (URS 2013). Stream S flows into Wetland I1 and both features are connected to Padilla Bay by fish-passable culverts under East March's Point Road. The ditches in the project area have seasonal flow; however, these drainage features lack characteristics associated with natural stream systems such as a natural headwaters source, downstream connectivity, and historical evidence of streams. Ditches D-3 and D-4 are the only ditches that are not constructed features designed to provide drainage. These ditches flow into Padilla Bay through perched culverts that cross under East March's Point Road approximately midway between 4th Street and North Texas Road and prevent upstream migration of fish. The ditches have not been mapped historically and receive a portion of their flow from industrial process water ponds.

Stream S (above)

Ditch E3

The southernmost drainage is identified as Stream S. Although unnamed, Stream S is a natural drainage channel that appears on historic maps of the area (Figure 3.4-1; USCGS 1886). Historically, this stream may have extended south of the Anacortes Subdivision and South March's Point Road; however, this area does not appear to be part of the current watershed due to local development patterns.

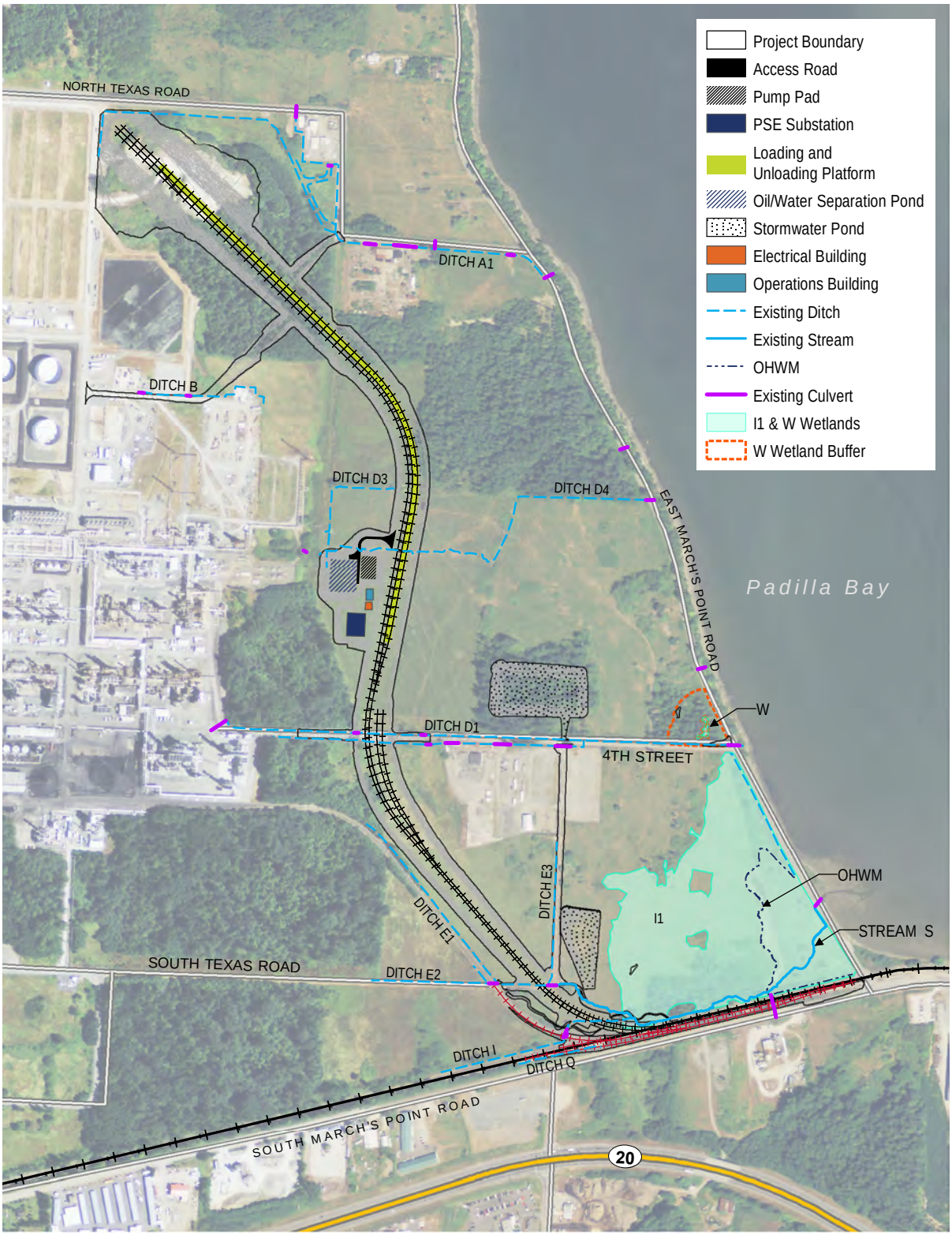

Figure 3.4-1

EXISTING WATERCOURSES – PROPOSED PROJECT SITE

Stream S receives surface flows from several ditches, including those that drain areas adjacent to the Anacortes Subdivision (Ditches Q and I), the existing rail spur to the Shell Puget Sound Refinery (PSR) (Ditch E-1), and South Texas Road (Ditches E-2 and E-3). Stream S starts at the outlet of a culvert at South Texas Road where the flow from several ditches joins together. The culvert has collapsed underneath the road and could not support upstream fish movement. Ditches west of South Texas Road are not accessible to fish due to the broken culvert. Also, these channels do not have natural watercourse characteristics meaning that, as man-made roadside ditches, they neither erode, transport, and deposit sediment, nor are they continuations of naturally occurring streams. East of the road, however, the channel has a defined bed and bank that moves and sorts sediments—features that are characteristic of natural watercourses.

What is the difference between a stream and a ditch?

Streams are natural watercourses that convey water from natural headwaters to a receiving waterbody.

Ditches are drainage features constructed to carry water away from built infrastructure.

Stream S extends approximately 1,300 feet until it reaches Wetland I1, and then another 500 feet until it discharges into Padilla Bay. The stream has been affected by the adjacent railroad, historic and present agricultural practices that limit habitat functions due to lack of riparian vegetation, and alterations to bed and bank structure caused by cattle grazing. The stream flows to an estuarine wetland complex that is connected to Padilla Bay through recently upgraded twin culverts. These culverts are fish passable and fish have been observed within the estuarine wetland and lower reaches of Stream S (Walker 2015). Shallow intertidal sampling in Padilla Bay suggests that fish found in the wetland complex and stream are likely to be primarily stickleback with seasonal use by rearing juvenile Chinook salmon (Beamer et al. 2007).

Regional studies suggest that stream systems similar in scale to Stream S and Wetland I1 may contain nonnatal juvenile Chinook fry migrants (Beamer et al. 2013). Nonnatal juvenile Chinook fry migrants are produced from adults that spawn in other stream systems and could be present between January and May. While the extent of upstream migration is unknown, it is presumed that fish have access up to the broken culvert at South Texas Road.

The ordinary high water mark (OHWM) for Padilla Bay extends to the west of East March's Point Road to the upland extent of salt tolerant vegetation associated with the estuarine Wetland I1 (URS 2013). Fish have access to this entire wetland area during high tides through two 62-inch-tall, 102-inch-wide concrete *culverts* that connect the wetland to Padilla Bay under East March's Point Road. These culverts were recently upgraded from a single undersized culvert, therefore, the wetland may continue to adjust to its improved hydrologic connection to Padilla Bay.

Culverts and structures may constrain natural changes to stream channels. Often culverts and structures force streams to change direction at sharp angles that can result in increased streamflow speeds, erosion of sediments, or may cause the structure to be impassable to fish.

Padilla Bay is an "Estuary of National Importance" and the majority of it has been designated as a National Estuarine Research Reserve. It is jointly managed by Washington State Department of Ecology (Ecology) and the National Oceanic and Atmospheric Administration (NOAA) with a focus on conservation, research, and education. Padilla Bay and the eastern shoreline of March Point are part of the post glacial Skagit River delta system that supports extensive eelgrass meadows and associated wildlife. Although the Skagit River contributed to the formation of Padilla Bay, when the Skagit and Samish rivers were diked in the 1880s, the bay lost direct connections to these riverine systems. The 7,400 acres of subtidal and intertidal eelgrass beds are the primary basis for the biological and ecological significance of Padilla Bay (Bulthuis 2013).

Padilla Bay and the eastern shoreline of March Point are part of the post glacial Skagit River delta system that supports extensive eelgrass meadows and associated wildlife. The 7,400 acres of subtidal and intertidal eelgrass beds are the primary basis for the biological and ecological significance of Padilla Bay (Bulthuis 2013).

A wide range of marine animals use the bay, such as invertebrates that provide food for marine mammals, fish, and birds. Specific species that occur in the area include Dungeness crabs, juvenile salmon, surf smelt, Pacific herring, sculpins, and shiner perch. Padilla Bay is dominated by schooling forage fish, including Pacific herring and surf smelt, with lower abundances of shiner perch, Pacific Staghorn, and starry flounder, and seasonal use by Chinook salmon (Beamer et al. 2007; Fresh 1979). A variety of birds also use Padilla Bay as described in Chapter 3.6 – Vegetation and Terrestrial Wildlife. Immediately adjacent to the southern shorelines of March Point is a complex of intertidal habitats that have been modified and disconnected from portions of Padilla Bay by the dredged navigation channel that connects to and includes the Swinomish Channel.

Several nonnative species are widespread in Padilla Bay: smooth cordgrass (*Spartina alterniflora)*, dwarf eelgrass (*Zostera japonica)*, soft-shell clam (*Mya arenaria)*, and purple mahogany clam (*Nuttalia obscurata)*. Two nonnative plants of special concern are cordgrasses and dwarf eelgrasses. Cordgrasses were intentionally introduced to the bay; however, control efforts began in 1994, and the population has since been reduced to scattered seedlings and clones covering less than 1 acre (Bulthuis 2013). Dwarf eelgrass primarily grows at higher elevations than native eelgrass (*Zostera marina)*; however, it may co-occur near the upper elevation boundary of native eelgrass.

Harbor seal

Southern Resident Killer Whale (Orca)

Marine mammals such as harbor seals (*Phoca vitulina)* and porpoises may use Padilla Bay during a portion of their life cycle. Several harbor seal haulout sites—locations where seals temporarily leave the water to forage on land—have been recorded. The haulout sites nearest to the proposed project vicinity are approximately 1 mile north of the project site along the dredged channels leading toward Swinomish Channel (Jeffries et al. 2000). Southern Resident Killer Whales, or Orcas (*Orcinus orca*), are unlikely to use the area because of the shallow waters characteristic of Padilla Bay and Swinomish Channel. NMFS (2008) reports one to five observations of Southern Resident Killer Whales occurred in Padilla Bay between 1990 and 2005.

Padilla Bay was seeded for Pacific oysters in the 1930s; however, high oyster mortality and poor oyster condition resulted in growers abandoning the bay in the 1960s (Bulthuis 2013). No geoduck beds have been identified in the bay, and other bivalves are uncommon. Furthermore, bacterial contamination may restrict recreational collection of shellfish in Padilla Bay with fecal coliform concentrations contributing to closures of recreational beds near Bay View. The Skagit County Marine Resources Committee and partners are leading ongoing efforts to reintroduce Olympia oysters and to enhance habitat in Fidalgo Bay. Natural recruitment of native oysters has been detected near the trestle in Fidalgo Bay and at Crandall Spit, suggesting that seeding efforts may be succeeding and that a population is now established and successfully reproducing in the area (Gabrian-Voorhees et al. 2013).

Padilla Bay supports large numbers of young-of-the-year Dungeness crabs that are found in intertidal eelgrass habitat. Mature crabs move into subtidal eelgrass areas and channel bottoms before moving into deeper channels (Bulthuis 2013).

A portion of Padilla Bay adjacent to the proposed project is included within the reservation boundaries for the Swinomish Tribe. In addition to interests in marine resources within their reservation, several tribes have usual and accustomed fish rights reserved by treaties in Padilla Bay and adjacent waters including Fidalgo Bay and Swinomish Channel. These include rights to a portion of the accessible catch of fisheries for subsistence, as well as ceremonial and commercial purposes. The impacts to tribal fisheries would the same as described for fish and aquatic resources in this chapter. Further discussion on these topics can be found in Chapter 3.8 – Treaty and Traditionally Used Resources.

Special-Status Fish, Marine Mammals and Habitats

Special-status fish, marine mammals and their habitats include the following:

- Federal proposed, candidate, threatened, and endangered species and critical habitat, and species that are managed by the Endangered Species Program of the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Services (NMFS).
- State Endangered, Threatened, Sensitive, and Candidate species.

Table 3.4-2 summarizes special-status species and habitats that may occur in the project study area.

Table 3.4-2 Special-Status Fish and Marine Mammal Species Documented or Potentially Occurring in the Study Area

Species	Status	Occurrence in the Study Area
Federally-Listed Species		
Puget Sound Chinook Salmon (*Onchorhynchus tshawytscha*)	Federal Threatened State Candidate	Puget Sound Chinook salmon are present in Padilla Bay, the Swinomish Channel, Big Indian Slough, Little Indian Slough, and Gages Slough. Fish have access to Wetland I1 and Stream S and are assumed to be present.
Puget Sound Steelhead (*Onchorhynchus mykiss*)	Federal Threatened	Puget Sound Steelhead are present in Padilla Bay, the Swinomish Channel, Big Indian Slough, Little Indian Slough, and Gages Slough. Fish have access to Wetland I1 and Stream S and are assumed to be present.
Coastal/Puget Sound bull trout (*Salvelinus confluentus*)	Federal Threatened State Candidate	Puget Sound bull trout are present in Padilla Bay, the Swinomish Channel, Big Indian Slough, Little Indian Slough, and Gages Slough. Fish have access to Wetland I1 and Stream S and are assumed to be present.
North American green sturgeon - Southern distinct population segment (DPS) (*Acipenser medirostris*)	Federal Threatened	Unlikely to be present in the study area.
Pacific Herring (*Clupea pallasi*)	State Candidate	Pacific herring are common in Padilla Bay and spawning aggregations occur in Fidalgo Bay on the west side of March Point.

Species	Status	Occurrence in the Study Area
Eulachon – Southern DPS (*Thaleichthys pacificus*)	Federal Threatened State Candidate	Eulachon are rarely found in the study area and no natal streams are known in the vicinity.
Bocaccio rockfish (*Sebastes paucispinis*)	Federal Endangered	Bocaccio rockfish are known to occur in Padilla Bay. Juvenile rockfish are found in shallow-water habitats; however, they are not expected to be found within Wetland I1 or Stream S due to low salinity characteristics.
Canary rockfish (*Sebastes pinniger*)	Federal Threatened	Canary rockfish are known to occur in Padilla Bay. Juvenile rockfish are found in shallow-water habitats; however, they are not expected to be found within Wetland I1 or Stream S due to low salinity characteristics.
Yellow rockfish (*Sebastes ruberrimus*)	Federal Threatened	Yellow rockfish are known to occur in Padilla Bay. Juvenile rockfish are found in shallow-water habitats, however, they are not expected to be found within Wetland I1 or Stream S due to low salinity characteristics.
Southern resident killer whale (*Orcinus Orca*)	Federal Endangered	Southern resident killer whales have been observed in Padilla Bay and the Swinomish Channel; however, occurrences are rare in these areas. Shallow waters adjacent to the project site are unlikely to be used by killer whales.
Steller sea lion (*Eumetopias jubatus*)	Federal Threatened	Steller sea lions are generally associated with coastal waters, but could occur in Swinomish Channel or Padilla Bay in small numbers.

Wetland Mitigation Site

The proposed wetland mitigation site is currently a diked and drained area that was historically converted to agriculture and supports hybrid poplar trees. This area was dramatically altered by several types of activities over many decades: the deepening of the Swinomish Channel to support navigation; the construction of dikes and draining of uplands to support agriculture; and the construction of State Route (SR) 20 and the Anacortes Subdivision. These changes converted

a complex of estuarine wetlands and tidal sloughs into agricultural uses and freshwater wetlands. Fish and aquatic resources in Padilla Bay cannot currently access the area due to a perimeter dike and a pump station that prevent water movement onto the site. Furthermore, current dike maintenance practices have prevented the development of vegetation along the dike, resulting in a lack of riparian vegetation.

Anacortes Subdivision

East of March Point, the Anacortes Subdivision runs for approximately 10.5 miles to Burlington where it joins the Bellingham Subdivision (Figure 3.4-2). Between March Point and Burlington, the Anacortes Subdivision crosses Stream S, the Swinomish Channel, Blind Slough, Telegraph Slough, Unnamed Tributary to Big Indian Slough, Big Indian Slough, and Higgins Slough. The railway fill and tracks form the southwestern shoreline of Padilla Bay near Whitmarsh, which includes a trestle opening at Whitmarsh before crossing the Swinomish Channel. The Anacortes Subdivision crosses Big Indian Slough multiple times and the slough flows between the rail line and SR 20 for approximately 1.5 miles. Portions of Big Indian Slough are being restored by Drainage and Irrigation Improvement District 19 as mitigation for continued maintenance of their flow control structures.

The aquatic habitats in the project vicinity include freshwater, estuarine, and marine ecosystems. Salmonids—steelhead, Chinook, coho, pink, and chum salmon—are documented or predicted to be present in Little Indian Slough, Big Indian Slough, and Gages Slough (WDFW 2016). The portion of Padilla Bay south of the rail trestle between March Point and the Swinomish Channel near Whitmarsh Junction has direct connections to Padilla Bay; therefore, any species present in Padilla Bay may also access these sites.

Gages Slough

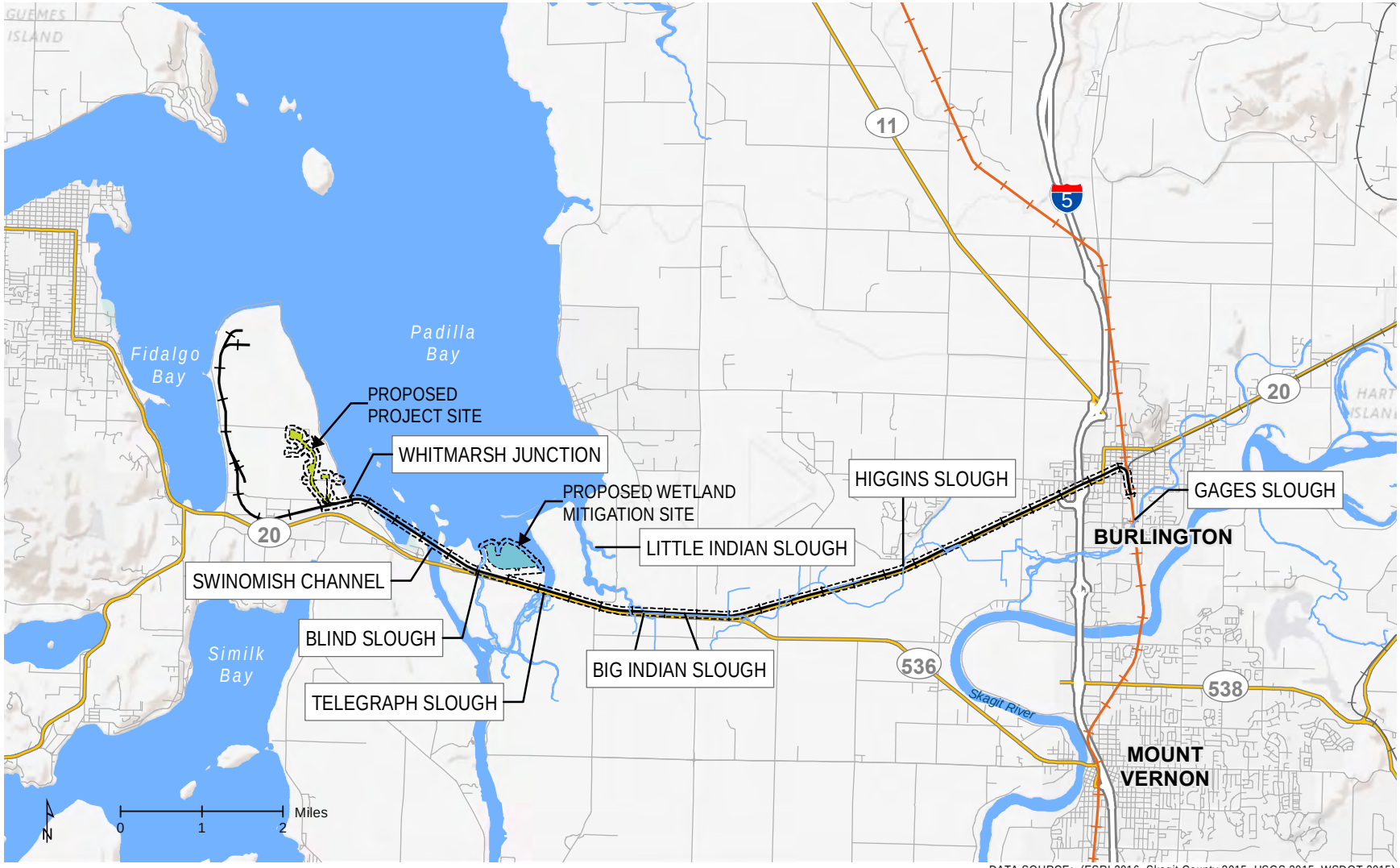

Figure 3.4-2
STREAM AND WATERWAY CROSSINGS – ANACORTES SUBDIVISION

ENVIRONMENTAL IMPACTS

No Action Alternative

Because no construction or operation would take place under the no action alternative, there would be no impacts to fish or aquatic resources. Existing conditions would remain the same unless affected by other projects in the future. Riparian improvements along Stream S would not occur. Upstream movements of fish would continue to be blocked at the broken culvert at South Texas Road. The wetland mitigation site would remain in its current condition and would continue to be separated from Padilla Bay by a dike that prevents tidal flow onto the site.

Proposed Project Site

Direct Impacts

Permanent impacts to fish and aquatic resources would include the loss or reconfiguration of drainage channels and an on-site stream, as well as changes to riparian habitat. The proposed project would result in the reconfiguration of all drainages crossing the project area.

Water from ditches would be captured and conveyed across the rail project in a culvert or intercepted by stormwater systems and directed into one of two proposed stormwater ponds on the east side of the project area. These ponds include pre-treatment oil/water separation systems and provide for detention and controlled release. While stormwater detention ponds can be associated with increases in water temperatures (Jones and Hunt 2010), water from the ponds is discharged through spreaders to upland areas or freshwater wetlands that could allow for infiltration during appropriate levels of inundation. Therefore, water could infiltrate into the groundwater instead of draining through surface ditches to Padilla Bay. When ground is saturated, the flow from discharges is presumed to form sheet flow until reaching a drainage ditch, wetland, or stream. The South Stormwater Pond would discharge into portions of Wetland I1. Although peak flows from the Stormwater system are projected to increase from the current baseline (see Chapter 3.3 – Surface Water), discharges from this system would be to upland discharge points. Therefore, the configuration of the stormwater system is not expected to cause increases in peak flows in the existing drainage ditches, therefore stormwater is not expected to increase erosion within the streams, ditches, or in Padilla Bay. Discussion of potential impacts associated with stormwater can be found in the Chapter 3.3 – Surface Water.

Ditches conveying water to the existing Stream S would be rerouted to enter a newly constructed stream channel (Figure 3.4-3) designed to provide for riparian habitat and stream channel sinuosity. As a result, flow in the existing channel would be reduced or eliminated between South Texas Road and where the new channel would join Stream S near its existing confluence with Ditch I. The dewatered section of Stream S would remain in place and would capture surface flow. Diverted flow would be routed to a new channel segment that would extend from the current origin of Stream S to the downstream confluence with the existing Stream S.

The current channel alignment is constrained as it runs between the existing Anacortes Subdivision rail line embankment and the proposed project's new rail spur. The new channel segment would include a new 75-foot-long culvert under that rail spur (Figure 3.4-3). Although fish have not been observed in this area, they are presumed to have access under both present and future conditions.

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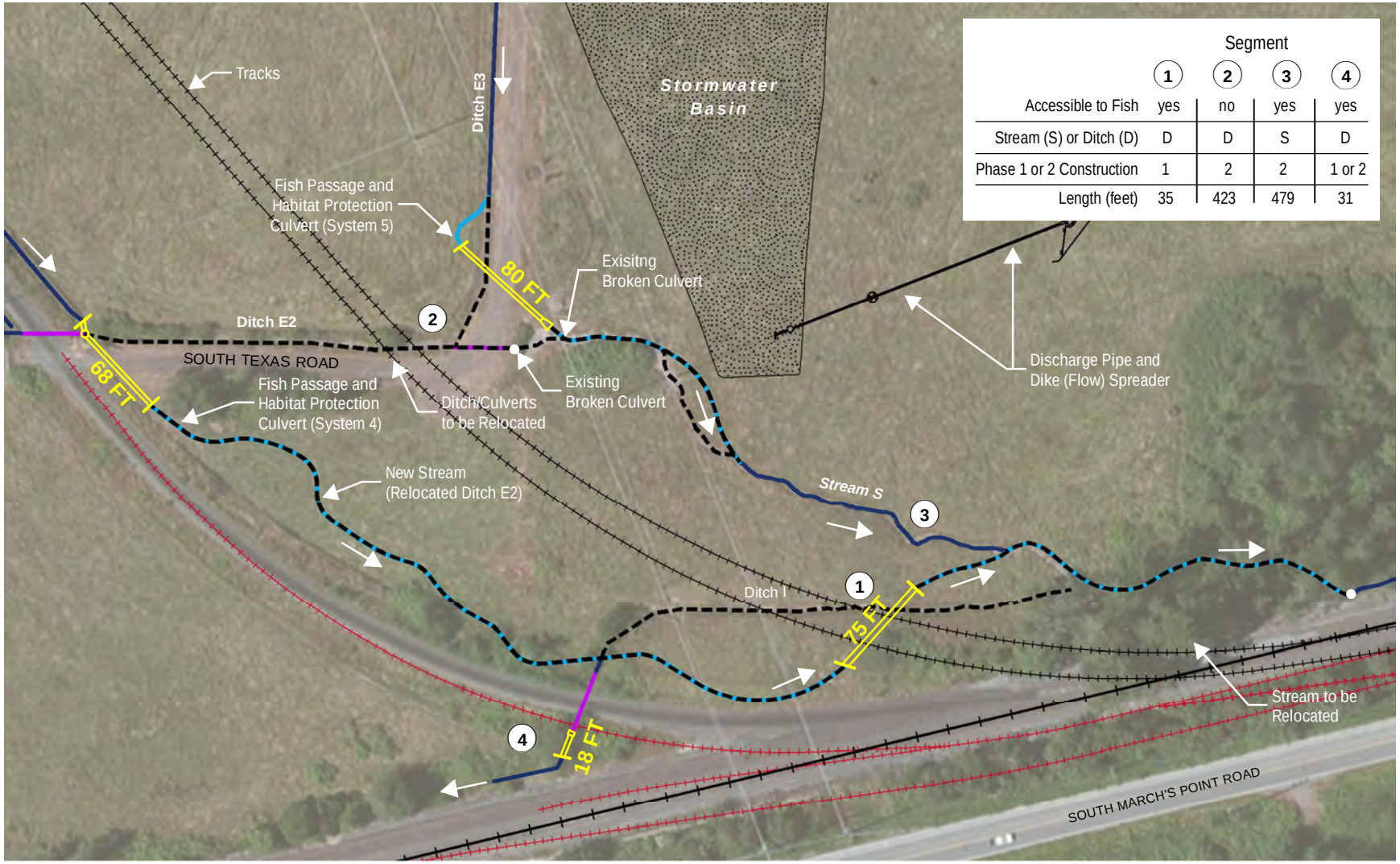

DATA SOURCE: (AECOM 2015, ESRI 2016, Skagit County 2015, WSDOT 2015)

Existing Stream/Ditch
Existing Culvert
Ditch/Stream/Culvert to be Removed
New Ditch/Stream
New Culvert
Proposed Rail Track
BNSF Rail Improvement
Anacortes Subdivision

N

0 50 100 Feet

Figure 3.4-3
STREAM "S" RECONFIGURATION

A stormwater pollution prevention plan (SWPPP) has been developed by Shell to identify best management practices (BMPs) and institutional controls and responsibilities to limit erosion and prevent water quality degradation (Wilson and Company 2014). Construction activities would occur within streams, ditches, and wetlands.

Shell's SWPPP specifies that sampling would occur at the outlets of existing culverts to ensure discharges do not exceed water quality standards (25 nephelometric turbidity units [NTU]). If samples were to exceed 25 NTU, additional measures could be implemented. Water quality would be maintained through monitoring and, if necessary, remedial actions as required by permits. While turbid conditions reduce the visual ability of fish, young fish can thrive in turbid environments (Gregory and Levings 1998). However, high concentrations of suspended solids can cause physiological and behavioral stress responses in fish (Bruton 1985), likely affecting the biological integrity of the aquatic system (Karr 1991). Further discussion of water quality is provided in Chapter 3.3 – Surface Water.

During construction, a fish barrier would be installed. Fish would be relocated downstream prior to instream work in Stream S. Major earthwork, including construction of the new Stream S, are planned to occur during the dry season between May 1 and September 30 (Wilson and Company 2014). Immediately following construction of the new stream channel, it is likely that some sediment would be mobilized as the bed material is sorted by flow and lighter material is transported downstream.

Changes to available fish habitat, introduction of turbid water to the environment during storm events, and fish handling associated with site isolation and in-water construction activities in Stream S could affect fish. These activities could impact a small number of fish and result in the loss of one or more fish. Species affected are likely to be limited to stickleback based on the timing and locations where in-water work would occur. The number of fish affected is not expected to measurably affect their populations, or other species that feed on fish.

Impacts from stormwater operations are expected to be similar to those described above. However, during operations, stormwater associated with the rail unloading facility would be treated at the existing wastewater treatment plant within the Shell PSR. Stormwater within the rail unloading platform would be collected and routed to the oil/water separation pond system before being routed to the wastewater plant. Following treatment, those waters would be discharged into Fidalgo Bay through an existing National Pollution Discharge Elimination System (NPDES) permitted outfall. Discharges would be monitored to demonstrate continued compliance with NPDES permit conditions for that outfall to prevent impacts to fish and aquatic resources in Fidalgo Bay. Further details of this treatment system are described in Chapter 3.3 – Surface Water.

The proposed project may also result in a reduction of marine vessel traffic to and from the Shell PSR (see Chapter 2 – Proposed Project and Alternatives). This reduction may reduce the potential for adverse impacts to aquatic habitat associated with marine vessel transport, including vessel or unloading accidents.

Anacortes Subdivision

Direct Impacts

Impacts to fish and aquatic resources may result from increased operations and maintenance along the Anacortes Subdivision. Train operations along the rail line would likely contribute to deposition of airborne pollution, vibration and in-air noise, potential for accidents, and require continued maintenance of the rail corridor.

Deposition of particulate matter from diesel train exhaust is described in Chapter 3.10 – Air Quality and Greenhouse Gases. These materials are not at concentrations or levels known to affect aquatic life (Maltby et al. 1995). However, concentrations of particulate matter are expected to increase with the number of trains or from idling trains in the area.

Rail traffic on the Bellingham Subdivision and other subdivisions on the proposed project route travels near or crosses aquatic resources beyond the study area including the Skagit River and Puget Sound. While no impacts to these resources are anticipated during typical operations, a derailment or spill could result in impacts. Potential impacts from a spill during transport of crude oil to Shell PSR are discussed in Chapter 4 – Environmental Health and Risk.

The Anacortes Subdivision contains a trestle and a swing bridge across the Swinomish Channel. Train passage over the trestle takes approximately 5 minutes each direction. Closing and opening the bridge takes an additional 2 to 5 minutes (the bridge is open by default to allow marine vessels to pass freely). Closures of the swing bridge may temporarily block navigation in the Swinomish Channel for approximately 10 to 15 minutes per instance. Such events may cause vessels to hold position or slow travel to accommodate train traffic. Boats queuing for the bridge may increase chances for collisions, as well as create additional air, sound, and water pollution associated with idling vessels. The bridge was built in 1891 with the bridge truss replaced in 1953. Increased use of the bridge may require more frequent inspections and maintenance activities, which could create short-term disturbances of fish or marine mammals in the immediate vicinity. See Chapter 3.15 – Rail Traffic and Transportation, for additional information about bridge inspections. No improvements to the swing bridge or mitigation for its operation are currently planned by BNSF Railway.

Swinomish Channel Swing Bridge

Fish, marine mammals, and diving birds are sensitive to in-water noise and vibration (see Chapter 3.6 – Vegetation and Terrestrial Wildlife). The rail corridor is primarily comprised of ballast and culverts for conveying streams and water bodies. There are five rail bridges in the study area: Whitmarsh, Swinomish Channel, and three that cross Big Indian Slough. Noise and vibration associated with these structures appears to be primarily from train wheels passing over the joints of the bridge at Swinomish Channel. The noise is minimized by moving the trains at low speeds during train crossings.

Existing rail traffic along the Anacortes Subdivision crosses each of these waterbodies. In addition to potentially limiting fish passage, existing bridges and culverts conveying water under the rail line segments may cause small-scale impacts by altering local channel formations and hydraulics (Blanton and Marcus 2009). Train operation associated with the proposed project would not directly affect these structures. Continued use of the railway would involve maintenance of bridges and culverts.

The railway and ballasted areas also affect stormwater runoff when compared with other land uses. Gravel surfaces and railroad yards have runoff coefficients—the proportion of rainfall running off a site—ranging between 0.2 and 0.4, while ballasted tracks are predicted to have higher runoff coefficients of approximately 0.55. These data suggest that runoff is 25 to 35 percent higher than natural land uses (Molinas and Mommandi 2012) within the study area. Ballasted railway tracks are designed to drain rainfall, which is why a greater proportion of rainfall is released as runoff from ballasted tracks than railway yards or gravel areas. Typically, a portion of the initial rainfall infiltrates into the ballast; however, as storm intensity increases, a greater proportion of subsequent rainfall would be released as runoff. Altered runoff characteristics of existing railways may continue to affect fish and aquatic resources in stream systems and receiving waterbodies near the rail line.

Ongoing vegetation maintenance along rail tracks restricts riparian habitat development in areas where the rail corridor is near streams and marine shorelines. The Anacortes Subdivision is within the riparian buffer of aquatic systems. A continued lack of riparian vegetation may affect stream temperatures and recruitment of prey items for aquatic resources. Furthermore, BNSF Railway's vegetation maintenance activities may include the application of herbicides. Some herbicide formulations are toxic to aquatic life; however, herbicide applications are expected to follow label guidance to minimize impacts to aquatic habitats.

Wetland Mitigation Site

Direct Impacts

A tidal channel would be constructed within the wetland mitigation site to support flow and fish access. These restored habitats would contribute prey resources and organic matter to Puget Sound and contribute valuable nursery habitat for juvenile salmon.

Development of the proposed wetland mitigation site is intended to compensate for impacts to onsite wetlands as discussed in Chapter 3.5 – Wetlands. Mitigation actions on this site would also affect fish and aquatic resources. During construction, temporary disturbances of fish habitat would occur. These disturbances are likely to include increased turbidity associated with the removal of vegetation, exposure of soils and increased flow across the site. By removing portions of the perimeter dike and supporting tidal exchange within the site, fish would gain access to habitat previously unavailable to them. The entire extent of habitat that would develop on the wetland mitigation site is presumed to be accessible to fish from Padilla Bay, as well as support a diverse mix of estuarine wetland habitats and vegetation. A tidal channel would be constructed within the site to support flow and fish access. These restored habitats would

contribute prey resources and organic matter to Puget Sound and valuable nursery habitat for juvenile salmon.

As noted above, the wetland mitigation site occurs in an area where a complex of estuarine wetlands and tidal sloughs have been dramatically altered over many years. The large-scale changes in this vicinity have attracted interest in restoration projects. The proposed wetland mitigation effort appears to be compatible with, and provides initial steps toward, restoration of the larger wetland complex identified by the Puget Sound Nearshore Estuary Restoration Project, namely the potential Strategic Restoration Concept for Telegraph Slough (PSNERP 2012). Mitigation sites are protected in perpetuity as compensation for project impacts. They often receive legal protections that prevent or add complexity to future restoration efforts. Appropriate coordination with Washington Department of Fish and Wildlife restoration program staff regarding the Telegraph Slough Restoration project may facilitate future restoration by creating design and mitigation requirements that include sufficient flexibility.

Cumulative Impacts

As described above, construction and operation of the proposed project could result in impacts to fish and aquatic species and habitat. Within the study area, there has been significant agricultural, industrial, commercial, and residential development. It is assumed that with this growth and new construction, fish and aquatic resources have been affected. Construction and operation of the proposed Tesoro Clean Products Upgrade Project (Tesoro 2015) (see Table 3.0-2 in Chapter 3.0 – Introduction, for additional project details) has the potential to impact these resources. The Tesoro project and the proposed project could have cumulative impacts to fish and aquatic species and habitat. These impacts would be minimized by construction BMPs and localized to the Tesoro Anacortes Refinery site and the proposed project and mitigation sites.

MITIGATION MEASURES

Avoidance and Minimization

Shell has incorporated engineering and operational measures into the design of the proposed project to avoid or minimize the potential for impacts on fish and aquatic resources. The upper portion of Stream S would be moved away from the existing rail embankment and approximately 700-linear-feet channel would incorporate sinuosity and in-channel habitat. This new channel segment would include a 75-foot-long fish-passable culvert that would allow the stream segment to cross under the new rail spur. The current channel would not be filled; however, most of the flow would be diverted to the newly constructed stream segment.

Specific design measures would also minimize the potential for impacts from a release of oil at the proposed rail unloading facility. They are described in further detail in Chapter 3.3 – Surface Water.

Impacts to fish and aquatic species and habitat would also be minimized by the implementation of the BMPs required as part of the NPDES Construction Stormwater Permit, CWA Section 404 Individual Permit, CWA Section 401 Water Quality Certification, Skagit County Grading Permit,

Hydraulic Project Approval, and Shoreline Substantial Development Permit. For example, stormwater and erosion control BMPs would be implemented to reduce sediments discharging into surface waters. The measures would also be implemented at the proposed restoration site to reduce sediments discharging into ditches and wetlands. Stockpiled soils would be covered to reduce erosion during precipitation events.

Mitigation

No additional mitigation measures are proposed beyond the avoidance and minimization measures that would be developed and enforced as part of the permitting processes.