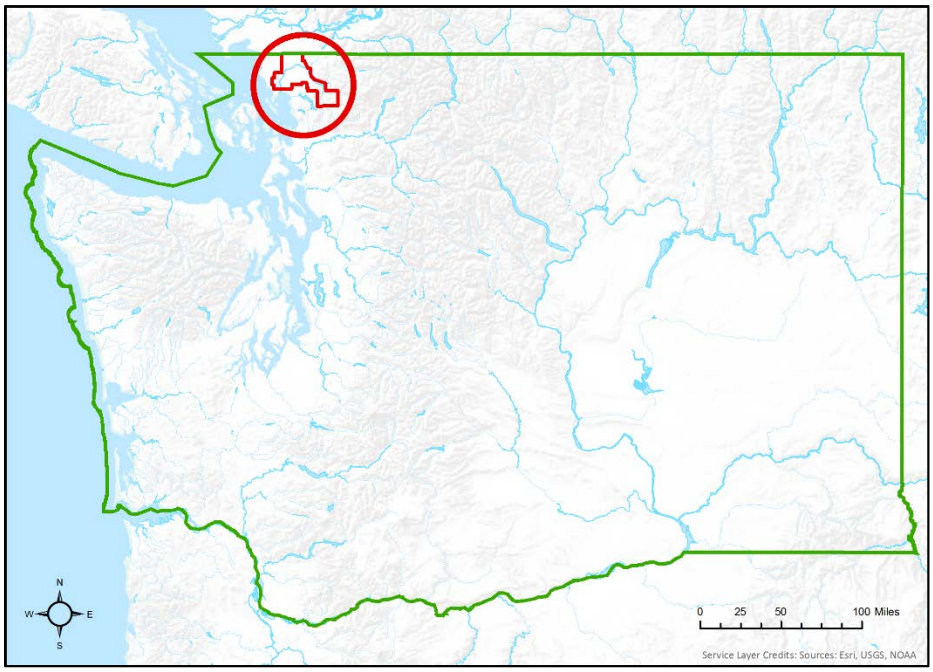
DRAFT

Northwest Area Committee NOVEMBER 2016

NOOKSACK RIVER

Geographic Response Plan

(NOOR-GRP)



NOOKSACK RIVER

Geographic Response Plan

(NOOR-GRP)

November 2016

Spill Response Contact Sheet

Required Notifications for Oil Spills and Hazardous Substance Releases	
Federal Notification - National Response Center	**(800) 424-8802***
State Notification - Washington Emergency Management	**(800) 258-5990***

- Other Contact Numbers -

U.S. Environmental Protection Agency	
Region 10 - Spill Response	**(206) 553-1263***
- Washington Ops Office	(360) 753-9437
- RCRA/CERCLA Hotline	(800) 424-9346
- Public Affairs	(206) 553-1203

U.S. Coast Guard	
Sector Puget Sound	(206) 217-6200
- Emergency / Watchstander	**(206) 217-6001***
- Command Center	**(206) 217-6002***
- Incident Management Division	(206) 217-6214
Station Bellingham	(360) 734-1692
13th Coast Guard District	(800) 982-8813
National Strike Force	(252) 331-6000
- Pacific Strike Team	(415) 883-3311

National Oceanic Atmospheric Administration	
Scientific Support Coordinator	(206) 526-6829
Weather	(206) 526-6087

Other Federal Agencies	
U.S. Fish & Wildlife Service	**(360) 534-9313***
U.S. Department of Interior	(503) 326-2489
U.S. Navy Region Northwest	(360) 315-5410

Pipeline Companies & Railroads	
BNSF Railway	**(800) 832-5452***
BP Olympic Pipeline	**(888) 271-8880***
Kinder Morgan Trans Mountain Pipeline	**(888) 876-6711***

Response Contractors (OSRO & PRC)	
Global Diving and Salvage	**(206) 623-0621***
Islands' Oil Spill Association	(360) 468-3441
Marine Spill Response Corporation	**(425) 252-1300***
NRC Environmental Services	**(800) 337-7455***

Washington State	
Dept Archaeology & Hist Preserv	(360) 586-3065
Dept of Ecology	
- Headquarters (Lacey)	(360) 407-6000
- NW Regional Office (Bellevue)	(425) 649-7000
- Bellingham Field Office	(360) 715-5200
Dept of Fish and Wildlife	(360) 902-2200
- Emergency HPA Assistance	**(360) 902-2537***
- Oil Spill Team	**(360) 534-8233***
Dept of Health (Drinking Water)	(800) 521-0323
- After normal business hours	(877) 481-4901
Dept of Natural Resources	(360) 902-1064
- After normal business hours	(360) 556-3921
Dept of Transportation	(360) 705-7000
State Parks & Rec Commission	**(360) 902-8544***
State Patrol - District 7	(360) 654-1204

Tribal Contacts	
Lummi Nation	(360) 384-1489
- Natural Resources Director	(360) 410-1706
Nooksack Tribe	(360) 592-5176

Local Government	
City of Bellingham	(360) 778-8000
City of Everson	(360) 966-3411
City of Ferndale	(360) 384-4302
City of Lynden	(360) 354-1170
Whatcom County Sheriff (EMD)	(360) 778-6600

*** Contact Numbers staffed 24-hour/day**

Before you print this document

Chapter 4 with appendices (pages 27-178) and Appendix 6A (pages 193-194) of this document are provided in "landscape" page orientation; all other chapters and appendices are oriented in "portrait." The appendices in Chapter 4 (pages 71-178) have been designed for duplex printing (front and back side of paper), "open to top" configuration.

Purpose and Use of this Plan

This Geographic Response Plan (GRP) constitutes the federal and state on-scene coordinators' orders during the initial phase of an oil spill response in the planning area. It is meant to aid the response community during the initial phase of an oil spill, from the time a spill occurs until a Unified Command is established. The plan prioritizes tactical response strategies based on locations where spills might occur and the proximity of those locations to sensitive natural, cultural, and economic resources. By using this document, it is hoped that immediate and proper action can be taken to reduce oil's impact on sensitive resources.

After an oil spill to water occurs, efforts to control and contain the spill at or near the source should be a top priority. Beyond those efforts, the response and notification strategies provided in Chapter 4 of this plan should be implemented as soon as possible using the priority tables in Section 4.3, unless overflight information, spill trajectory models, or circumstances unique to a particular spill situation dictate otherwise. Changes to the order listed in the priority tables may be made if approved by the Incident Commander or Unified Command.

Information meant to support initial Environmental Unit functions can be found in Chapter 6 (Resources at Risk). The chapter and its appendix provide specific information about the type and location of natural and economic resources in the area. Cultural resource locations were considered in the development of this plan but, because of the sensitive nature of the information, specifics about the location of those resources are not included in this document.

Record of Changes

Date	Change Number	Summary of Changes	Name of Person Making Change

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CHAPTER 1

Introduction

This plan focuses on sensitive resource protection after an oil spill on or near the water occurs. It serves as the federal and state on-scene-coordinators' orders during the initial phase of an oil spill response in the Nooksack River area. It has been approved by Regional Response Team 10 and the Chairs and Co-Chairs of the Northwest Area Committee. GRPs are living documents that can be revised at any time based on new information from comments and lessons learned from drills and spills. These changes are typically reflected as interim updates on the websites for each GRP until they are fully incorporated into the plan during a future update. We value your input and hope that you will let us know how the plan might be improved. Please submit comments online at http://www.rrt10nwac.com/Comment. Comments may also be emailed to GRPs@ecy.wa.gov or submitted by mail using the form and information provided in the appendix of this chapter.

The Nooksack River GRP planning area covers 11 miles of the South Fork Nooksack River, down to where the main stem forks at river mile 37. It then follows the river downstream to within two miles of Bellingham Bay, where the plan borders the San Juan Islands/North Puget Sound GRP planning area. The Nooksack River GRP can be characterized by two types of areas: (1) the South Fork and main stem Nooksack River and (2) the smaller tributary creeks south of Lynden and east of Ferndale, including Deer, Silver, Tenmile and Fourmile Creeks. The planning area fully resides within Water Resource Inventory Area Nooksack (WRIA 01). The communities of Acme, Deming, Everson, Ferndale, and Lynden are included in this area, as well as the Nooksack Reservation and a portion of the Lummi Reservation. Additional information about the planning area, including physical features, hydrology, climate and winds, tides and currents, and oil spill risks, can be found in Chapter 2 (Site Description). Information about potential response options in the planning area can be found in Chapter 3 (Response Options and Considerations).

The bulk of this plan is contained in Chapter 4 (Response Strategies and Priorities). It provides information on tactical response strategies and the order they should be implemented, based on potential oil spill origin points and their proximity to sensitive resources. Area and sector maps and information on staging areas and boat launch locations are also provided in that chapter.

Control and Containment of an Oil Spill are a Higher Priority than the Implementation of GRP Response Strategies

If in the responder's best judgment, control and containment at or near the source of a spill isn't feasible, or if the source is controlled and contained but oil has spread out beyond initial containment, then the priorities laid out in Section 4.3 of this plan should take precedence until a Unified Command is formed. Spill response priorities, beyond those described in this plan, should

rely on aerial observations and spill trajectory modeling. A booming strategy listed as a high priority in Section 4.3 would not necessarily be implemented if a spill trajectory did not warrant action in that area; however, the priority tables should be followed until spill trajectory information becomes available. During an incident, modifications to the deployment priorities provided in Section 4.3 of this plan may be made if approved by the Incident Commander or Unified Command.

The downstream movement of oil and the time it takes to mobilize response resources to deploy GRP strategies must always be considered when setting strategy implementation priorities. The strategies discussed in this plan have been designed for use with persistent oils that float on water and may not be suitable for other petroleum products or hazardous substances. For hazardous substance spills, refer to the Northwest Area Contingency Plan (NWACP), Chapter 7000.

Information meant to support initial Environmental Unit functions can be found in Chapter 6 of this plan (Resources at Risk). Chapter 6 and its appendix provide specific information about the type and location of natural and economic resources in the area. Specific information about the location of cultural sites in the planning area was taken into consideration in the development of this plan but, because of the confidential nature of the material, details about cultural and historic sites aren't included in this document.

1.1 GRP CHAPTERS AND APPENDICES

Chapter 1	Introduction
Appendix 1A	Comments, Corrections, or Suggestions
Chapter 2	Site Descriptions
Chapter 3	Response Options and Considerations
Chapter 4	Response Strategies and Priorities
Appendix 4A	Response Strategies
Appendix 4B	Notification Strategies
Appendix 4C	Staging Areas
Appendix 4D	Boat Launch Locations
Chapter 5	Reserved
Chapter 6	Resources at Risk
Appendix 6A	List of Economic Resources in Area

1.2 GEOGRAPHIC RESPONSE PLAN DEVELOPMENT PROCESS

GRPs are part of the Northwest Area Contingency Plan, just developed and revised separately. They have been developed for the marine and inland waters of Washington, Oregon, and Idaho. The plans are prepared through the efforts of, and in cooperation with, Washington Department of Ecology, Oregon Department of Environmental Quality, Idaho State Emergency Response Commission, U.S. Coast Guard, U.S. Environmental Protection Agency, as well as other state and federal agencies, tribal and local governments, response organizations, emergency responders, and communities. GRPs are developed through workshops and meetings with representatives of these

organizations, as well as local oil spill emergency response experts, industry, environmental and conservation organizations, ports, pilots, and the public. Participants identify resources that may be at risk of injury from spills and work to develop oil spill response or notification strategies to reduce the chance of injury to those resources.

After compiling information on sensitive resources in the area, site visits are conducted to gather data and determine if spill response strategies near those resources should be added, modified, or deleted. In this, the anticipated effectiveness of existing strategies are reviewed, modifications made as determine necessary, potentially unsafe or ineffective strategies removed, and new strategies added to the plan. Unfortunately, the dynamics of marine and inland water environments, and the present limitations of response technology, make the development of strategies for all resource locations impracticable. A draft plan is produced after site visits are completed, and made available for public review and comment before a final version of the GRP is produced and published. A responsiveness summary is also published that addresses public comments received during the GRP update and development process.

1.3 STANDARDIZED RESPONSE LANGUAGE

In order to avoid confusion in response terminology, this plan uses standard National Interagency Incident Management System, Incident Command System (NIIMS ICS) terminology.

1.4 TERMINOLOGY AND DEFINITIONS

The glossary provided in Section 1910 of the NWACP and other sections of the area plan with glossaries independent of Section 1910 should be used when seeking the meaning of terms used in this plan.

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APPENDIX 1A

Comments, Corrections, or Suggestions

GRPs are living documents and can be revised at any time based on new information from comments and lessons learned from drills and spills. These changes are typically reflected as interim updates on the website for each GRP until they are fully incorporated into the plan during a future update. We value your input and hope that you'll submit comments on how this plan might be improved. If you have any questions or comments, suggestions for improvement, or find errors in this document please submit comments online at http://www.rrt10nwac.com/Comment, email them to us at GRPs@ecy.wa.gov, or forward them via U.S. Mail to the following agencies:

United States Environmental Protection Agency
Region 10
Office of Environmental Cleanup
1200 Sixth Avenue
Room ECL-116
Seattle, WA 98101

Washington State Department of Ecology
Spill Prevention, Preparedness, and Response (GRPs)
P.O. Box 47600
Olympia, WA 98504-7600

The form on the following page of this attachment can be used to submit comments by mail. Contact information is requested so that we can give you a call if more information or comment clarification is needed.

Please use the GRP Field Report Form for providing information on GRP strategy field visits or the testing of response strategies. The form is available online at http://www.ecy.wa.gov/programs/spills/preparedness/GRP/Form-GRPFieldReport.pdf. Additional information on Geographic Response Plans is available at http://www.rrt10nwac.com/GRP.

GRP Comment Form

Mail Completed Form to:

US Environmental Protection Agency
Region 10
Office of Environmental Cleanup
1200 Sixth Avenue Room ECL-116
Seattle, WA 98101

Washington State Department of Ecology
Spills Program (GRPs)
P.O. Box 47600
Olympia, WA 98504-7600

Today's Date: _____

Your Name: _____

Title: _____

Company/Agency: _____

Address: _____

City: _____

State/Province: _____ Zip: _____

Email: _____ Ph: _____

GRP Page Number: _____ Section or Paragraph: _____

Comment(s): _____

CHAPTER 2

Site Description

2.1 CHAPTER INTRODUCTION

This chapter provides a description of the physical features, hydrology, climate, and winds found within the Nooksack River area and includes an overview of oil spill risks in, or near, the planning area.

The Nooksack River GRP begins upstream partway up the South Fork of the Nooksack River, north of the border of Whatcom and Skagit Counties, near the town of Acme. It continues north along Highway 9 to where the main stem meets with the Middle and South Forks. The plan follows the river along Highway 9 to Deming and further northwest to Everson. Heading west of Everson, it includes a section of Lynden on the north side of the river, plus the flat land and tributary creeks to its south. West of Lynden, the river curves south through the City of Ferndale. The planning area includes a portion of the Lummi Reservation, and then ends about 3 miles upstream of Bellingham Bay. Here it adjoins the existing San Juan Islands/North Puget Sound GRP, which covers the rest of the Lummi Reservation and the Nooksack delta.

The planning area is located entirely within Washington's Water Resource Inventory Area Nooksack (WRIA 01), and contained within Whatcom County. The southern border of the plan abuts the Samish River GRP, with which it also shares a wetland complex. Part of the complex is the source of a small tributary draining to the South Fork Nooksack River, and another part of the complex forms the headwaters of the Samish River itself. Studies to determine whether there is actually a connection or transfer between the two watersheds are so far inconclusive.[1]

2.2 PHYSICAL FEATURES

There are three sources of the Nooksack River, all in the North Cascades mountain range. The North Fork begins 80 miles upstream from Bellingham Bay, draining a semicircle of glaciers called the Nooksack Cirque between Icy Peak and the eastern slope of Mount Shuksan. As this fork travels east, it passes north of Mount Baker, past the ski area, and parallels Highway 542 (Mount Baker Highway) to river mile 40. Here, it meets the Middle Fork, which drains the southeast slope of Mount Baker. The South Fork Nooksack joins three miles later at River Mile (RM) 37 to create the main stem Nooksack River.

The South Fork Nooksack River sources on the eastern slope of Twin Sisters Mountain, south of Baker. As it enters the planning area, it crosses Highway 9 in Acme, then flows north parallel to the highway for its final nine miles until the confluence with the main stem. The upstream sections of

[1] Gendaszek 2014 (p14) http://pubs.usgs.gov/sir/2014/5221/pdf/sir2014-5221.pdf

all three forks are characterized by steep, forested hills draining into creeks and streams that meet the rivers in narrow valleys. As the forks approach their confluence, the valley floors begin to widen and fill with farmland, with the South Fork valley particularly wide and gently sloped.

After the forks converge, the main stem Nooksack continues draining north along Highway 9, passing Deming and the Nooksack Tribe Reservation. At RM 31, the Mount Baker Highway (SR 542) splits from Highway 9 and heads southwest towards Bellingham. From here west to Puget Sound and north to Canada, the valley is wide-open and essentially flat. The wetlands, lakes and stormwater from this valley are the source of several large tributary creeks. Fourmile Creek and Deer Creek both empty into Tenmile Creek, which enters the Nooksack just above Ferndale. Silver Creek empties into Bellingham Bay as part of the Nooksack delta.

The Nooksack River valley is home to many of Whatcom County's 1400 farms, and popular crops include corn and hay to feed dairy cows, although it is most famous for its berry farms. Sixty-five percent of the red raspberries grown in the US are from this county. It is also a center for milk production, producing 246 million dollars of milk annually from 44,000 cows.[2]

The Nooksack River creates the eastern border of this flat valley along Highway 9 up to Everson. Here, the highway continues north and separates the river from the adjoining Sumas River watershed. Although turn of the century flooding combined the rivers, Highway 9 and the railroad track have since separated surface drainage between the two systems. The Sumas River flows north to Canada, where it empties to the mighty Fraser River flowing west to Vancouver, British Columbia. Many of the towns in this area, including Everson and Lynden, originally began as Nooksack Tribe settlements, which were then either relocated or destroyed as settlers capitalized on the area's location as a through-route to Canada[3].

In Everson, the Nooksack River makes a left turn towards Lynden, a city along the north bank that became a popular relocation point for Dutch immigrants in the early 1900s[4]. Bertrand Creek, a large tributary draining south from Canada, enters the river downstream of Lynden at RM 12.5.

As the river continues south into Ferndale, it passes under bridges for Interstate 5, BNSF railroad, and finally Main Street, which connects the two halves of the city. Just downstream of the bridge is Hovander Homestead Park, a National Historic Site with a barn and farmhouse built over a century ago. The park adjoins Tennant Lake Park, a wildlife area and interpretive center co-managed by the Whatcom County Parks Department and the Washington Department of Fish and Wildlife.

The last 3.5 miles of the river and delta, including Silver Creek, create the eastern border of the Lummi Tribe's reservation lands before it empties into Bellingham Bay. Most of this estuary area is undeveloped and difficult to access.

[2] AWB 2015 http://www.agwaterboard.com/#!storymap/c1jc6
[3] Moles 2014 http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=10775
[4] Dougerty 2008 http://www.historylink.org/index.cfm?displaypage=output.cfm&file_id=8393

2.3 HYDROLOGY

The upper reaches of the Nooksack drain the foothills of the Cascade Range and so receive more precipitation than the coastal areas. Bellingham averages 35" or more rain annually, and may receive a few inches of snow once or twice a year. The North Cascades in the central and eastern part of the county experience more extreme weather, averaging 90" of precipitation, several feet of which arrive as snow and sleet.[5]

As with most of Western Washington, the rainy season is considered to begin in October and end in May or June. The non-glacially fed areas, such as the creeks in the lower valley, experience low summer flows during the dry season. Because of the agricultural nature of the lower Nooksack watershed, water levels are further drawn down by irrigation in the summer. The melting of glaciers and snow that are the source of the upper forks of the Nooksack add extra runoff during the spring thaw, in the months of May and June.

There are two USGS stations tracking velocity and river height. One is located at the Mount Baker Highway (542) bridge near Deming, at river mile 31. This gage shows that highest flows are in November and May, averaging over 5500 and 5100 cubic feet per second (cfs), respectively. The quietest months of August and September average 2000 cfs and below.[6] At the downstream gage in Ferndale, near mile 6, rainfall on the tributary creeks adds additional flow during the early spring.[7]

The low, quiet summer flows are popular times for recreational floating on the river, using inflatable rafts or inner tubes. During this season, logjams and sandbars emerge that may prevent boats with propellers from accessing all stretches of the river uninterrupted.

The planning area fully resides within the boundaries of Water Resource Inventory Area Nooksack (WRIA 01).

> Nooksack (WRIA 01): The Nooksack watershed comprises the western portion of Whatcom County, as well as small portions of Skagit County and British Columbia, Canada. It is bounded by Bellingham Bay and the Strait of Georgia on the west and its east side includes portions of the Cascade Mountain range, including Mt. Baker. This watershed has a mix of urban, agricultural, rural land uses. The watershed consists of the Nooksack River, which originates in the Cascade Mountains, and its numerous tributaries. It also includes the Sumas River (tributary to the Fraser River), and coastal drainages including the Lummi River, and Dakota, California, Terrell, Squalicum, Whatcom, Padden, and Chuckanut Creeks. The Nooksack River is a source of drinking water for the city of Bellingham, and several other cities in Whatcom County.[8]

[5] NOAA 2014 http://www.ncdc.noaa.gov/cdo-web/datasets/ANNUAL/locations/FIPS:53073/detail
[6] USGS 2016 http://waterdata.usgs.gov/wa/nwis/uv/?site_no=12210700
[7] USGS 2016 http://waterdata.usgs.gov/nwis/uv?site_no=12213100
[8] WA Dept. of ECY 2012 https://fortress.wa.gov/ecy/publications/documents/1111006.pdf

2.4 CLIMATE AND WINDS

The temperatures in western Whatcom County remain mild year round, Near the coast, Bellingham averages a total of 4.3" of snowfall, 35" of precipitation, and highs from 73 degrees to lows of 35 degrees.[9] Winds at Bellingham airport tend northerly most of the year, averaging about 8 mph.[10]

Further inland near the Cascade foothills, the temperatures are slightly more variable and precipitation increases. Clearbrook, a few miles north of Everson, averages 16" of total snowfall, 46" of total precipitation, and highs of 75 to lows of 30.[11]

Upstream of the planning area, the Cascade Mountains experience extreme weather. The Glacier Ranger Station averages 45" of annual snowfall, 61" of precipitation, and highs of 75 to lows of 25.[12] Just east of that station, the Mount Baker Ski Area holds the US record for annual snowfall, with an accumulation of 1,140 inches (95 feet) of snow during the1998-1999 ski season.[13]

Winter often means the chance of severe storms. In the past, blizzards, ice storms, and windstorms have caused major damage and flooding throughout western Whatcom county These storms are most likely to occur from November to February, although they may hit as early as October and as late as March. Historic storms included wind gusts up to 104 mph, wind-chills of 70 below zero, and lowland snowdrifts 25 feet high.[14]

2.5 TIDES AND CURRENTS

The tidal influence on the Nooksack is visible at the tide gage on RM 5.8. At that distance from the bay, the tidal influence is mild, mostly affecting the river by slowing the speed of flow during an incoming tide, with the river height changing only by a few inches. King tides during low summer flows will have exaggerated effects, and will stretch further inland than usual.

When the Nooksack River runs above 9600cfs, a portion of the water diverts through an elevated culvert into the Lummi River, vastly increasing its usual flow. Below that water level, the Lummi River has very low discharge and water speed, but can also experience tidally influenced flows when tides are above 8 feet.

2.6 RISK ASSESSMENT

The Nooksack River area is plentiful in natural, cultural, and economic resources, all at risk of injury from oil spills. Potential oil spill risks include, but are not limited to, road transportation, rail

[9] WRCC 2016 http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa0587
[10] WRCC 2006 http://www.wrcc.dri.edu/climatedata/climtables/westwind
[11] WRCC 2016 http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa1484
[12] WRCC 2000 http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa3160
[13] NOAA 1999 http://www.publicaffairs.noaa.gov/releases99/aug99/noaa99056.html
[14] Whatcom 2015 http://www.whatcomready.org/wp-content/uploads/2011/11/whatcomHMPupdate2015.pdf

transportation, oil pipelines, aircraft, recreational boating, and other oil spill risks. This section briefly discusses these risks and how they could impact the GRP planning area.

Pipelines

There are two pipelines carrying petroleum products through the Nooksack River area: the Kinder Morgan Trans Mountain pipeline, importing crude oil from Canada, and the BP Olympic Pipeline, distributing gasoline, diesel and jet fuel from the refineries at Cherry Point and Ferndale.

The Trans Mountain Puget Sound pipeline system is operated by Kinder Morgan Canada. It carries crude oil products via the Trans Mountain pipeline from Abbotsford, British Columbia, for delivery to four refineries in Whatcom and Skagit counties in Washington State. The system capacity is approximately 180,000 barrels (7.5 million gallons) per day.

The BP Olympic Pipeline travels 400 miles from the Cherry Point refinery northwest of Bellingham to Portland, Oregon, with additional input lines from the refineries at Phillips 66 Ferndale, Tesoro Anacortes, and Shell Anacortes. It delivers product to terminals at Harbor Island in Seattle, SeaTac airport, and Tacoma before exporting 1.3 billion gallons per year across the Columbia River to Oregon.

Rail Transportation and Facilities

Prior to 2012, there was little to no transport of crude oil by rail to Washington or Oregon, as oil was traditionally transported by water via tanker or barge, or pipeline. With the surge in production in the Midwest and Canada, rail is now an option for transporting crude to refineries throughout the country. Individual tank cars contain up to 30,000 gallons of crude oil or other petroleum products. Each "unit train", consisting of 90 or more tank cars of oil, carries about 3 million gallons of crude. [15]

Unit trains pick up crude from the Bakken Formation in North Dakota, enter Washington State near Spokane, continue along the Columbia River to Vancouver at the Oregon border, and then head north along I-5. This main rail line, owned by BNSF, enters Whatcom County from the southwest along the coast of Puget Sound. The tracks cross the Nooksack River in Ferndale between I-5 and the Main Street Bridge, then continue north to Blaine and Canada. North of the planning area, the Custer spur splits west from the main line to deliver 1 to 2 unit trains of crude oil per day to the refineries at BP Cherry Point and Phillips 66 Ferndale.[16]

The other BSNF tracks in the Nooksack River area are known as the Sumas subdivision, which parallel Highway 9 as it heads north to Canada. Another spur connects downtown Lynden to Sumas, Washington on the Canadian border. The main spill risk from trains in the upper area of the Nooksack are from locomotive saddle tanks, each with an approximate capacity of 5,000 gallons of

[15] WA Dept. of ECY 2015 https://fortress.wa.gov/ecy/publications/publications/1508010.pdf (320)
[16] WA Dept. of ECY 2016 https://fortress.wa.gov/ecy/coastalatlas/storymaps/spills/spills_sm.html

diesel fuel. Rail may also move refined petroleum products (i.e gasoline, diesel fuel) and other chemicals.[17]

Recreational Boating

Because this GRP is inland, and the Nooksack River is too shallow for commercial traffic, recreational boating is the only notable risk of oil spills from vessels. These boats are unlikely to carry a significant volume of oil. There are two public boat launches on the Nooksack River, at RM 5.8 in Ferndale, and at RM 31 between Everson and Deming.

Road Systems

Vehicle traffic on roadways pose an oil spill risk in areas where they run adjacent to the shorelines, or cross over lakes, rivers, creeks, and ditches that drain into the Nooksack River. Interstate 5 carries West Coast traffic between Canada and Mexico and poses the most significant risk of highway spills, due to the frequency of large tanker trucks carrying a number of fuel types. State Highway 9 does not have the traffic capacity of I-5 but is more convenient to move fuel between smaller upland communities. Highway 9 travels from the southeastern corner of the plan area along the South Fork, then north through central Whatcom County to become Canadian Highway 11 after crossing the border. There is potentially high use by logging trucks and local fuel trucks serving the inland communities in these areas.

A vehicle spill onto one of these bridges or roadways can cause fuel or oil to flow from hardened surfaces into the Nooksack River or its tributaries. Commercial trucks can contain hundreds to thousands of gallons of fuel and oil, especially fully loaded tank trunks, and may carry almost any kind of cargo, including hazardous waste or other materials that might injure sensitive resources if spilled. Smaller vehicle accidents pose a risk commensurate to the volume of fuel and oil they carry.

Aircraft

A corner of Bellingham International Airport (BLI) overlaps the planning area along I-5 near Silver Creek, on the outskirts of Bellingham. Run by the Port of Bellingham, it handled over 62,000 flights in 2016. Some commercial carriers use BLI for flights along the West Coast, but the majority of flights are local tourism and other small craft.[18] Since this airport is within three miles of the river, the potential exists for aircraft failures during inbound or outbound flights that could result in a spill by releasing aviation fuel to the Nooksack River or its tributaries.

[17] WA Dept. of ECY 2015 https://fortress.wa.gov/ecy/publications/publications/1508010.pdf
[18] WSDOT 2016 http://wsdot.wa.gov/aviation/planning/systemplan/conditionassessment/AirportFacilityServiceReport.aspx?reportId=6&FAASiteNumber=26109.A

Other Spill Risks

Other potential oil spill risks in the area include fuel storage areas (including waste oil storage), road run-off during rain events, activities where heavy equipment is being operated or stored, and the migration of spilled oil through soil on lands adjacent to the river or its tributaries.

2.7 REFERENCES

Dougherty, Phil. (2008, January 20). Lynden – Thumbnail History. Retrieved from the HistoryLink.org website: http://www.historylink.org/File/8393

Gendaszek, Andrew. (2014) Hydrogeologic framework and groundwater/surface-water interactions of the South Fork Nooksack River Basin, northwestern Washington: U.S. Geological Survey Scientific Investigations Report 2014–5221. Retrieved from http://dx.doi.org/10.3133/sir20145221

Moles, Kathleen. (2014, April 14). Everson – Thumbnail History. Retrieved from the HistoryLink.org website: http://www.historylink.org/File/10775

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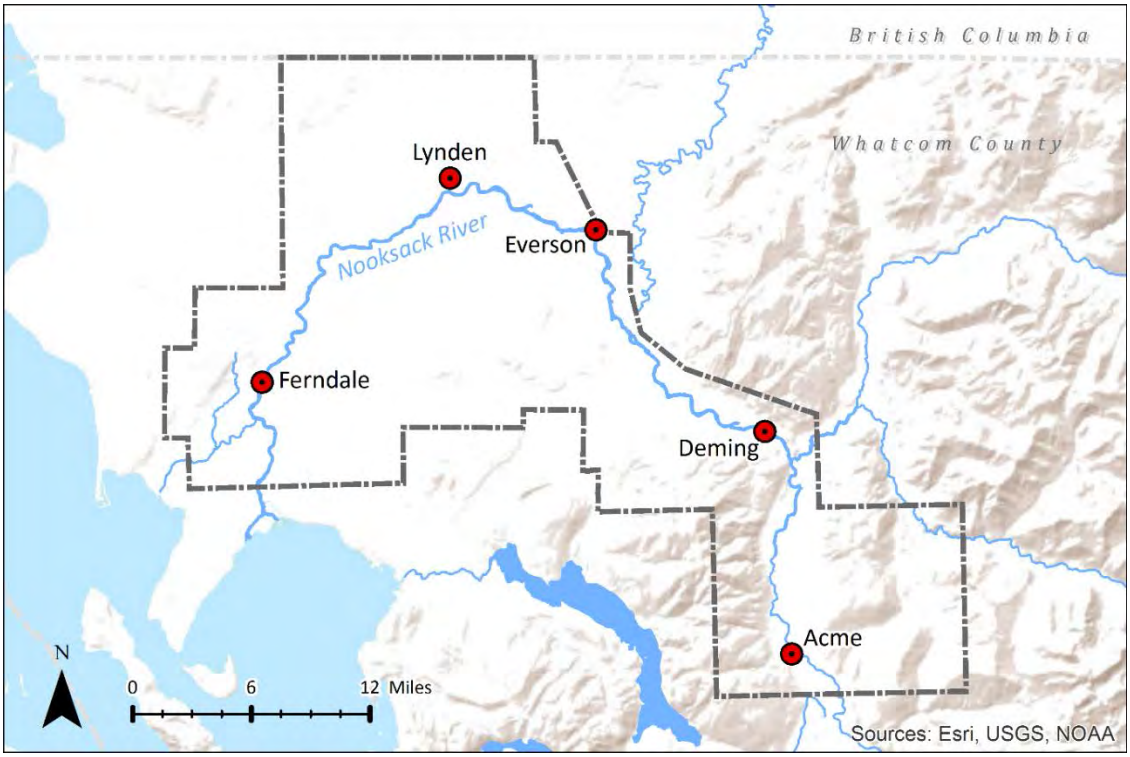
CHAPTER 3

Spill Response Options and Considerations

		Location				
		Acme	Deming	Everson	Lynden	Ferndale
Waterbody	Rivers	●	●	●	●	●
	Creeks	●	●	●	●	●
	Lakes					
	Pool Area formed by Dam					
	Tidally Influenced Areas					●
	Wetland Area(s)	●	●	●	●	●
	Intermittent Streams (Seasonal Flow)	●	●	●	●	●
Potential Response Options	Source Control and Containment Activities	●	●	●	●	●
	Aerial/Vessel Surveillance Activities	●	●	●	●	●
	Wildlife Rescue and Rehabilitation Activities	●	●	●	●	●
	Collection for Skimming Operations *(Note: 1)*	●	●	●	●	●
	Vessel Based Skimming Operations *(Note: 2)*					
	Shore Based Skimming Operations *(Note: 3)*	●	●	●	●	●
	Shoreside Protection Booming *(Note: 4)*	●	●	●	●	●
	Shoreside Cleanup Activities *(Note: 5)*	●	●	●	●	●
	In-Situ Burning ***Areas not pre-approved (Note: 8)***					
	Dispersant Use ***Areas not pre-approved(Note: 9)***					
Considerations	Shoreside Access can be Limited by Geography	●	●	●	●	●
	Shoreside Access can be Limited by Private Property	●	●	●	●	●
	State or National Wildlife Refuge/Recreation Area					●
	Threatened/Endangered Terrestrial Species *(Note: 6)*	●	●	●	●	●
	Public or Commercial Marina(s) in Area					
	Commercial Vessel Movement/Port Area					
	Recreational Boat Traffic		●		●	●
	Tribal Lands or U and A Interests *(Note: 7)*	●	●	●	●	●
	Historic/Cultural District(s) in Area					●
	Dam(s) in Area					
	Interstate Highway Corridor					●
	Oil Movement by Rail in Area					●
	Oil Pipeline(s) in Area			●	●	●

Note 1: Collection for Skimming Operations response options should include use of enhanced skimming using a U-boom, V – boom, or J – boom configuration in waters large enough for boats to maneuver (e.g., lake, large river).
Note 2: Vessel Based Skimming Operations response options should include use of advancing skimmers: weir, belt, brush, drum, or other skimmer types.
Note 3: Shore Based Skimming Operations response options should include use of fixed skimmers: weir, belt, brush, drum, or other skimmer types.
Note 4: Shoreline Protection should include the deployment of response strategies (boom) to divert and collect oil off the water before shoreline areas are impacted, or deflect and exclude oil away from shoreline areas. These strategies include those published in this document (GRP response strategies), those provided in other plans (e.g., facility contingency plans), and "ad-hoc" strategies developed during the spill itself. A culvert block or underflow dam might be installed to aid in the recovery of spilled oil in small streams or those with intermittent flow.
Note 5: Shoreside Cleanup options depend on safe and efficient access to locations and the type of river, creek, or stream bank present. Potential activities could include flooding, flushing, manual removal, vacuum, mechanical removal, sorbents, vegetation cutting, mechanical tilling/aeration, and/or sediment reworking/surf washing.
Note 6: More information available in Chapter 6. Response and cleanup in these areas may require coordination with Federal or State Fish and Wildlife staff to reduce disturbances to upland species.
Note 7: This sheet does not represent all locations where Tribes and Tribal Nations have lands or areas of specific interest (including lands established by treaty or rights to Usual and Accustom areas). Early coordination with tribal governments is highly recommended during a response, regardless of the spill location or potential impact areas.
Note 8: These areas are not pre-approved for the use of in-situ burning. Refer to the Northwest Area Contingency Plan for the dispersant Policy.
Note 9: These areas are not pre-approved for the use of dispersants. Refer to the Northwest Area Contingency Plan for the dispersant Policy.

Figure 3-1: Response Options and Considerations Area



NOOKSACK RIVER

Geographic Response Plan

(NOOR-GRP)

CHAPTER 4

Response Strategies and Priorities

November 2016

Before you print this document

This chapter and its appendices, as well as the appendix at the end of Chapter 6, are provided in "landscape" page orientation. The detailed 2-page information sheets for response strategies, notification strategies, staging areas, and boat launch locations in appendices 4A though 4D (pages 71-178) have been designed for duplex printing (front and back side of paper), "open to top" configuration.

4.1 CHAPTER INTRODUCTION

This chapter provides information on GRP response strategies and the order (priority) they should be implemented, based on Potential Oil Spill Origin Points (POSOPs) and their proximity to sensitive resources. Area maps, sector maps, and information on staging areas and boat launch locations are also provided in this chapter. During a spill incident, GRP response strategies should be implemented as soon as possible. Unless circumstances unique to a particular spill situation dictate otherwise, the priority tables in Section 4.3 should be used to decide the order that GRP strategies are deployed. The downstream movement of oil and the time it takes to mobilize response resources to deploy GRP strategies must always be considered when setting implementation priorities. Information on resources at risk, sensitive areas, and flight restrictions can be found in Chapter 6 of this plan. Information on shoreline countermeasures can be found in the Northwest Area Shoreline Countermeasures Manual (NWACP Section 9420). The Northwest Area Contingency Plan (NWACP) is available online at http://www.rrt10nwac.com/NWACP/Default.aspx.

The GRP strategies provided in this chapter have been created to reduce spilled oil's impact on sensitive resources. They are not everything that should or could be done during a response to lessen the chance of injury to natural, cultural, and economic resources at risk from oil spills. Although designed to be implemented during the initial phase of an oil spill, GRP strategies may continue to be used throughout a response at the discretion of the Incident Commander or Unified Command.

4.1.1 On-site Considerations

Before Deploying a GRP Strategy (Questions to Ask)

- Are conditions safe? Response managers and responders must first determine if efforts to implement a response strategy would pose an undue risk to worker safety or the public, based on conditions present during the time of the emergency. No strategy should be implemented if doing so would threaten public safety or present an unreasonable risk to the safety of responders.
- Has initial control and containment been sufficiently achieved? Source control and containment of the spill at or near the source of a spill are always higher priorities than the deployment of GRP response strategies, especially when concurrent response activities are not possible.
- How far downstream or out into the river environment is the spilled oil likely to travel before response personnel will be ready and able to deploy GRP response strategies?
- Are permits required? Consult the Northwest Area Contingency Plan Permit Summary Table (NWACP Section 9401) for information specific to your location and circumstance.

- Will equipment or vehicles need to be staged on or near a roadway? If so, traffic control may be required. Contact the Washington State Patrol, or local, county, municipality, or tribal police for assistance. At minimum, Washington Department of Transportation (WSDOT) guidelines for work zone traffic control should be followed when working on or near a roadway.
    - City of Everson Police Department (360) 966-4212
    - City of Ferndale Police Department (360) 384-3390
    - City of Lynden Police Department (360) 354-2828
    - Lummi Nation Police Department (360) 312-2274
    - Nooksack Tribal Police Department (360) 592-9065
    - Washington State Patrol District #7 (360) 654-1204
    - Whatcom County Sheriff's Office (360) 778-6600

During Strategy Implementation (Things to Remember)

- On-scene conditions (weather, currents, tides, waves, river speed, and debris) may require that strategies be modified in order to be effective. There is a significant chance that weather and conditions experienced at a particular strategy location during an actual spill event will be different from that when data was gathered during field visits. Response managers and responders must remain flexible and modify the strategies provided in this chapter as needed to meet the challenges experienced during an actual response.
- Certain strategies may call for access points or staging areas that are not easily reached at all times of the year or in all conditions.
- The GRP response strategies provided in this chapter were designed for use with persistent heavy oils that float on water and may not be suitable for other petroleum products or hazardous substances.

After Strategy Implementation (Things to Understand)

- Oil containment boom should be maintained and periodically monitored to ensure its effectiveness. Changes in river or current speed will likely require modifications to boom deflection angles (see Table 4.1). Depending on conditions, some booming strategies may require around-the-clock tending.

- Although designed for implementation during the initial phase of an oil spill, GRP strategies may continue to be deployed and implemented throughout the entire lifespan of a response, as determined appropriate and necessary by the Incident Commander or Unified Command.

Water Speed and Boom Deflection Angle

Measure the speed that water is moving by anchoring a line with two floating markers/buoys attached that are spaced 100 feet apart. Time the movement of floating debris between the two buoys, and then use Table 4.1 to estimate the water speed based on the travel time of the debris between the two buoys. You can also measure 100 feet along a straight portion of river bank or shoreline, and time the movement of debris between those points, but this method is generally less accurate than using the buoys. The maximum boom deflection angle is also provided in the table, based on the water speed measurements.

Table 4-1: Water Speed Drift Measurement Table

Time to Drift 100 Feet (seconds)	Velocity (ft/sec)	Velocity (m/sec)	Velocity (knots)	Max Boom Deflection Angle (degrees)	Boom required for 100-foot Profile to Current (feet)	Anchors needed if Placed Every 50 feet (number)
6	16.7	5.1	10.00	4.0	1,429	30
8	12.5	3.8	7.50	5.4	1,071	22
10	10.0	3.1	6.00	6.7	857	18
12	8.3	2.5	5.00	8.0	714	15
14	7.1	2.2	4.29	9.4	612	13
17	5.9	1.8	3.53	11.4	504	11
20	5.0	1.5	3.00	13.5	429	10
24	4.2	1.3	2.50	16.3	357	8
30	3.3	1.0	2.00	20.5	286	7
40	2.5	0.8	1.50	27.8	214	5
60	1.7	0.5	1.00	44.4	143	4
>86	≤1.2	≤0.35	≤0.70	90.0	100	3

Source: Oil Spill Response in Fast Currents. A Field Guide. U.S. Coast Guard Research and Development Center. October 2001

4.1.2 Historical River Flow Ranges

Gage/streamflow data from U.S. Geological Survey (USGS) was used to determine the mean monthly river and stream discharge for the Nooksack River. Discharge is recorded in cubic feet per second (cfs); surface velocities in miles per hour (mph) or nautical miles per hour (knots) are not available. NHD+ models estimate average speeds of the Nooksack River covered in this plan vary between 0.5 mph in the late summer to 1.5 mph and faster in the spring and winter. Seasonal variation on tributary creeks in general varies between 0.3 mph in the summer to 1.5 mph and faster in the winter. Table 4-1 provides information that can be used to calculate river velocities based on the time it takes a floating object to drift 100 feet downstream from any given point in a river or creek. Additional information on calculating river velocities can be found in the NWACP. Information on USGS river gage readings can be found online at http://maps.waterdata.usgs.gov/mapper/index.html.

Table 4-2: Historical Streamflow for the Nooksack River

Monthly average flow in Cubic Feet per Second (cfs)		
	Nooksack River at Ferndale **USGS 12213100** (data from 1966 to 2016)	Nooksack River at North Cedarville **USGS 12210700** (data from 2004 to 2016)
Jan	5,070	5,050
Feb	4,100	2,940
Mar	3,890	3,610
Apr	3,800	3,500
May	4,680	5,190
Jun	4,830	5,060
Jul	3,470	3,580
Aug	2,060	2,020
Sep	1,830	1,830
Oct	2,760	2,910
Nov	5,160	5,580
Dec	5,020	4,230

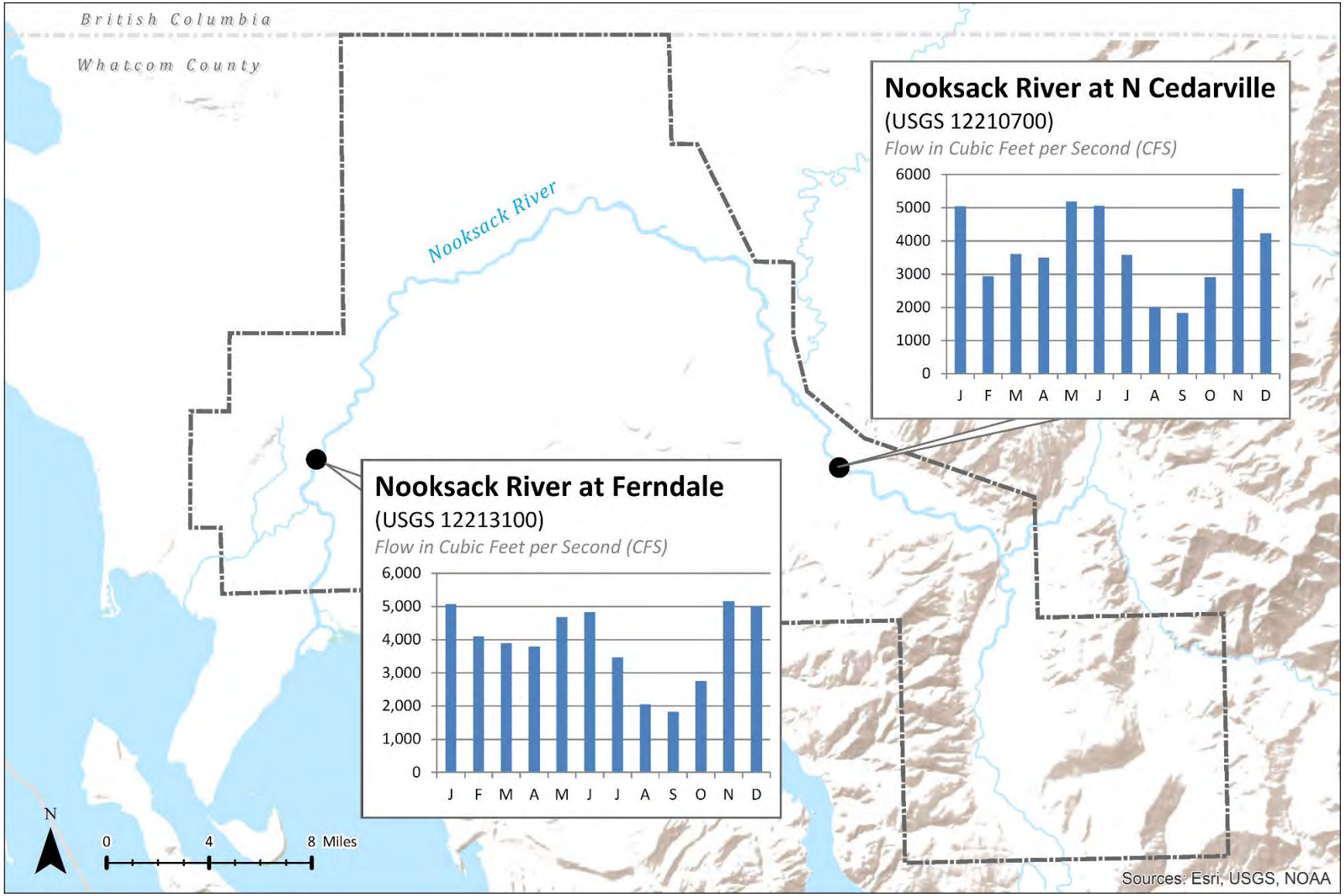


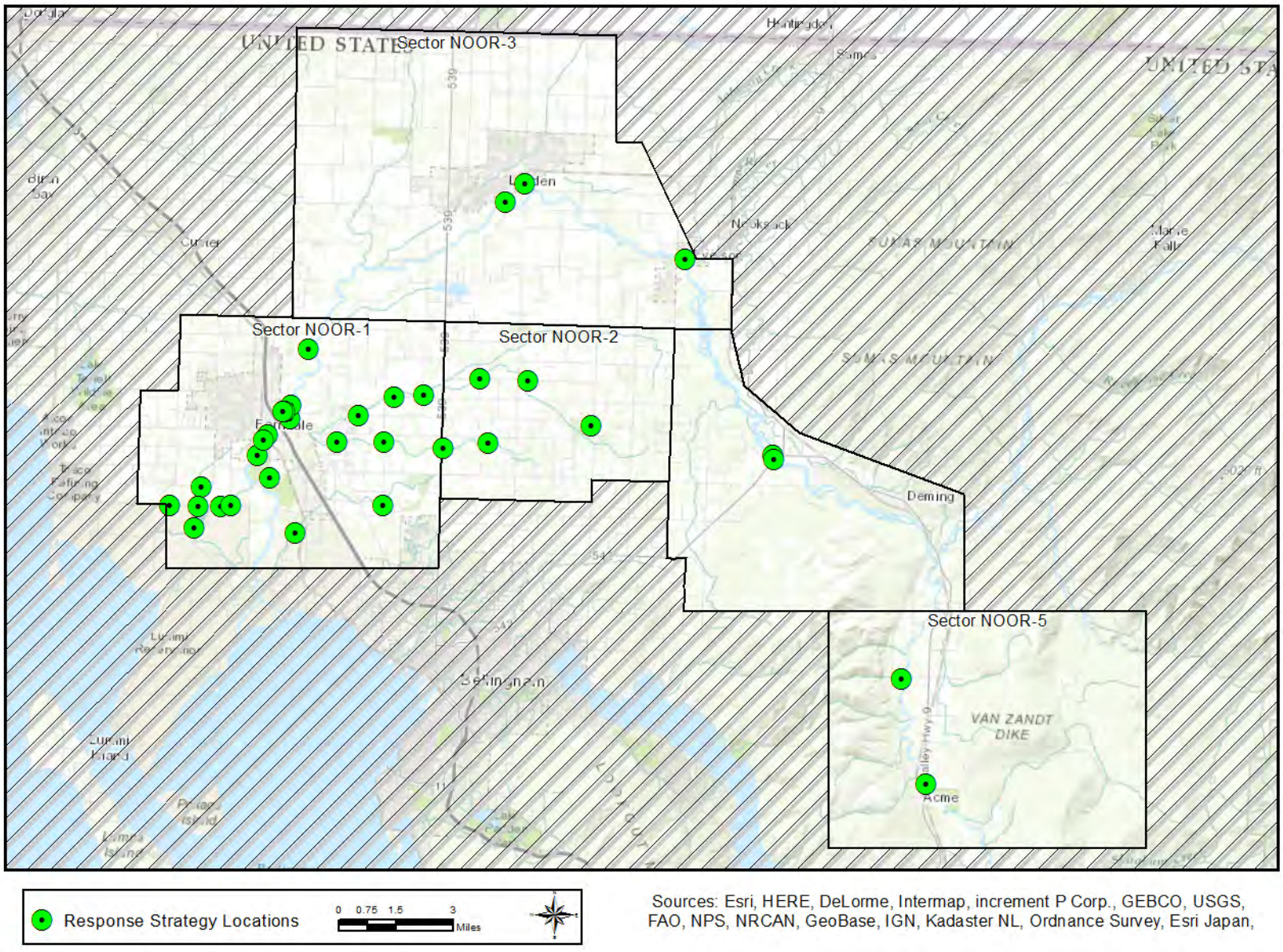
Figure 4-1: Mean Monthly Discharge Measurements for Nooksack River

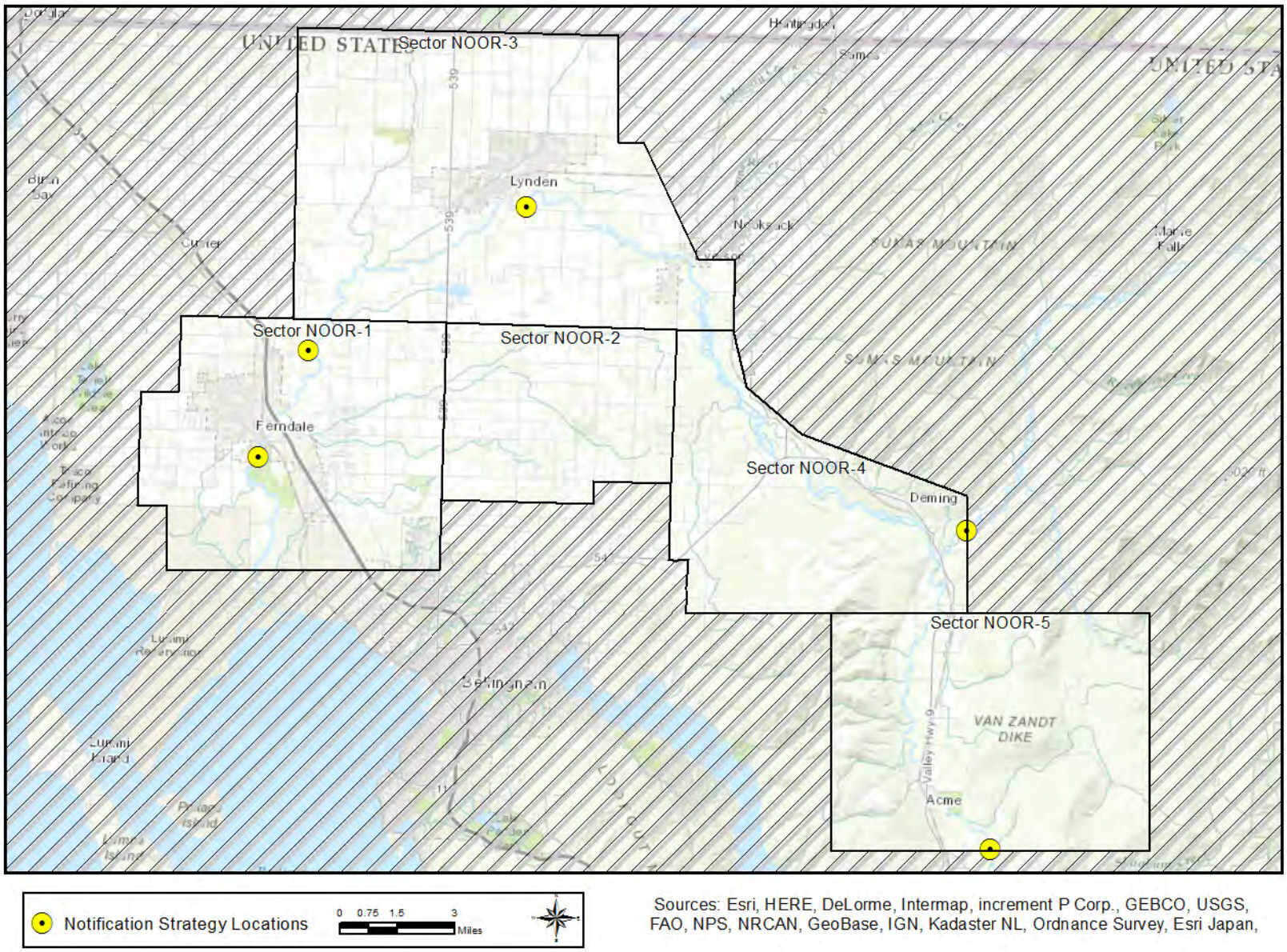
4.2 AREA OVERVIEW MAPS

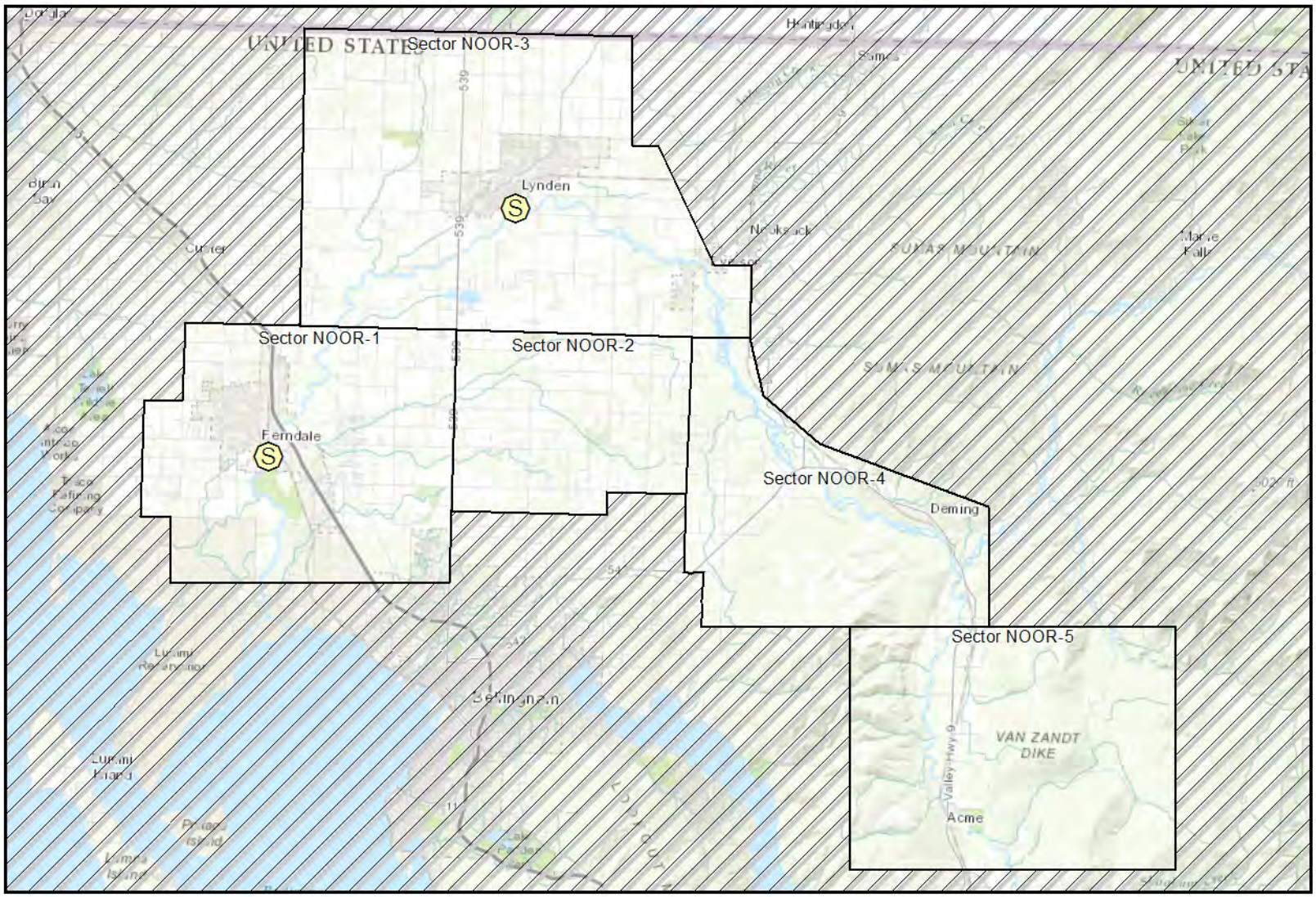
The following maps provide a geographic overview of the Nooksack River GRP. Sector maps in Section 4.4 of this chapter provide more detail on the location of response strategies, notification strategies, staging areas, boat launch locations, and Potential Oil Spill Origin Points (POSOPs). Detailed information for each location can be found in the matrices of Section 4.5 or in the chapter appendices. Priority tables for potential oil spill origin points can be found in Section 4.3.2.

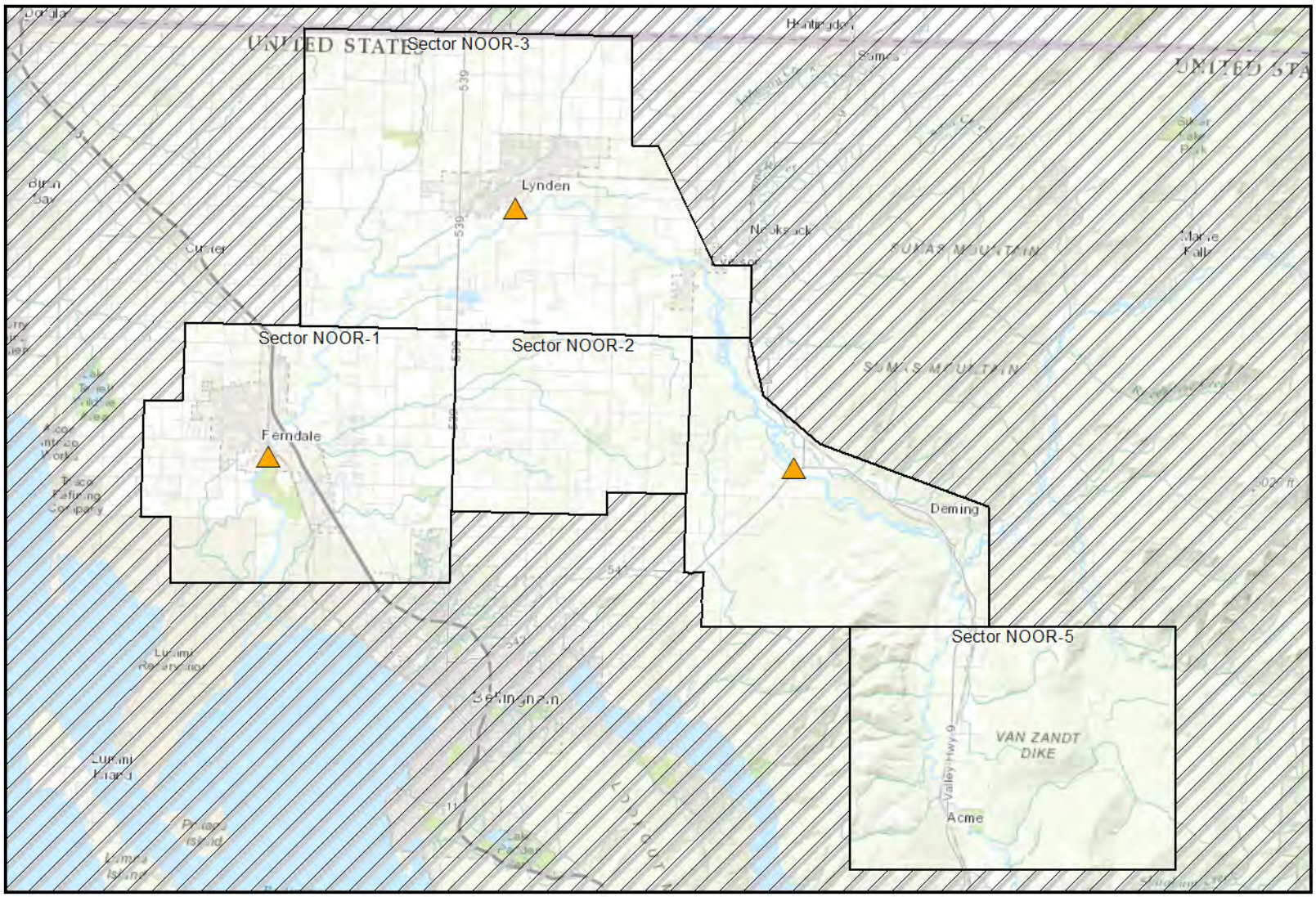
The following area maps are provided for reference:

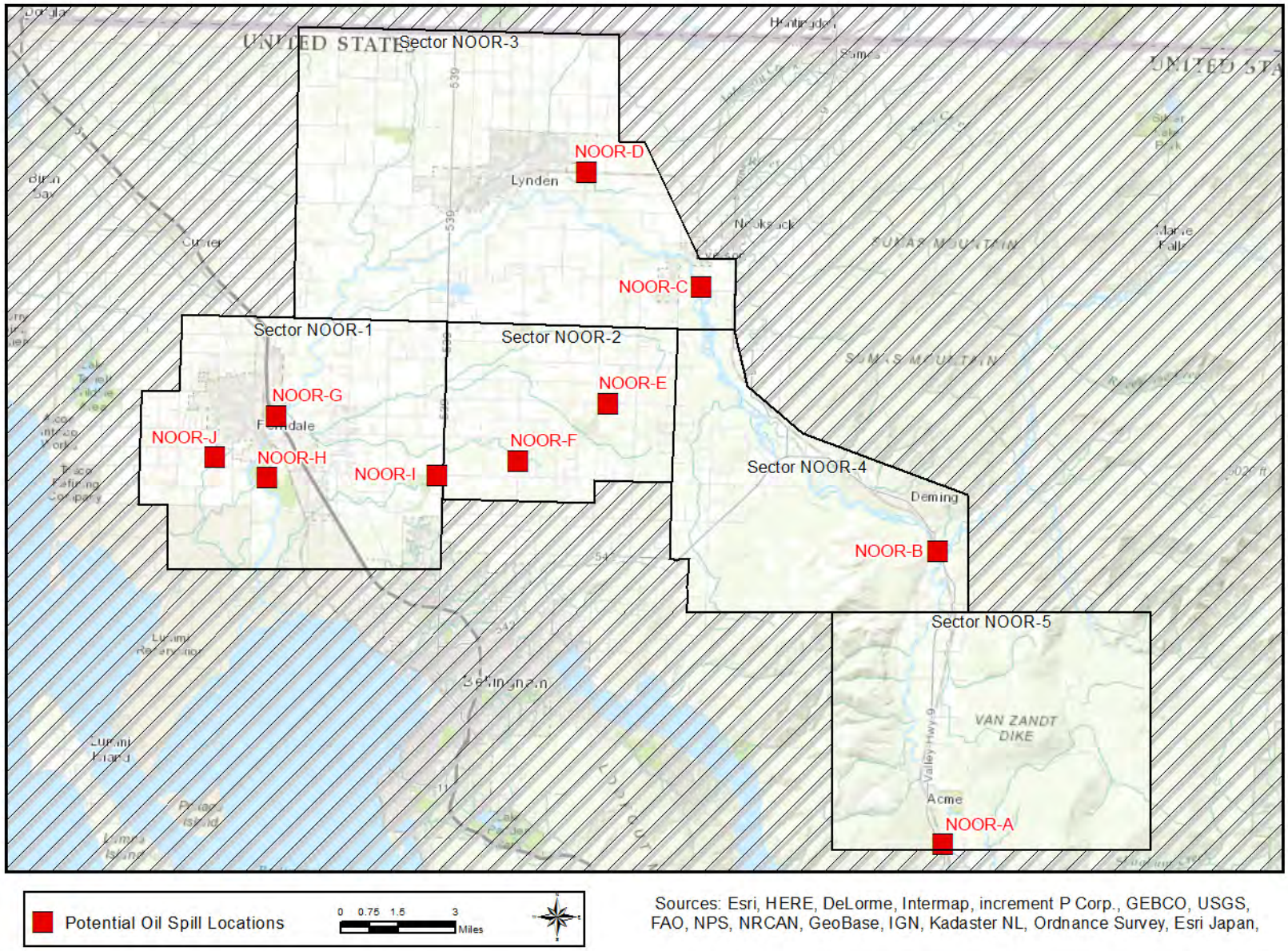
- Response Strategy Locations
- Notification Strategy Locations
- Staging Areas
- Boat Launch Locations
- Potential Oil Spill Origin Points


Sector NOOR-3
Sector NOOR-1
Sector NOOR-2
Sector NOOR-5
Deming
Acme
VAN ZANDT DIKE
Response Strategy Locations
0 0.75 1.5 3
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan,


Sector NOOR-3
Lynden
Sector NOOR-1
Sector NOOR-2
Ferndale
Sector NOOR-4
Deming
Sector NOOR-5
VAN ZANDT DIKE
Acme
Bellingham
Notification Strategy Locations
0 0.75 1.5 3
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan,


Sector NOOR-3
Lynden
Sector NOOR-1
Sector NOOR-2
Ferndale
Sector NOOR-4
Deming
Sector NOOR-5
VAN ZANDT DIKE
Acme
Bellingham
Staging Area Locations
0 0.75 1.5 3
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan,


Sector NOOR-3
Lynden
Sector NOOR-1
Sector NOOR-2
Ferndale
Deming
Sector NOOR-5
VAN ZANDT DIKE
Acme
Valley Hwy 9
Bellingham
Boat Launch Locations
0 0.75 1.5 3
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan,


Sector NOOR-3
Sector NOOR-1
Sector NOOR-2
Sector NOOR-4
Sector NOOR-5
NOOR-A
NOOR-B
NOOR-C
NOOR-D
NOOR-E
NOOR-F
NOOR-G
NOOR-H
NOOR-I
NOOR-J
Lynden
Deming
Acme
Bellingham
Ferndale
VAN ZANDT DIKE
Potential Oil Spill Locations
0 0.75 1.5 3
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan,

4.3 STRATEGY AND RESPONSE PRIORITIES

4.3.1 General Response Priorities

The following list provides the order of response priorities after an oil spill occurs in the planning area.

- Safety is always the number one priority. Do not implement GRP strategies or take actions that will unduly jeopardize public, worker, or personal safety.
- Notify local public health and safety personnel.
- Control and contain the source of the spill; mobilize resources to the spill location. Source control and containment are always a higher priority than the implementation of GRP strategies.
- Determine the priority or order GRP strategies should be implemented based on the location of the spill or affected area. Priorities based on POSOPs are included in this chapter and should be used unless the situation or circumstances dictate otherwise (see Section 4.3.2).
- As response resources become available, implement the GRP Strategies in order of priority.

4.3.2 Strategy Priorities based on Potential Oil Spill Origin Points

Potential Oil Spill Origin Points (POSOPs) are geographic locations that have a defined list of response strategy implementation priorities provided in a table within Section 4.3. The placement of each POSOP is often based on spill risks in the area, including oil pipelines, railways, highways/roadways, tributaries, and vessel movements. Intersections of two or more of these risk locations typically represent a higher spill risk than any one individually, increasing the probability of an oil spill. Occasionally POSOPs are generalized to ensure implementation priorities are developed throughout an entire planning area.

These points are displayed on area overview and sector maps as red boxes. In establishing priorities during a response, or selecting an appropriate POSOP, the downstream and/or tidal movement of spilled oil and the time it takes to mobilize and deploy response resources must be considered. Generally, GRP strategies should first be implemented downstream, well beyond the furthest extent of the spill, with deployments continuing upstream towards the spill source and in some cases slightly beyond. POSOPs are alphabetically designated.

The following tables provide the strategy implementation order for Potential Oil Spill Origin Points in the Nooksack River GRP, including points NOOR-A, NOOR-B, NOOR-C, NOOR-D, NOOR-E, NOOR-F, NOOR-G, NOOR-H, NOOR-I, and NOOR-J. The priority tables provided in

this section were developed using a combination of variables, including: notification time, travel time for responders and equipment, average and seasonal flow rates, average winds, tides or currents, deployment time, proximity to the spill source, trustee input, and other considerations.

Source control and containment are a higher priority than GRP strategy implementation

Table 4-3: NOOR-A (Unnamed Tributary of South Fork at BNSF ~SFNOOR-9.0)

NOOR-A (Unnamed Tributary of South Fork at BNSF ~SFNOOR-9.0)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NOOR-30.8**	55	62	109	
2	**NOOR-30.9**	55	62	111	
3	**SFNOOR-4.2**	56	63	129	
4	**SFNOOR-8.6**	56	63	131	
5	**SAMR-27.0**	SAMR-GRP		123	Samish River GRP
6	**SAMR-26.9**	SAMR-GRP		121	Samish River GRP

Table 4-4: NOOR-B (Nooksack at BNSF ~NOOR-37.4)

NOOR-B (Nooksack at BNSF ~NOOR-37.4)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NOOR-30.8**	55	62	109	
2	**NOOR-30.9**	55	62	111	
3	**NOOR-23.8**	54	62	107	
4	**NOOR-17.4**	54	61	105	

Table 4-5: NOOR-C (Nooksack Pipeline Crossing above Everson ~NOOR-24.7)

NOOR-C (Nooksack Pipeline Crossing above Everson ~NOOR-24.7)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NOOR-17.4**	54	61	105	
2	**NOOR-23.8**	55	62	107	
3	**NOOR-9.2**	52	61	103	

Table 4-6: NOOR-D (Stickney Slough at Northwood Road ~NOOR-18.1)

NOOR-D (Stickney Slough at Northwood Road ~NOOR-18.1)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NOOR-17.4**	54	61	105	
2	**MORM-0.8**	54	60	89	
3	**NOOR-9.2**	52	61	103	
4	**NOOR-7.2**	52	61	101	
5	**NOOR-6.9**	52	61	99	
6	**NOOR-6.8**	52	61	97	
7	**NOOR-6.0**	52	60	95	

Table 4-7: NOOR-E (Unnamed Tributary of Tenmile Creek at E Hemmi Rd (~TNMIC-12.0)

NOOR- E (Unnamed Tributary of Tenmile Creek at E Hemmi Rd ~TNMIC-12.0)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**TNMIC-8.2**	53	65	145	
2	**TNMIC-9.2**	53	65	147	
3	**TNMICU-11.6**	53	65	149	
4	**TNMIC-6.0**	52	65	143	
5	**TNMIC-4.5**	52	64	141	
6	**TNMIC-2.7**	52	64	139	

Table 4-8: NOOR-F (Deer Creek at Hannegan Rd (~DEERC-7.0)

NOOR- F (Deer Creek at Hannegan Rd (~DEERC-7.0)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**DEERC-2.4**	52	58	75	
2	**DEERC-4.2**	53	58	77	
3	**DEERC-6.6**	53	58	79	
4	**DEERC-0.9**	52	58	73	
5	**TNMIC-0.2**	52	64	137	
6	**NOOR-6.9**	52	61	99	
7	**NOOR-6.8**	52	61	97	
8	**NOOR-6.0**	52	60	95	

Table 4-9: NOOR-G (Nooksack River at I-5 (~NOOR-6.6)

NOOR-G (Nooksack River at I-5 (~NOOR-6.6)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NPS-10**	NPS-GRP		117	North Puget Sound GRP
2	**LUMR-3.9**	52	59	85	Deploy only if Nooksack is 9600+ cfs
3	**LUMR-3.5**	52	59	83	Deploy only if Nooksack is 9600+ cfs
4	**LUMR-2.3**	52	59	81	Deploy only if Nooksack is 9600+ cfs
5	**NOOR-5.4**	52	60	91	
6	**NOOR-5.9**	52	60	93	
7	**NOOR-6.0**	52	60	95	

Table 4-10: NOOR-H (Tennant Creek at Pipeline Crossing ~TNTC-0.2)

NOOR-H (Tennant Creek at Pipeline Crossing ~TNTC-0.2)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**TNTC-0.1**	52	66	151	

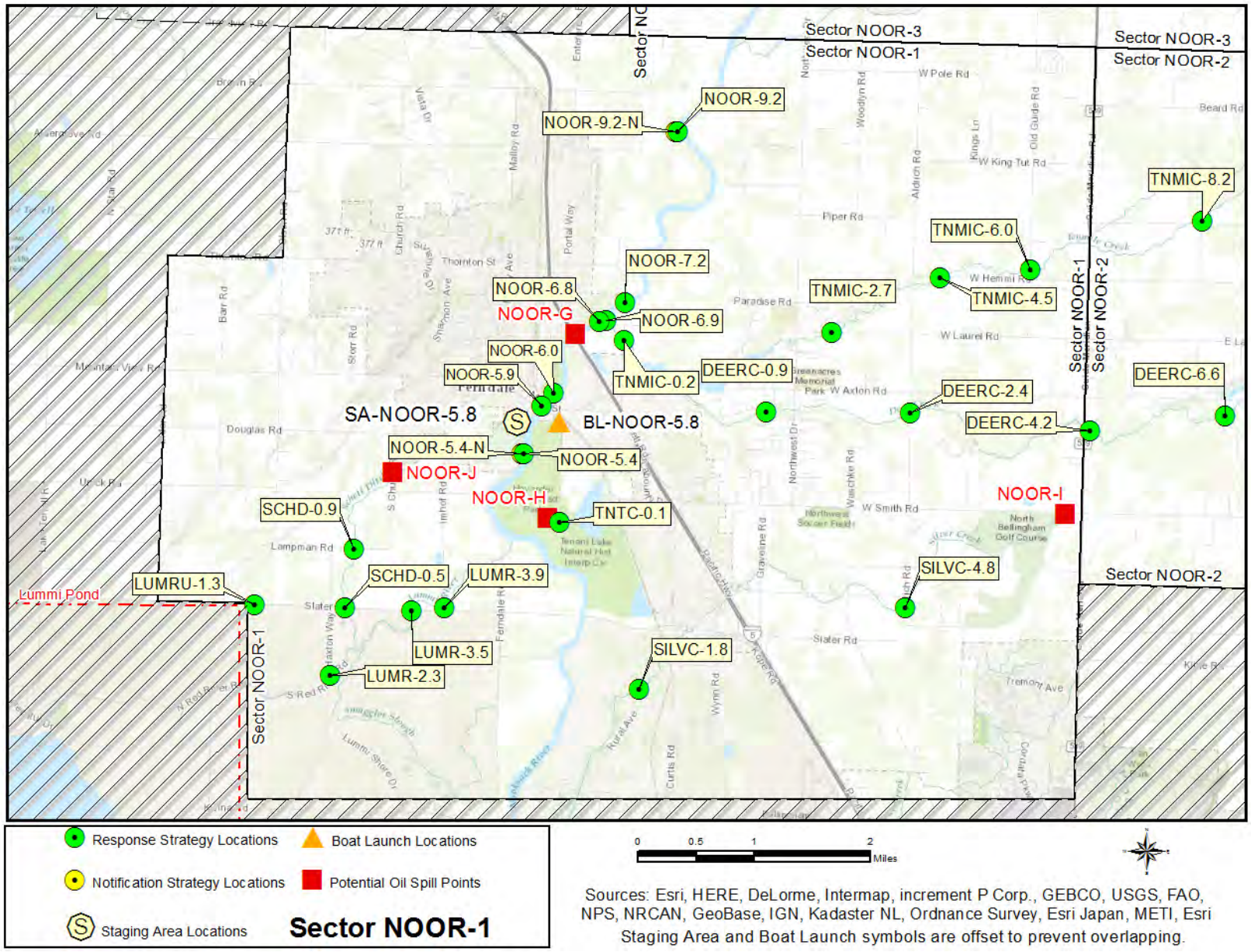
Table 4-11: NOOR-I (Silver Creek at E Smith Rd ~SILVC-6.8)

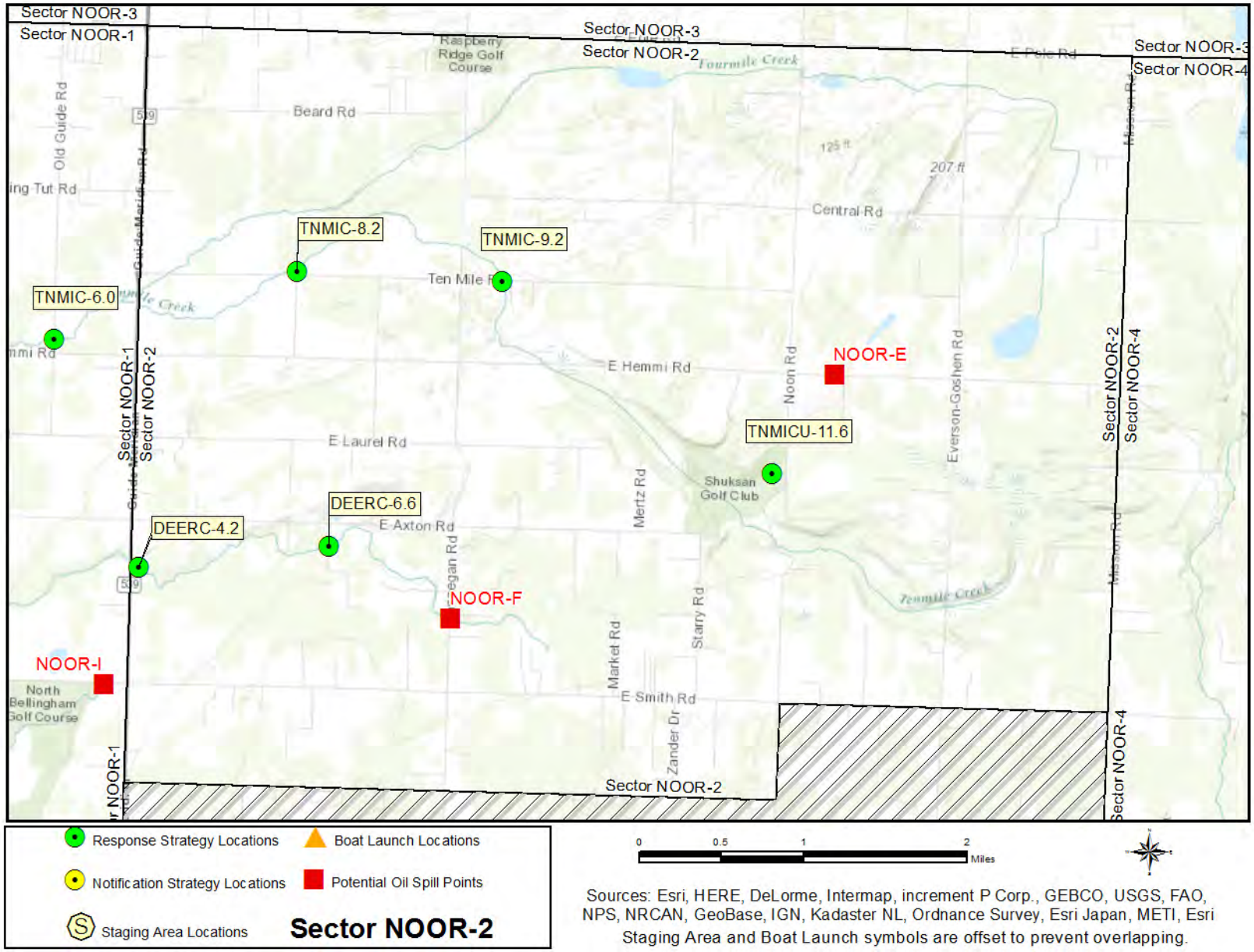
NOOR-I (Silver Creek at E Smith Rd ~SILVC-6.8)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NPS-10**	NPS-GRP		117	North Puget Sound GRP
2	**SILVC-1.8**	52	63	133	
3	**SILVC-4.8**	52	64	135	

Table 4-12: NOOR-J (Schell Ditch at S Church Rd ~SCHD-1.8)

NOOR-J (Schell Ditch at S Church Rd ~SCHD-1.8)					
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**	**Comments**
1	**NPS-8**	NPS-GRP		113	North Puget Sound GRP
2	**NPS-9**	NPS-GRP		115	North Puget Sound GRP
3	**NPS-13**	NPS-GRP		119	North Puget Sound GRP
4	**LUMR-2.3**	52	59	81	
5	**SCHD-0.5**	52	62	125	
6	**SCHD-0.9**	52	63	127	

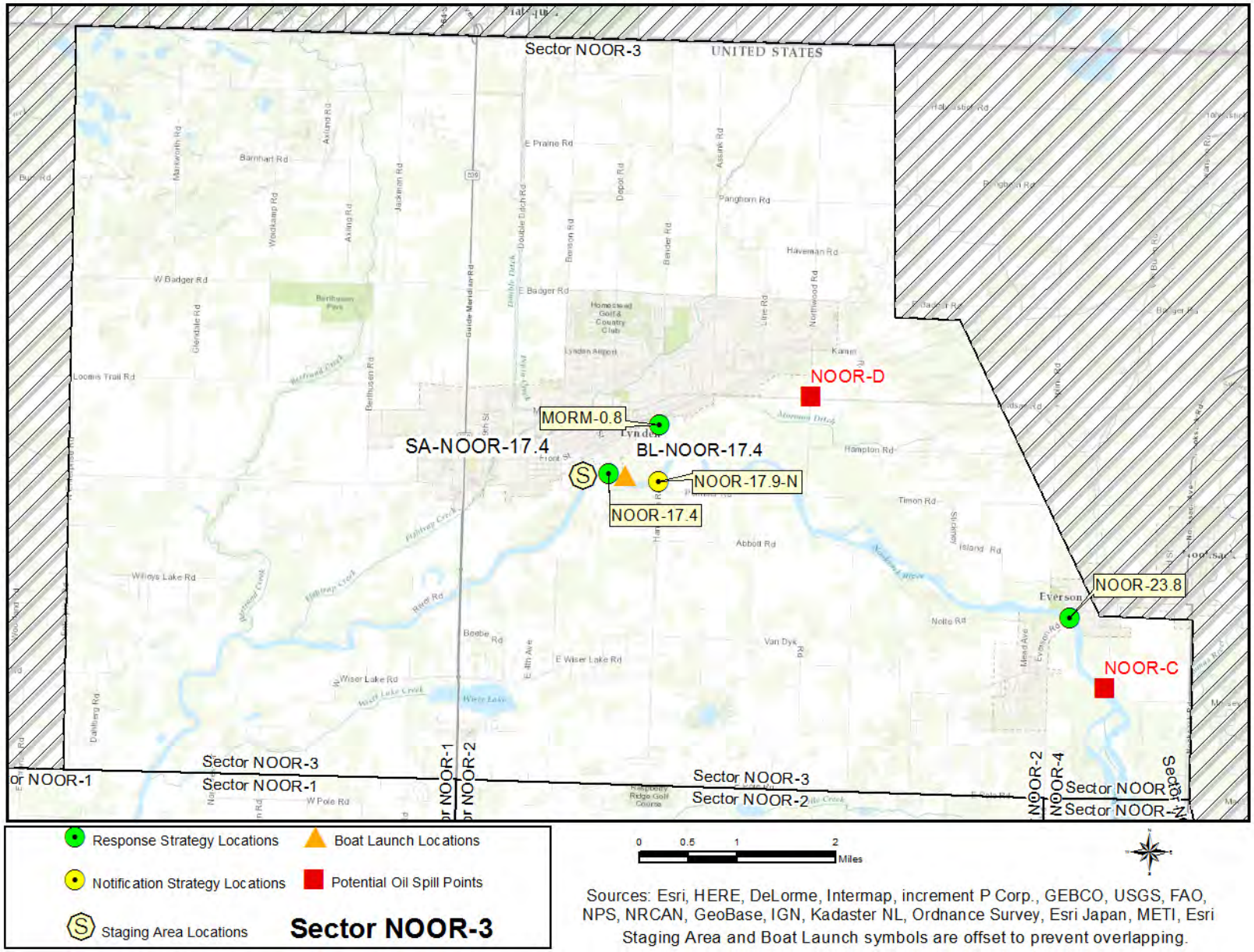
4.4 SECTOR MAPS (STRATEGY LOCATIONS)

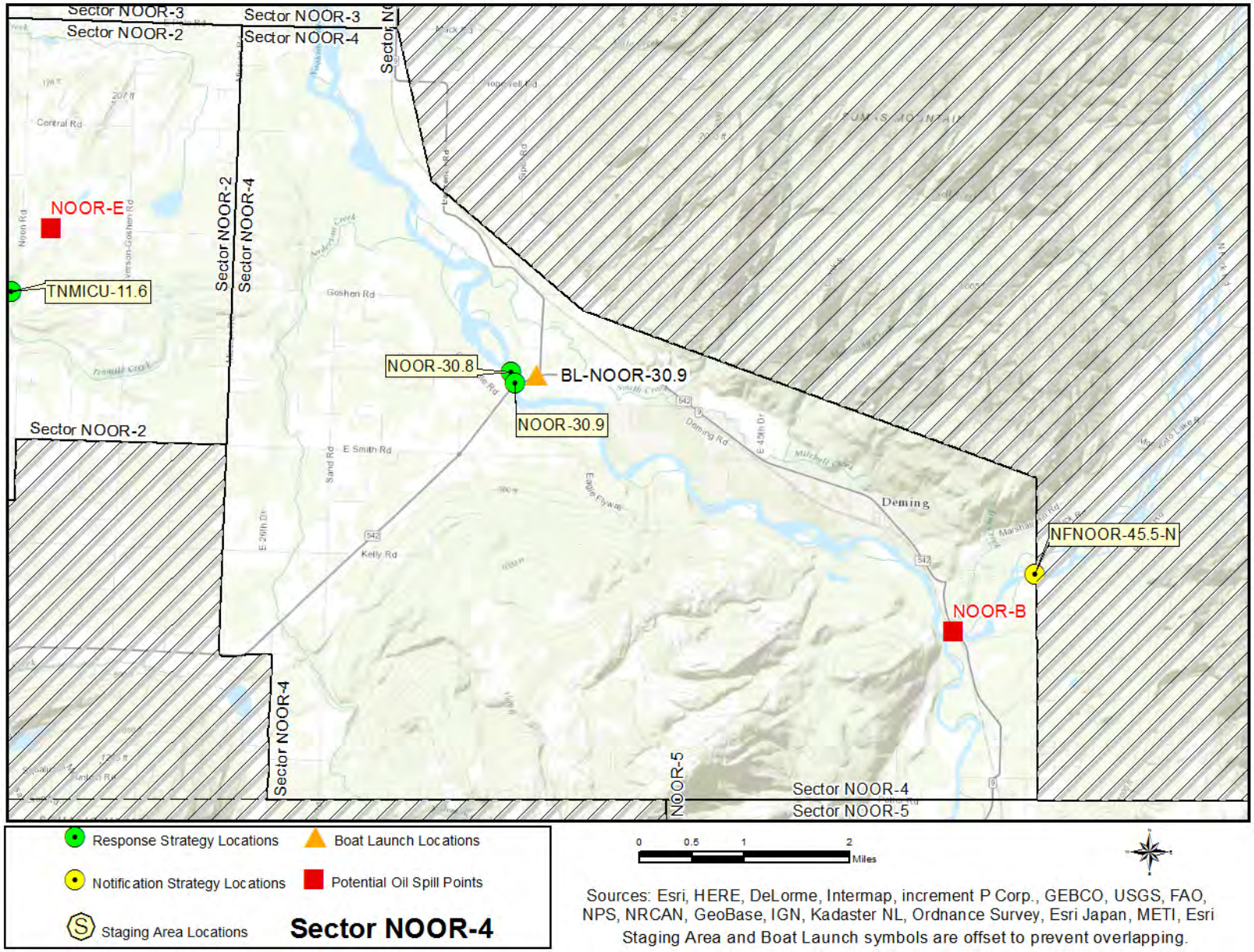




Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri

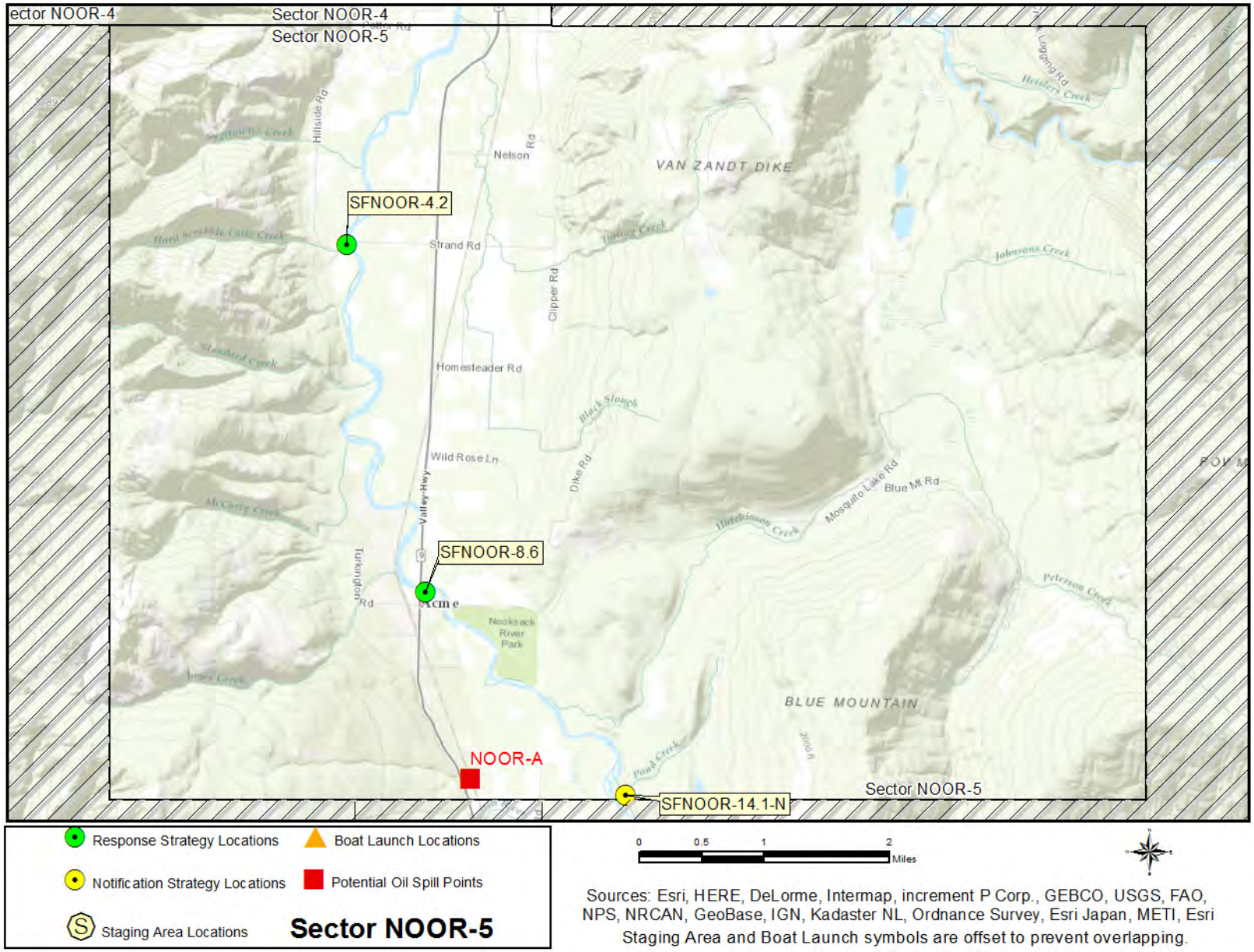
Staging Area and Boat Launch symbols are offset to prevent overlapping.


Sector NOOR-3
UNITED STATES
NOOR-D
MORM-0.8
SA-NOOR-17.4
BL-NOOR-17.4
NOOR-17.9-N
NOOR-17.4
NOOR-23.8
NOOR-C
Sector NOOR-3
Sector NOOR-1
Sector NOOR-3
Sector NOOR-2
Response Strategy Locations
Boat Launch Locations
Notification Strategy Locations
Potential Oil Spill Points
Staging Area Locations
Sector NOOR-3
0 0.5 1 2
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri
Staging Area and Boat Launch symbols are offset to prevent overlapping.



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri

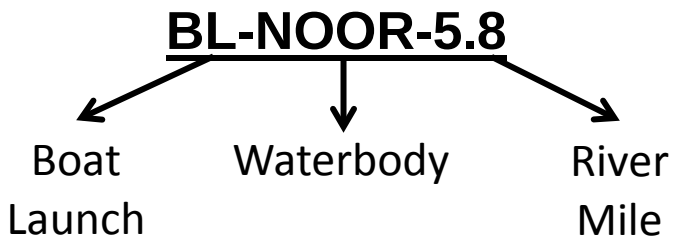
Staging Area and Boat Launch symbols are offset to prevent overlapping.


ector NOOR-4
Sector NOOR-4
Sector NOOR-5
SFNOOR-4.2
SFNOOR-8.6
SFNOOR-14.1-N
NOOR-A
Sector NOOR-5
VAN ZANDT DIKE
BLUE MOUNTAIN
Nelson
Strand Rd
Homesteader Rd
Wild Rose Ln
Valley Hwy
Dike Rd
Clipper Rd
Hillside Rd
Blue Mt Rd
Mosquito Lake Rd
Acme
Nooksack River Park
Response Strategy Locations
Boat Launch Locations
Notification Strategy Locations
Potential Oil Spill Points
Staging Area Locations
Sector NOOR-5
0 0.5 1 2
Miles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri
Staging Area and Boat Launch symbols are offset to prevent overlapping.

4.5 MATRICES

4.5.1 Naming Conventions (Short Names)

Each strategy, staging area, and boat launch location in this document has been given a unique "Short Name" which includes one to six letters denoting the associated waterbody. Following the letters are numbers that specify the location. On rivers or other linear waterbodies, the location is named by river mile: the distance from the mouth of the river or creek upstream to the site location. Some short names indicate whether the site is located on river right, river left, or mid-river by an "R", "L" or "M" after the river mile. On lakes, the numbers indicate the location by shoreline mile, typically starting at the northernmost point and increasing clockwise around the lake. In marine areas, the numbers do not have a geographic meaning. Notification strategies are indicated by an "-N" at the end of the name. Staging Areas and Boat Launches are indicated by the prefix "SA" or "BL".



Associated waterbody short name designations used within the Nooksack River GRP include:

DEERC = Deer Creek

LUMR = Lummi River

LUMRU = Unnamed Tributary of Lummi River

MORM = Mormon Ditch

NFNOOR = North Fork Nooksack River

NOOR = Nooksack River

SCHD = Schell Ditch

SFNOOR = South Fork Nooksack River

SILVC = Silver Creek

TNMIC = Tenmile Creek

TNMICU = Unnamed Tributary of Tenmile Creek

TNTC = Tennant Creek

4.5.2 Response Strategy Matrices

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
DEERC-0.9	Deer Creek at Judy Way (KM DE-0.9) 48.84507 -122.54635	Collection	Boom 100ft, Sorbent 100ft	No	Onsite Stage at private road north of creek, at small flat pull-off next to site. More room on nearby lawns/front yards.	Estuary Resources, Salmon Bearing Stream, Shorebirds, Waterfowl	DO NOT DRIVE VAC TRUCK OVER WOODEN BRIDGE. Not weight rated. Site is next to small private driveway and new wood bridge over creek crossing. Downstream of bridge has small waterfall and concrete anti-erosion chute.	52	73
DEERC-2.4	Deer Creek at Aldrich Rd (KM DE-2.4) 48.84544 -122.51902	Collection	Sorbent 200ft	No	Onsite Stage at driveway just north of site. Extra room at private fields, lawns, driveways in area.	Estuary Resources, Salmon Bearing Stream, Shorebirds, Waterfowl	No shoulder at road but private driveway along NW of creek, and large flat farm fields in area. 4 ft. culvert.	52	75
DEERC-4.2	Deer Creek above Guide Meridian (KM DE-4.2) 48.84370 -122.48492	Collection	Boom 100ft, Sorbent 100ft	No	Onsite Stage on driveway at 5572 Guide Meridian Road (Green Carpet Cleaners); downhill path leads to site.	Estuary Resources, Salmon (Coho, Chinook and Chum), Shorebirds, Waterfowl	Enter driveway at carpet cleaners and leave vehicles up top. Walk down dirt path on N side of driveway to access creek at bottom of ravine. Use wood pedestrian bridge to walk 100 ft section of boom across Deer Creek.	53	77
DEERC-6.6	Deer Creek at East Road (KM DE-6.6) 48.84602 -122.45948	Collection	Boom 200ft, Sorbent 200ft	No	Onsite Stage on roadway or nearby fields or driveways. Lane closure may be needed.	Estuary Resources, Salmon Bearing Stream, Shorebirds, Waterfowl	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Six ft metal culvert. Private lawn on SE side of creek/road; more vegetation on upstream side.	53	79

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
LUMR-2.3	Lummi River at Haxton Way 48.81069 -122.62744	Collection	Boom 200ft, Sorbent 200ft	No	Onsite Stage on trails along river; may need to cut bollard locks. Additional staging available at Silver Reef Casino.	Estuary Resources, Fish Hatchery, Marine Mammals, Raptors, Salmon Bearing Stream, Tribal Lands/Resources	CONTACT LUMMI POLICE BEFORE DEPLOYMENT. Access river left (SE bank) using pedestrian bridge. Paved bike/ped path alongside road. Water level and speed increases in tides 8+ ft or 9600+ CFS on Nooksack. Downstream of Schell Ditch and Smuggler Slough.	52	81
LUMR-3.5	Lummi River at Slater Rd 48.81910 -122.61245	Collection	Boom 100ft, Sorbent 100ft	No	Onsite Stage on shoulder off S Red River Rd. Additional staging available at Silver Creek Casino.	Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Dirt track under east side of river is wide enough to drive. Area under bridge is clear of vegetation.	52	83
LUMR-3.9	Lummi River at Imhoff Rd (KM LU-3.9) 48.81961 -122.60628	Collection	Sorbent 100ft	No	Onsite Stage on small roadway shoulder near site. Additional staging available at Silver Reef Casino.	Fish Hatchery, Raptors, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources	Recently regraded hillside covered in rocks/rip-rap on downstream side. Upstream is solid blackberry. Narrow shoulder onsite, busy roadway.	52	85
LUMRU-1.3	Lummi River Tributary at Slater Rd (KM LU(T)-1.3) 48.81928 -122.64213	Collection	Sorbent 200ft	No	Onsite Stage onsite on dirt farm road. Additional staging available at Silver Reef Casino.	Fish Hatchery, Salmonids, Tribal Lands/Resources	CONTACT LUMMI POLICE BEFORE DEPLOYMENT. Ungated dirt pull-off onto dirt farm road from Slater Rd. Culvert may be hidden by vegetation. Follow WSDOT work zone traffic control guidelines when working on or near roadway.	52	87

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
MORM-0.8	Mormon Ditch at Hampton Rd 48.94507 -122.44174	Collection	Sorbent 200ft	No	Onsite Stage at paved pull-off near SW corner of bridge.	Habitat Mitigation Site/Project, Salmon (Coho, Chinook and Chum), Shorebirds, Water Intakes, Waterfowl (Wintering)	Recent restoration site with fairly clear area SW of bridge; steep rocky slope leads to gentle dirt slope under bridge both sides.	54	89
NOOR-5.4	Whatcom PUD Water Intake Downstream (KM NO-5.4) 48.83902 -122.59222	Exclusion	Boom 200ft, Sorbent 200ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**, 0.4 mi upstream.	Public Health and Safety, Water Intakes	Very steep bank with boulders, blackberry and steep angled concrete. May have to anchor high on shore.	52	91
NOOR-5.9	Nooksack River below Main St Bridge (KM NO-5.9) 48.84505 -122.58881	Collection	Boom 300ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**. Additional staging onsite on paved riverwalk.	Crabs, Marine Mammals, Sensitive Resources, Shorebirds, Water Intakes, Waterfowl	Access riverwalk and gage via Alder St - cut bollards to drive onto paved walkway. Ladder to water from USGS gage won't hold much weight: one person only. Keep safety backup on top of ladder on land.	52	93
NOOR-6.0	VanderYacht Park (KM NO-6.0) 48.84680 -122.58671	Collection	Boom 600ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**. Additional staging available onsite at VanderYacht Park.	Crabs, Marine Mammals, Public Recreation Site/Area, Shorebirds, Water Intakes, Waterfowl	Paved public road with rip-rap angled Public park.	52	95

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
NOOR-6.8	Nooksack River Deflection Downstream 48.85588 -122.57827	Deflection	Boom 200ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**, 1 mi downstream.	Sensitive Resources Nearby	Recommend shallow-draft boat/jet boat. Shallow, in-channel debris, muddy water. Vegetation along steep banks, potential erosion of tree roots.	52	97
NOOR-6.9	Tenmile Creek Mouth Exclusion 48.85592 -122.57708	Exclusion	Boom 200ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**, 1.1 mi downstream.	Salmonid Concentrations and Habitat, Waterfowl	Recommend shallow-draft boat/jet boat. Shallow, in-channel debris, muddy water. May be debris pile at the mouth. Side outlet on upstream end between 2 large trees. Steep slope banks with vegetation.	52	99
NOOR-7.2	Nooksack River Deflection Upstream 48.85826 -122.57348	Deflection	Boom 200ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**, 1.4 mi downstream.	Sensitive Resources Nearby	Thick cluster of large trees on river right is just downstream of anchor point. Large split-trunk oak or maple is visible back in field, 50 ft N of shoreside anchor point.	52	101
NOOR-9.2	Whatcom PUD Intake #2 Trigg Rd (KM NO-8.8) 48.87986 -122.56444	Exclusion	Boom 200ft, Sorbent 200ft	Yes	Remote Stage at Hovander Park **SA-NOOR-5.8**, 3.4 mi downstream. Alternate staging area onsite at intake.	Economic Resource, Water Intakes	Recommend shallow-draft boat - debris, shallow, muddy water. Steep bank covered in brush. Dirt road through field at end of Tripp Rd to intake building.	52	103
NOOR-17.4	Lynden Treatment Plant (KM NO-17.4) 48.93769 -122.45294	Collection	Boom 800ft	Yes	Remote Stage at Polinder Beach (**SA-NOOR-17.4**). Use boat launch **BL-NOOR-17.4**	Salmon (Coho, Chinook and Chum), Shorebirds, Waterfowl (Wintering)	15 ft steep north bank with thick vegetation. Some breaks to gravel road behind Plant. May have to anchor boat to tend skimmer.	54	105

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
NOOR-23.8	Nooksack River above Everson bridge (KM NO-23.6) 48.91787 -122.34827	Collection	Boom 200ft	Yes	Onsite Stage on lawn at site. Additional staging available at Everson Riverside Park.	Public Recreation Site/Area, Salmon (Coho, Chinook and Chum)	Upstream of bridge, gentle sloping lawn to site from warehouse parking lot. Short rip-rap bank with large rocks near water's edge. Can hand-launch at site or from park just downstream.	54	107
NOOR-30.8	Nugents Corner downstream 48.84381 -122.29494	Collection	Boom 700ft	Yes	Onsite Stage at boat launch. Additional staging available at park along access road.	Habitat Restoration Site/Project, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources	Sandy beach may be obscured in high water; eddy at this location with braiding and riffles just downstream.	55	109
NOOR-30.9	Nugent's Corner Bridge 48.84232 -122.29399	Collection	Boom 600ft	Yes	Onsite Stage at boat launch. Additional staging available at park along access road.	Habitat Restoration Site/Project, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources	Low banks on either side of the river may be covered in high water flows.	55	111
SCHD-0.5	Schell Ditch at Slater Rd (KM LU(T)-0.5) 48.81921 -122.62509	Collection	Sorbent 100ft	No	Onsite Stage on small roadway shoulder near site. Additional staging available at Silver Reef Casino.	Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources	CONTACT LUMMI POLICE BEFORE DEPLOYMENT. Follow WSDOT work zone traffic control guidelines when working on or near roadway. Lummi Reservation lands south of Slater Rd.	52	125
SCHD-0.9	Schell Ditch at Lampman Rd (KM LU(T)-0.9) 48.82660 -122.62373	Collection	Sorbent 100ft	No	Onsite Stage on driveways and yards north of ditch. Additional staging available at Silver Reef Casino.	Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources	Follow WSDOT work zone traffic control guidelines when working on or near roadway. No shoulder, narrow road with some traffic.	52	127

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
SFNOOR-4.2	South Fork Nooksack at Strand Rd 48.76008 -122.21765	Collection	Boom 800ft	Yes	Onsite Stage on sandy beach on river right and paved dead-end of Strand Rd. Logs block vehicle access from road.	Marbled Murrelets, Reptiles and Amphibians, Salmon (Coho, Chinook and Chum)	Put-in/take out point for rafters, floaters and kayakers. May have summer crowds. Shallow water. River right has sand/gravel beach and eddies. River left has old pilings and rip-rap.	56	129
SFNOOR-8.6	South Fork Nooksack at Highway 6 Acme 48.71991 -122.20257	Collection	Boom 500ft	Yes	Onsite Stage on south shoulder of Mosquito Lake Rd, and sandbar river right. Additional gravel parking south on Hwy 9.	Habitat Restoration Site/Project, Marbled Murrelets, Reptiles and Amphibians, Salmon (Coho, Chinook and Chum)	Use bridge to drop equipment/vac hose. River left owned by Whatcom Land Trust with small parking area, narrow ped path with fallen logs to site. Mosquito Lake Rd busy and no shoulder but small pull-off for one car leads to large sandbar.	56	131
SILVC-1.8	Silver Creek at Shady Lane Rd (KM SC-1.8) 48.81009 -122.56900	Collection	Boom 200ft	No	Onsite Stage on roadway or nearby fields or driveways. Lane closure may be needed.	Raptors, Salmon (Coho, Chinook and Chum), Shorebirds, Waterfowl, Wetlands Restoration Site	Bridge may not support heavy equipment. Follow WSDOT work zone traffic control guidelines when working on or near roadway. Quiet road, wetland-type area near creek.	52	133
SILVC-4.8	Silver Creek at Aldrich Rd (KM SC-4.8) 48.82109 -122.51899	Collection	Sorbent 200ft	No	Onsite Stage on roadway. Lane closure required. Nearby fields or driveways may be used for additional staging.	Salmon (Coho, Chinook and Chum), Shorebird Concentrations, Wetlands Restoration Site	Follow WSDOT work zone traffic control guidelines when working on or near roadway. 3 ft concrete culverts, grassy vegetation at roadside. New wetland restoration project immediately SW of site.	52	135

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
TNMIC-0.2	Tenmile Creek at Barrett Rd (KM TC-0.2) 48.85355 -122.57365	Collection	Boom 200ft, Sorbent 200ft	No	Onsite Stage on roadway or nearby fields or driveways. Lane closure may be needed.	Endangered Plant Species, Public Recreation Site/Area, Salmon, Sensitive Resources Nearby, Shorebirds, Waterfowl, Wetlands	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Small pull-off areas at shoulder. Barrett Road popular for large trucks. Restoration plantings at site.	52	137
TNMIC-2.7	Tenmile Creek at W Laurel Rd (KM TC-2.7) 48.85521 -122.53437	Collection	Boom 200ft, Sorbent 200ft	No	Onsite Stage on roadway. Lane closure required. Nearby fields or driveways may be used for additional staging.	Endangered Plant Species, Raptors, Salmon (Coho, Chinook and Chum), Waterfowl, Wetland Habitat	Natural gas pipeline on bridge. Follow WSDOT work zone traffic control guidelines when working on or near roadway. No shoulder on road.	52	139
TNMIC-4.5	Tenmile Creek at W Hemmi Rd (KM TC-4.5) 48.86245 -122.51412	Collection	Boom 100ft, Sorbent 100ft	No	Onsite Stage on driveway. Roadway or nearby fields may be used for additional staging. Lane closure may be needed.	Emergent Wetlands, Salmon (Coho, Chinook and Chum), Waterfowl	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Upstream side has veg cleared next to bridge and wide bank in low water; driveway to west is paved. Downstream is thicket.	52	141
TNMIC-6.0	Tenmile Creek at Old Guide Rd (KM TC-6.0) 48.86369 -122.49705	Collection	Boom 200ft, Sorbent 200ft	No	Onsite Stage on roadway. Lane closure required. Additional staging available at Slavic Gospel Church parking, 0.3 mi north	Emergent Wetlands, Riparian Habitat, Salmon (Coho, Chinook and Chum), Waterfowl	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Natural gas pipeline on bridge. Livestock fencing in area, may need to cut to access banks. No road shoulder. Slow and wide stream in winter that floods wetland area upstream.	52	143

Strategy Name	Location	Strategy Type	Boom Length	Boat Req?	Staging Area	Resources At Risk	Comments	Sector Map (Page #)	Strategy Details (Page#)
TNMIC-8.2	Tenmile Creek at Chasteen Rd (KM TC-7.5) 48.87029 -122.46463	Collection	Boom 100ft, Sorbent 200ft	No	Onsite Stage on roadway or nearby fields or driveways. Lane closure may be needed.	Riparian Habitat, Salmon (Coho, Chinook and Chum), Waterfowl, Wetlands	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Narrow to no shoulder on road but small pull-off into field just north of collection site.	53	145
TNMIC-9.2	Tenmile Creek at Ten Mile and McClue (KM TC-9.2) 48.86985 -122.43706	Collection	Sorbent 200ft	No	Onsite Stage on roadway or nearby fields or driveways. Lane closure may be needed.	Downstream Resources, Riparian Habitat, Salmon (Coho, Chinook and Chum), Steelhead	Follow WSDOT work zone traffic control guidelines when working on or near roadway. East side of creek is very close to homes with farm animals & equipment. Downside of bridge has more open space, less vegetation.	53	147
TNMICU-11.6	Shuksan Golf Course Tenmile Creek Tributary 48.85340 -122.40023	Collection	Boom 100ft, Sorbent 100ft	No	Onsite Stage onsite on rough and cart path. Additional staging available at Shuksan clubhouse, 1500 E Axton Rd.	Riparian Habitat, Salmon (Coho, Chinook and Chum), Wetlands	Best access to site is from gates on Noon Rd or High Noon Rd and drive across rough/golf cart paths. Site is on large pond by 13th Hole that drains into creek flowing through golf course. Transmountain Pipeline ROW goes under golf course nearby.	53	149
TNTC-0.1	Tennant Creek at Fragrance Garden (KM TL-0.1) 48.83061 -122.58485	Collection	Boom 100ft, Sorbent 300ft	No	Onsite Stage on roadway. Additional staging available at paved parking area at interpretive center.	Critical Wetland Area, Public Recreation Site/Area, Salmon - Coho, Waterfowl Concentrations, Wildlife Refuge	High water may flood road. Gravel hand-launch just south of site. Just upstream of critical habitat: Tennant Lake is shallow with dense vegetation.	52	151

4.5.3 Notification Strategy Matrices

Strategy Name	Location	Strategy Type	Resources at Risk	Implementation	Comments	Sector Map (Page #)	Strategy Details (Page#)
NFNOOR-45.5-N	WDFW Kendall Creek Hatchery 48.81750 -122.18401	Notification	Fish Hatchery	Call Kendall Creek Hatchery at (360) 599-2841 and inform them of the spill. Advise they take action to protect the resources under their control, which may include delaying or relocating any planned fish releases so as to avoid the Nooksack or its tributaries until water quality is appropriate.	Notify WDFW hatchery so they can protect their fish	55	155
NOOR-5.4-N	Whatcom PUD #1 Downstream Intake (KM NO-5.4) 48.83905 -122.59230	Notification	Water Intakes	Call Whatcom PUD #1 and advise them of the spill, and that they take protective action, which may include shutting down their water intakes.	Notify Whatcom PUD #1 so they can protect their water intakes	52	157
NOOR-9.2-N	Whatcom PUD #1 Upstream Water Intake (KM NO-8.8) 48.87978 -122.56475	Notification	Water Intakes	Call Whatcom PUD #1 and inform them of the spill, so they take action to protect the resources under their control, which may include closing their water intakes.	Notify Whatcom PUD #1 so they can protect their water intakes	52	159
NOOR-17.9-N	City of Lynden Water Intake (KM NO-17.9) 48.93660 -122.44161	Notification	Water Intakes	Call City of Lynden Public Works at 360-354-0633 and advise of spill, and that they take protective action, which may include shutting down their water intakes.	Notify City of Lynden so they can protect their water intakes	54	161

Strategy Name	Location	Strategy Type	Resources at Risk	Implementation	Comments	Sector Map (Page #)	Strategy Details (Page#)
SFNOOR-14.1-N	Lummi Hatchery on Skookum Creek 48.69670 -122.16664	Notification	Fish Hatchery, Tribal Lands/Resources, Water Intakes	Call Lummi Natural Resources Director at 360-410-1706 at notify of spill. Advise Skookum Creek hatchery to protect the resources under their control, which may include delaying or relocating any fish releases.	Notify hatchery so they can protect their fish and water intakes	56	163

4.5.4 Staging Area Matrices

Strategy Name	Location	Position	Nearest Address	Contact	Strategies Served	Comments	Sector Map (Page #)	Strategy Details (Page#)
SA-NOOR-5.8	Ferndale Boat Launch - Hovander	48.84305 -122.58939	5528 Baker St Ferndale, WA 98248	Washington Department of Fish and Wildlife Region 4 16018 Mill Creek Boulevard Mill Creek, WA 98012-1296 425-775-1311	NOOR-5.4, NOOR-5.9, NOOR-6.0, NOOR-6.8, NOOR-6.9, NOOR-7.2, NOOR-9.2	Large gravel parking area at public park. Large fields and restrooms.	52	167
SA-NOOR-17.4	Polinder Private Beach	48.93729 -122.45389	670 Polinder Rd Lynden, WA 98264-9437	Kinder Morgan Trans Mountain Pipeline Maintains resident contact info 888-876-6711 City of Lynden Public Works Department Water/Wastewater Treatment Plant 360-354-0633	NOOR-17.4	Private property across from Wastewater Plant. Unimproved dirt/sand road to large beach. Privately owned - sign with instructions/ restrictions at exit. In low to average water will be very large workspace; may be unusable in high water.	54	169

4.5.5 Boat Launch Matrices

Strategy Name	Location	Position	Nearest Address	Contact	Strategies Served	Comments	Sector Map (Page #)	Strategy Details (Page#)
BL-NOOR-5.8	Ferndale Boat Launch - Hovander	48.84305 -122.58939	5528 Baker St Ferndale, WA 98248	Washington Department of Fish and Wildlife Region 4 16018 Mill Creek Boulevard Mill Creek, WA 98012-1296 425-775-1311	NOOR-5.4, NOOR-5.9, NOOR-6.0, NOOR-6.8, NOOR-6.9, NOOR-7.2, NOOR-9.2	Concrete slab - can be deep in mud	52	173
BL-NOOR-17.4	Polinder Private Beach	48.93729 -122.45389	670 Polinder Rd Lynden, WA 98264-9437	Kinder Morgan Trans Mountain Pipeline Maintains resident contact info 888-876-6711 City of Lynden Public Works Department Water/Wastewater Treatment Plant 360-354-0633	NOOR-17.4	Private property across from Wastewater Plant. Unimproved dirt/sand road to large beach. Shallow entry to sudden dropoff - use caution when launching. Privately owned - sign with instructions/ restrictions at exit. In low to average water will be very large workspace; may be unusable in high water.	54	175
BL-NOOR-30.9	Nugent's Corner	48.84348 -122.29375	Nugents Corner River Access Rd Everson, WA 98247	Washington Department of Fish and Wildlife Region 4 16018 Mill Creek Boulevard Mill Creek, WA 98012-1296 425-775-1311	NOOR-30.8, NOOR-30.9	WDFW launch area with large mud/gravel turnaround and minimal facilties. Additional paved parking on access road in, with large grassy park and picnic tables. Grocery store next to access road entrance.	55	177

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APPENDIX 4A

Response Strategy 2-Pagers

RESPONSE STRATEGIES LIST

DEERC-0.9	**DEERC-2.4**	**DEERC-4.2**	**DEERC-6.6**
LUMR-2.3	**LUMR-3.5**	**LUMR-3.9**	**LUMRU-1.3**
MORM-0.8	**NOOR-5.4**	**NOOR-5.9**	**NOOR-6.0**
NOOR-6.8	**NOOR-6.9**	**NOOR-7.2**	**NOOR-9.2**
NOOR-17.4	**NOOR-23.8**	**NOOR-30.8**	**NOOR-30.9**
NPS-8**	**NPS-9****	**NPS-10****	**NPS-13****
SAMR-26.9ǂ	**SAMR-27.0ǂ**	**SCHD-0.5**	**SCHD-0.9**
SFNOOR-4.2	**SFNOOR-8.6**	**SILVC-1.8**	**SILVC-4.8**
TNMIC-0.2	**TNMIC-2.7**	**TNMIC-4.5**	**TNMIC-6.0**
TNMIC-8.2	**TNMIC-9.2**	**TNMICU-11.6**	**TNTC-0.1**

** Strategies from the **North Puget Sound GRP** that are included in this appendix for ease of reference

ǂ Strategies from the **Samish River GRP** that are included in this appendix for ease of reference

Deer Creek at Judy Way (KM DE-0.9) DEERC-0.9

Position - Location:	11° 29.233', 10° 18.408'	11° 29' 14.0", 10° 18' 24.5"	11.48722, 10.30680	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Deer Creek
Implementation:	Secure 100ft section of boom to upstream side of wood bridge on creek right, near B. Extend boom upstream and across to creek left and secure to creek bank at/near Point A. Collect oil at Point B using a vac-truck or skimmer/storage; keep vac truck and heavy equipment off wooden bridge - not weight-rated. Deploy sorbent boom along downstream side of bridge, between Points C and D.
Staging Area:	Onsite: Stage at private road north of creek, at small flat pull-off next to site. More room on nearby lawns/front yards.
Site Safety:	Water Hazard: PFD required. Do not drive vac truck over private crossing - not weight rated. Slips, trips, falls. Heavy vegetation.
Field Notes:	DO NOT DRIVE VAC TRUCK OVER WOODEN BRIDGE. Not weight rated. Site is next to small private driveway and new wood bridge over creek crossing. Downstream of bridge has small waterfall and concrete anti-erosion chute.
Watercourse:	Creek - Deer Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Salmon Bearing Stream, Shorebirds, Waterfowl, Wetlands

Recommended Equipment

4	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - B3 (River Boom) or equivalent
100	Feet	Boom - Sorbent
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Deer Creek at Judy Way (KM DE-0.9) DEERC-0.9

DEERC-0.9 Photo: Downstream side of Judy Way over Deer Creek. Taken mid-Jan in avg water.

Site Contact

No Information
Private Owner :

Nearest Address

5610 Judy Way
Bellingham, WA 98226

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn left on W Axton Rd (Main St) (1.37 miles)
4. Turn right on Judy Way (0.22 miles)
5. Continue straight to private drive, near 5610 Judy Way, 98226

Deer Creek at Aldrich Rd (KM DE-2.4) DEERC-2.4

Position - Location:	48° 50.726', -122° 31.141'	48° 50' 43.6", -122° 31' 8.5"	48.84544, -122.51902	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Deer Creek
Implementation:	Deploy multiple lengths of sorbent boom across creek on downstream (west side) of roadway culvert at Aldrich Road. Use plywood, plastic, and fill material to create culvert block or underflow dam on upstream side (east side) of culvert, as needed based on stream flow conditions. Use vac-truck or skimmer/storage for collection on upstream side of culvert.
Staging Area:	Onsite: Stage at driveway just north of site. Extra room at private fields, lawns, driveways in area.
Site Safety:	Water Hazard: PFD required. Road hazard. Heavy vegetation. Slips, trips, falls.
Field Notes:	No shoulder at road but private driveway along NW of creek, and large flat farm fields in area. 4 ft. culvert.
Watercourse:	Creek - Deer Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Salmon Bearing Stream, Shorebirds, Waterfowl, Wetlands

Recommended Equipment

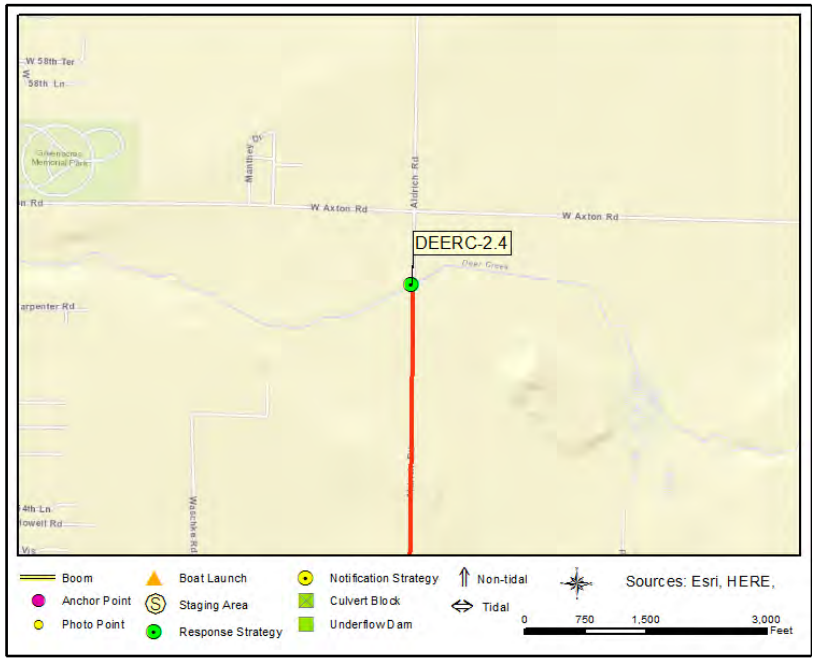
200	Feet	Boom - Sorbent
10	Each	Fill material (sand, earth, gravel, sandbags)
1	Each	Machete(s) - (or other vegetation cutting tool)
20	Feet	Plastic Sheeting
2	Each	Plywood sheets (4ft x 8ft)
4	Each	Stake
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

3	Laborer
1	Supervisor

Deer Creek at Aldrich Rd (KM DE-2.4) DEERC-2.4

DEERC-2.4 Photo: Downstream side of culvert on Deer Creek, looking SW from Aldrich Rd at driveway.



Site Contact

No Information
Private Owner :

Nearest Address

5643 Aldrich Rd
Bellingham, WA 98226

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 257 take ramp on the right to Northwest Ave (0.22 miles)
3. Bear right on Northwest Dr (0.06 miles)
4. At roundabout, take the first exit to proceed on Northwest Dr (2.63 miles)
5. Bear right on Waschke Rd (0.23 miles)
6. Turn right on Lange Rd (0.5 miles)
7. Turn left on Aldrich Rd (1.63 miles)
8. Finish at 5643 Aldrich Rd, 98226, on the left

Deer Creek above Guide Meridian (KM DE-4.2) DEERC-4.2

Position - Location:	48° 50.622', -122° 29.095'	48° 50' 37.3", -122° 29' 5.7"	48.84370, -122.48492	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Deer Creek
Implementation:	Secure 100ft hard boom to creek right, immediately downstream of small pedestrian bridge at/near Point A. Extend boom downstream and across to opposite bank. Adjust boom angle as needed for stream flow conditions, and secure to creek left at/near Point B. Deploy multiple lengths of sorbent boom downstream of hard boom. Use vac-truck or skimmer/storage for collection at Point B; booster pump and 200ft length hose recommended for vac-truck staged in driveway.
Staging Area:	Onsite: Stage on driveway at 5572 Guide Meridian Road (Green Carpet Cleaners); downhill path leads to site.
Site Safety:	Path from driveway to site can't support vehicles. Water hazard. Slips, trips, falls. Heavy vegetation. Nearby homes and businesses.
Field Notes:	Enter driveway at carpet cleaners and leave vehicles up top. Walk down dirt path on N side of driveway to access creek at bottom of ravine. Use wood pedestrian bridge to walk 100 ft section of boom across Deer Creek.
Watercourse:	Creek - Deer Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Salmon (Coho, Chinook and Chum), Shorebirds, Waterfowl, Wetlands

Recommended Equipment

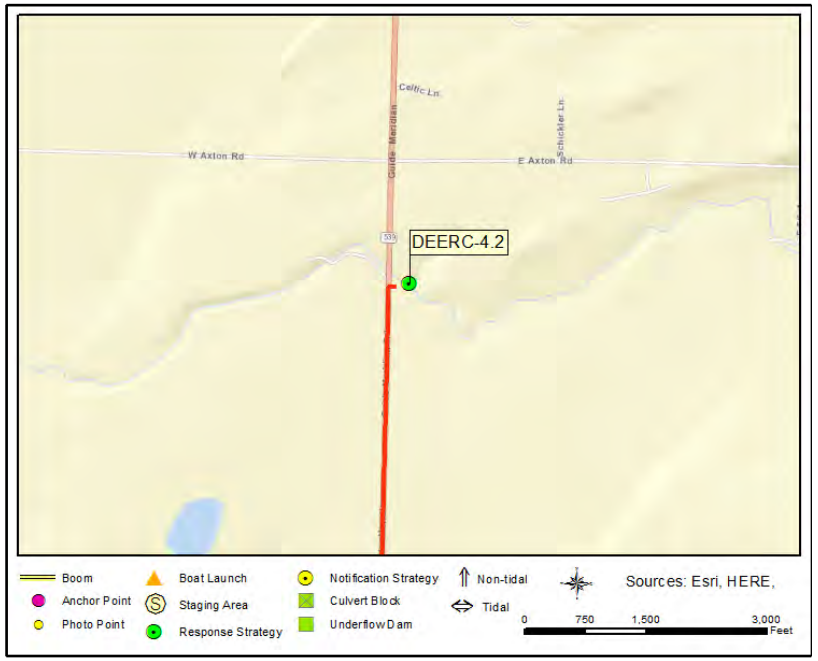
2	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - B3 (River Boom) or equivalent
100	Feet	Boom - Sorbent
1	Each	Pump(s)
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Deer Creek above Guide Meridian (KM DE-4.2) DEERC-4.2

DEERC-4.2 Photo: From Deer Creek left, looking east across ped footbridge at bottom of dirt trail.



Site Contact

No Information
Private Owner :

Nearest Address

5572 Guide Meridian
Bellingham, WA 98226

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (4.12 miles)
5. Finish at 5572 Guide Meridian, 98226, on the right - at sign for green carpet cleaners

Deer Creek at East Road (KM DE-6.6) DEERC-6.6

Position - Location:	48° 50.761', -122° 27.569'	48° 50' 45.7", -122° 27' 34.1"	48.84602, -122.45948	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Deer Creek
Implementation:	Secure 100ft section of hard boom to creek right at/near Point A (as far upstream/east as possible). Extend boom downstream and secure to SE corner of bridge on creek left at/near Point B. Similarly, deploy additional length 100ft hard boom between Points C and D. Collect oil at Points B and D, as needed, using vac-truck or skimmer storage. May need to close roadway lane if vac-truck using shoulder. In low flow conditions, consider installation of culvert block rather than boom deployment.
Staging Area:	Onsite: Stage on roadway or nearby fields or driveways. Lane closure may be needed.
Site Safety:	Nearby Homes; Slips, Trips, Falls; Water Hazard; Roadway Hazard; Steep Banks; Heavy Vegetation
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Six ft metal culvert. Private lawn on SE side of creek/road; more vegetation on upstream side.
Watercourse:	Creek - Deer Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Salmon Bearing Stream, Shorebirds, Waterfowl, Wetlands

Recommended Equipment

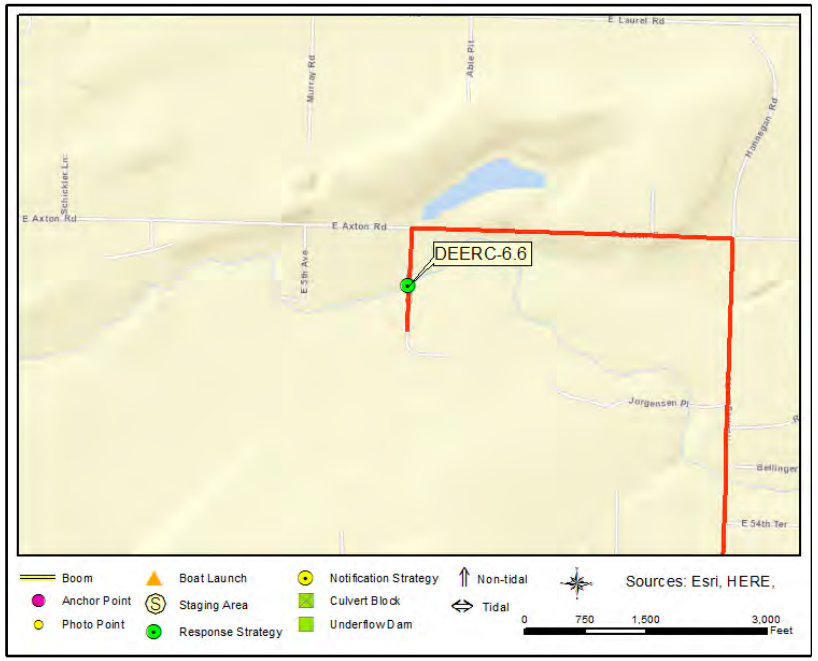
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
1	Assort	Fill material (sand, earth, gravel, sandbags)
20	Feet	Plastic Sheeting
2	Each	Plywood sheets (4ft x 8ft)
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

3	Laborer
1	Supervisor

Deer Creek at East Road (KM DE-6.6) DEERC-6.6

DEERC-6.6 Photo: From W side of East Road, looking W at downstream Deer Creek culvert. Taken mid-Jan in average water.



Site Contact

No Information
Private Owner :

Nearest Address

5629 East Rd
Bellingham, WA 98226

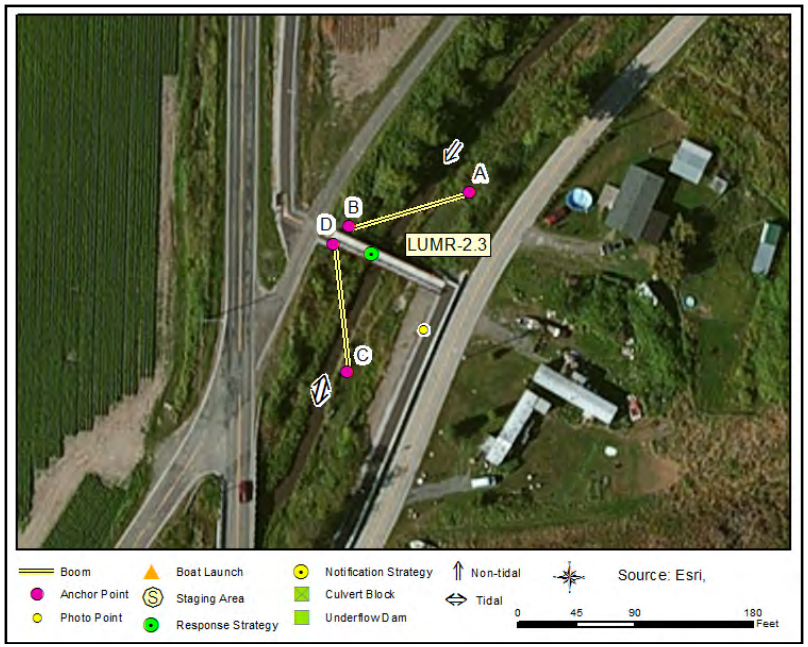
Driving Directions

1. Head North on I-5 from Seattle.
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on E Sunset Dr (WA-542) (0.88 miles)
4. Turn left on Hannegan Rd (4.98 miles)
5. Turn left on E Axton Rd (0.75 miles)
6. Turn left on East Rd (0.21 miles)
7. Finish at 5629 East Rd, 98226, on the right

Lummi River at Haxton Way — LUMR-2.3

Position - Location:	48° 48.641', -122° 37.646'	48° 48' 38.5", -122° 37' 38.8"	48.81069, -122.62744	Ferndale

Strategy Objective:	Collection : Collect oil moving upstream or downstream on the Lummi River
Implementation:	Secure 100ft hard boom to river left, upstream of the pedestrian bridge, at/near Point A. Extend boom downstream and across river, securing it to the NW corner of the bridge on river right at/near Point B. Secure second 100ft section of hard boom to bridge at/near Point D, and extend it downstream and across river securing it to bank on river left at/near Point C. Collect oil using vac-truck or skimmer/storage at Points B or D on river right.
Staging Area:	Onsite: Stage on trails along river; may need to cut bollard locks. Additional staging available at Silver Reef Casino.
Site Safety:	Slips, Trips, Falls; Water Hazard; Roadway Hazard; Steep Banks; Heavy Vegetation
Field Notes:	CONTACT LUMMI POLICE BEFORE DEPLOYMENT. Access river left (SE bank) using pedestrian bridge. Paved bike/ped path alongside road Water level and speed increases in tides 8+ ft or 9600+ CFS on Nooksack. Downstream of Schell Ditch and Smuggler Slough.
Watercourse:	Slough - Lummi River (Low flow conditions unless Nooksack is above 9600 CFS or tides are above 8 ft.)
Resources at Risk:	Estuary Resources, Fish Hatchery, Marine Mammals, Raptors, Salmon Bearing Stream, Tribal Lands/Resources



Recommended Equipment

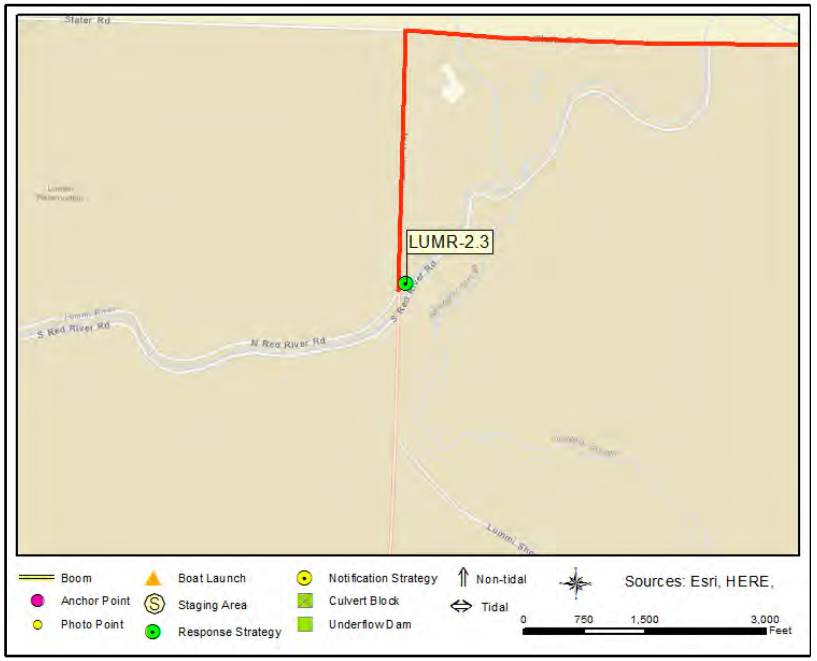
4	Each	Anchoring System(s)- Shoreside
1	Each	Bolt Cutters
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Lummi River at Haxton Way LUMR-2.3

LUMR-2.3 Photo: SE bank of Lummi River, looking N at pedestrian bridge. Taker early January at average/low water.



Site Contact

Lummi Nation Police Department
Pre-Notification Required : Non-emergency number
360-312-2274

Lummi Nation Oil Spill Response Team
Primary Contact : Natural Resources Department
360-410-1706

Nearest Address

4692 Haxton Way
Ferndale, WA 98248

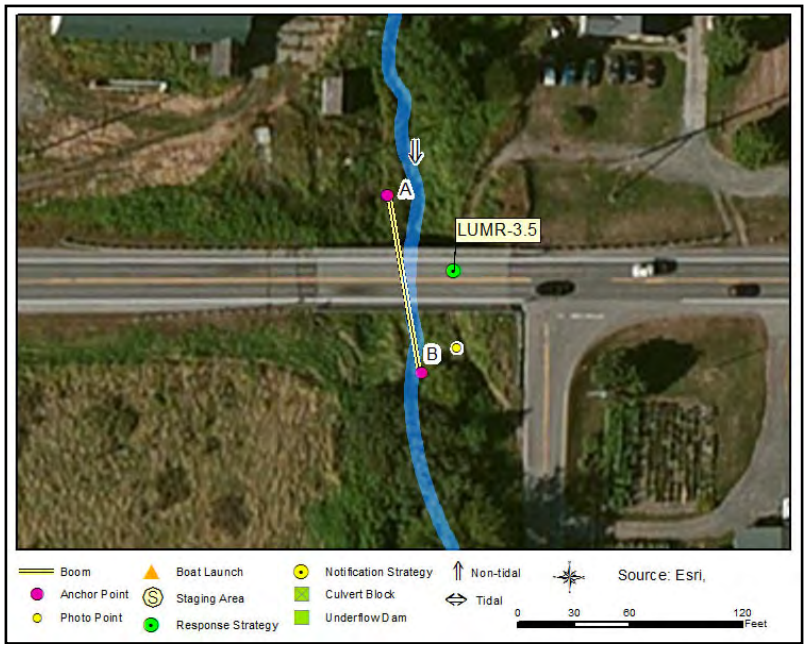
Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. Turn left on Slater Rd (3.74 miles)
4. Turn left on Haxton Way (0.62 miles)
5. Near 4692 Haxton Way, 98248, turn left onto paved recreation trail north of river, cut bollards as needed.

Lummi River at Slater Rd — LUMR-3.5

Position - Location:	48° 49.146', -122° 36.747'	48° 49' 8.8", -122° 36' 44.8"	48.81910, -122.61245	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on the Lummi River
Implementation:	Secure 100ft hard boom to river right, north of bridge on Slater Road, at/near Point A. Extend boom downstream and under bridge using a line, and secure to river left at/near Point B. Use vac-truck or skimmer/sorage for collection at Point B, adjacent to Red River Road. Adjust boom angle and anchor points as needed, based on conditions. In low flow conditions, consider deploying sorbent in place of hard boom deployment.
Staging Area:	Onsite: Stage on shoulder off S Red River Rd. Additional staging available at Silver Creek Casino.
Site Safety:	Use caution when walking along Slater Rd: high speed roadway hazard. Water hazard. Slips, trips, falls; heavy vegetation.
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Dirt track under east side of river is wide enough to drive. Area under bridge is clear of vegetation.
Watercourse:	Slough - Lummi River (Flow may be stagnant unless Nooksack level is 9600+ CFS)
Resources at Risk:	Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources



Recommended Equipment

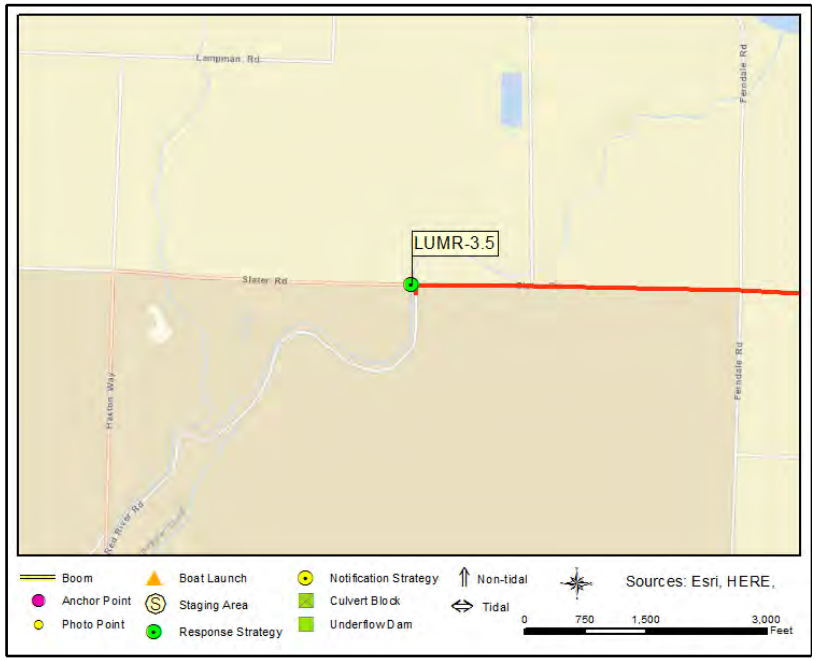
1	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - B3 (River Boom) or equivalent
100	Feet	Boom - Sorbent
200	Feet	Line - 3/8" poly line
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Lummi River at Slater Rd LUMR-3.5

LUMR-3.5 Photo: From dirt track under Slater Rd, looking N from Red River Rd. Taken early Jan in average/still water.



Site Contact

Lummi Nation Police Department
Pre-Notification Required : Non-emergency number
360-312-2274

Lummi Nation Oil Spill Response Team
Secondary Contact : Natural Resources Department
360-410-1706

Nearest Address

2406 S Red River Rd
Ferndale, WA 98248

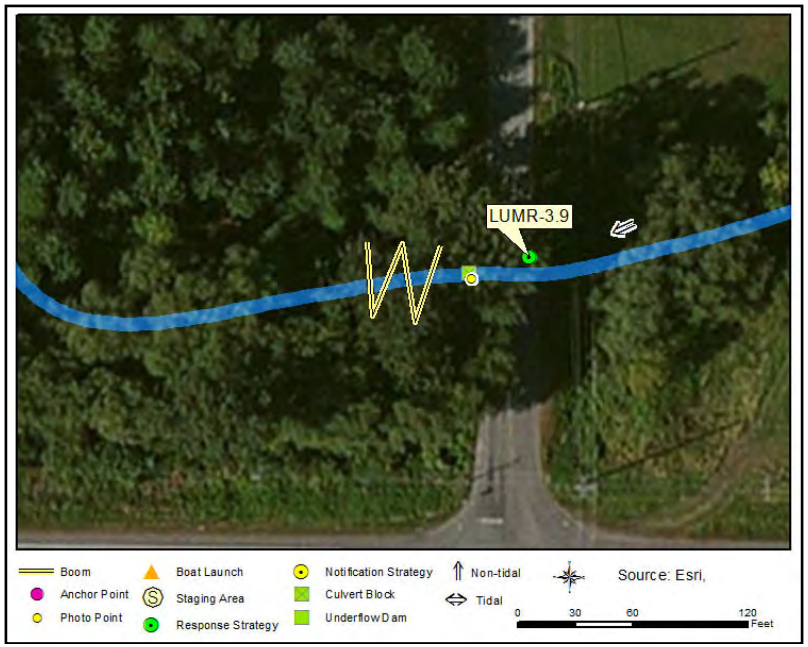
Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. Turn left on Slater Rd (3.03 miles)
4. Turn left on S Red River Rd (0.02 miles)
5. Finish at 2406 S Red River Rd, 98248, on the right

Lummi River at Imhoff Rd (KM LU-3.9) LUMR-3.9

Position - Location:	48° 49.177', -122° 36.377'	48° 49' 10.6", -122° 36' 22.6"	48.81961, -122.60628	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on the Lummi River
Implementation:	Deploy multiple lengths of sorbent boom across creek on downstream (west side) of roadway culvert on Imhoff Road. Use plywood and plastic to create culvert block or underflow dam on downstream side (west side) of culvert, as needed based on stream flow conditions. Use vac-truck or skimmer/storage for collection on downstream side of culvert. Booster pump may be required to clear height.
Staging Area:	Onsite: Stage on small roadway shoulder near site. Additional staging available at Silver Reef Casino.
Site Safety:	Roadway Hazard; Steep Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Recently regraded hillside covered in rocks/rip-rap on downstream side. Upstream is solid blackberry. Narrow shoulder onsite, busy roadway.
Watercourse:	Slough - Lummi River (flow may be stagnant unless Nooksack River flow is 9600CFS+)
Resources at Risk:	Fish Hatchery, Raptors, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources



Recommended Equipment

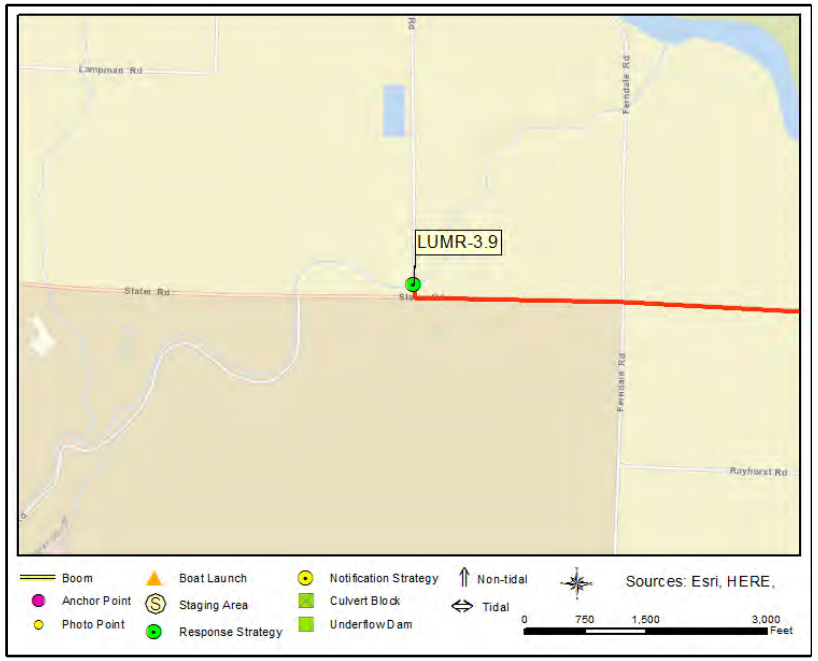
4	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - Sorbent
1	Assort	Fill material (sand, earth, gravel, sandbags)
20	Feet	Plastic Sheeting
2	Each	Plywood sheets (4ft x 8ft)
1	Each	Pump(s)
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

3	Laborer
1	Supervisor

Lummi River at Imhoff Rd (KM LU-3.9) LUMR-3.9

LUMR-3.9 Photo: From Imhoff Rd, looking W at downstream culvert. Taken early Jan in average water.



Site Contact

No Information
Private Owner :

Nearest Address

4927 Imhoff Rd
Ferndale, WA 98248

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. Turn left on Slater Rd (2.76 miles)
4. Turn right on Imhof Rd (Imhoff Rd) (0.03 miles)
5. Culvert is just north of Slater Rd (4927 Imhoff Rd, 98248).

Lummi River Tributary at Slater Rd (KM LU(T)-1.3) LUMRU-1.3

Position - Location:	48° 49.157', -122° 38.528'	48° 49' 9.4", -122° 38' 31.7"	48.81928, -122.64213	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on unnamed ditch leading to Lummi River
Implementation:	Deploy multiple lengths of sorbent boom across creek on downstream (west side) and upstream (east side) of farm road culvert. If time allows, use plywood and plastic to create culvert block or underflow dam on upstream side of culvert, as needed based on stream flow conditions. Use vac-truck or skimmer/storage for collection.
Staging Area:	Onsite: Stage onsite on dirt farm road. Additional staging available at Silver Reef Casino.
Site Safety:	Roadway Hazard; Slips, Trips, Falls; Water Hazard; Heavy Vegetation
Field Notes:	CONTACT LUMMI POLICE BEFORE DEPLOYMENT. Ungated dirt pull-off onto dirt farm road from Slater Rd. Culvert may be hidden by vegetation. Follow WSDOT work zone traffic control guidelines when working on or near roadway.
Watercourse:	Ditch - Unnamed tributary of Lummi River (no flow/low flow)
Resources at Risk:	Fish Hatchery, Salmonids, Tribal Lands/Resources

Recommended Equipment

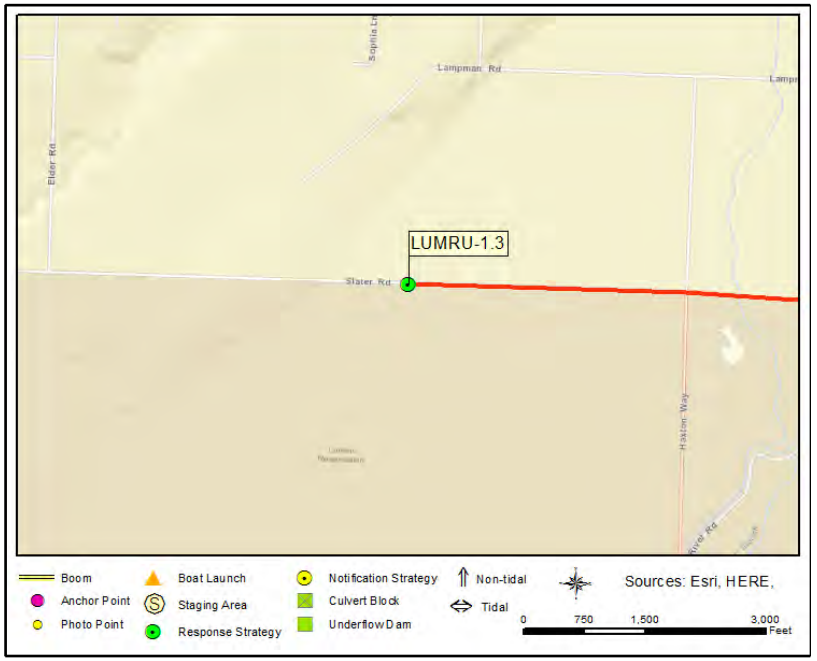
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - Sorbent
1	Assort	Fill material (sand, earth, gravel, sandbags)
1	Each	Machete(s) - (or other vegetation cutting tool)
20	Feet	Plastic Sheeting
4	Each	Plywood sheets (4ft x 4ft)
1	Each	Vac Truck or Skimmer and Storage (if collection)

Recommended Personnel

3	Laborer
1	Supervisor

Lummi River Tributary at Slater Rd (KM LU(T)-1.3) LUMRU-1.3

LUMRU-1.3 Photo: From dirt track over unnamed ditch, looking E along Slater Rd to casino. Taken early Jan in average water.



Site Contact

Lummi Nation Police Department
Pre-Notification Required : Non-emergency number
360-312-2274

Lummi Nation Oil Spill Response Team
Secondary Contact : Natural Resources Department
360-410-1706

Nearest Address

3069 Slater Rd
Ferndale, WA 98248

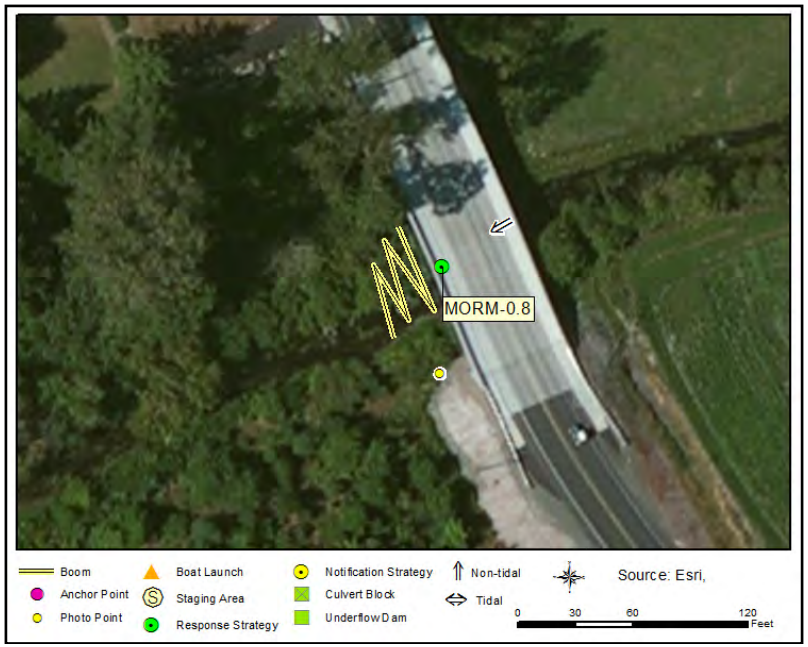
Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. Turn left on Slater Rd (4.4 miles)
4. Finish at 3069 Slater Rd, 98248, on the left - just before the treeline past the casino

Mormon Ditch at Hampton Rd — MORM-0.8

Position - Location:	48° 56.704', -122° 26.504'	48° 56' 42.3", -122° 26' 30.3"	48.94507, -122.44174	Lynden

Strategy Objective:	Collection : Collect oil moving downstream on Mormon Ditch
Implementation:	Deploy multiple lengths of sorbent boom off downstream side (west side) of Hampton Road bridge across Mormon Ditch. Use stakes, shoreside anchoring systems, trees, or existing structures to secure ends of sorbent boom to banks of tributary. Replace saturated sorbents as needed. Bank is steep on north side of bridge, may need extra line or sorbent to reach water from roadway.
Staging Area:	Onsite: Stage at paved pull-off near SW corner of bridge.
Site Safety:	Roadway Hazard; Steep Slope; Heavy Vegetation; Slips, Trips, Falls; Water Hazard
Field Notes:	Recent restoration site with fairly clear area SW of bridge; steep rocky slope leads to gentle dirt slope under bridge both sides.
Watercourse:	Ditch - Mormon Ditch (Variable flow is low in summer, high in winter)
Resources at Risk:	Habitat Mitigation Site/Project, Salmon (Coho, Chinook and Chum), Shorebirds, Water Intakes, Waterfowl (Wintering)



Recommended Equipment

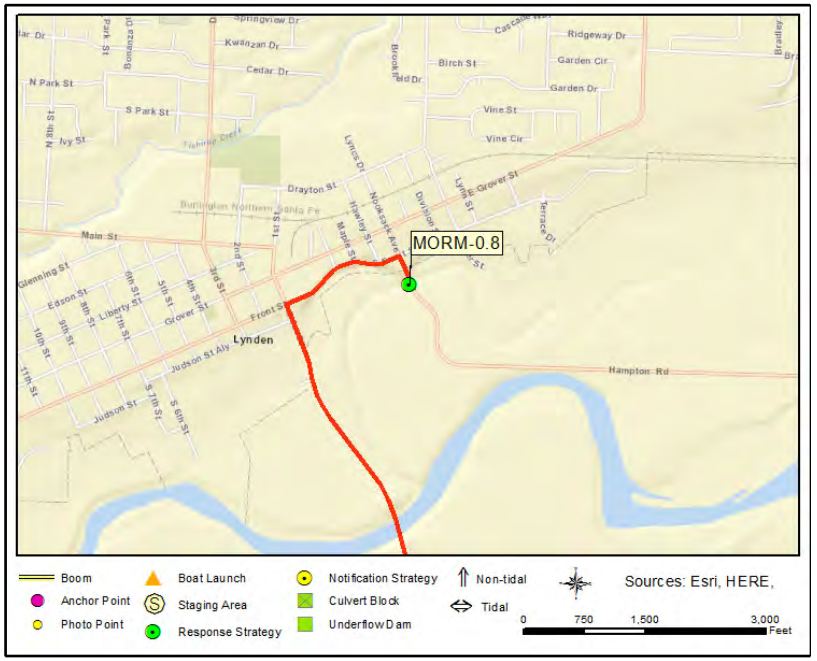
2	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - Sorbent
200	Feet	Line - 3/8" poly line
1	Each	Machete(s) - (or other vegetation cutting tool)

Recommended Personnel

2	Laborer
1	Supervisor

Mormon Ditch at Hampton Rd MORM-0.8

MORM-0.8 Photo: On SW side of Hampton Rd bridge, looking N at Mormon Ditch. Taken early Jan, low winter water.



Site Contact

No Information
Private Owner :

Nearest Address

823 Hampton Rd
Lynden, WA 98264

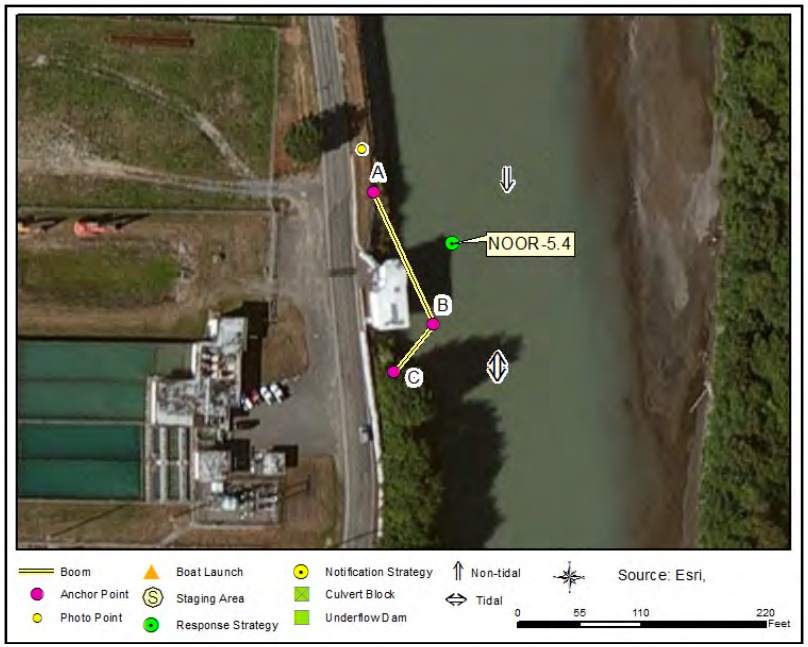
Driving Directions

1. Head North on I-5 towards Bellingham.
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (7.46 miles)
5. At second roundabout, take the first exit to turn right on WA-544 E (E Pole Rd) (1.95 miles)
6. Turn left on Hannegan Rd (3.59 miles)
7. Continue on S 1st St (0.12 miles)
8. Turn right on E Front St (0.3 miles)
9. Turn right on Nooksack Ave (0.03 miles)
10. Continue on Hampton Rd (0.05 miles)
11. Finish at 823 Hampton Rd, 98264, on the right

Whatcom PUD Water Intake Downstream (KM NO-5.4) NOOR-5.4

Position - Location:	48° 50.342', -122° 35.518'	48° 50' 20.5", -122° 35' 31.1"	48.83903, -122.59196	Ferndale

Strategy Objective:	Exclusion : Exclude oil from water intake
Implementation:	Using shallow-water workboat, anchor 200 ft section of boom on river right at/near Point A (48.8392, -122.59227), upstream of intake. Extend boom downstream and anchor in channel at/near Point B (48.83886, -122.592). Secure remainder of boom on shore at river right downstream of intake, near Point C. Pack inside of boom chevron with sorbent. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8, 0.4 mi upstream.
Site Safety:	Water Hazard: PFD Required; Logs and Hidden Snags; Rip-Rap; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Very steep bank with boulders, blackberry and steep angled concrete. May have to anchor high on shore.
Watercourse:	River - With Tidal Influence - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Public Health and Safety, Water Intakes



Recommended Equipment

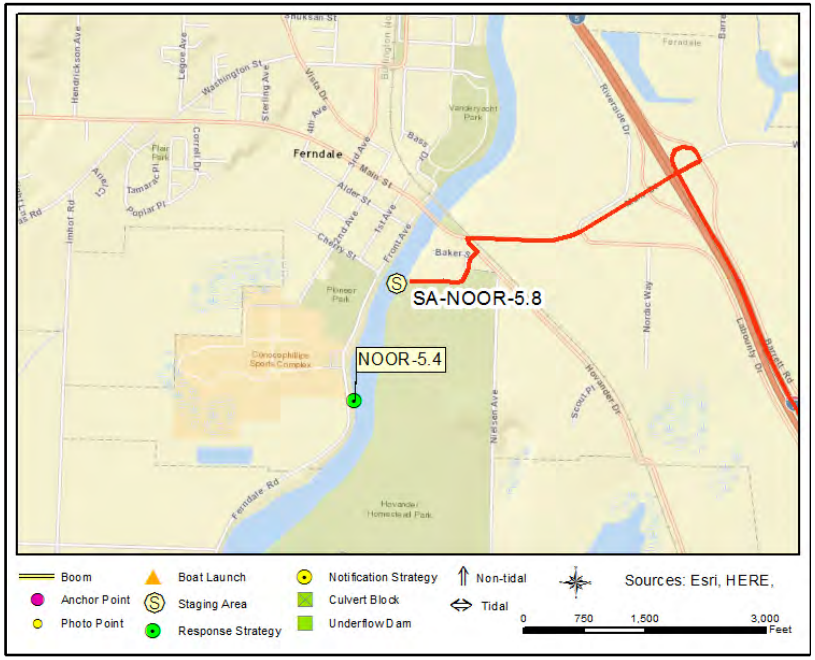
3	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
2	Laborer
1	Supervisor

Whatcom PUD Water Intake Downstream (KM NO-5.4) NOOR-5.4

NOOR-5.4 Photo: From Nooksack River right, looking S downstream at water intake and rip-rap/concrete banks. Taken late spring in avg water, 3500 cfs/7 ft



Site Contact

Whatcom County PUD #1
Emergency Contact : Water intake operator

Ferndale, WA 98248
360-384-4288

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

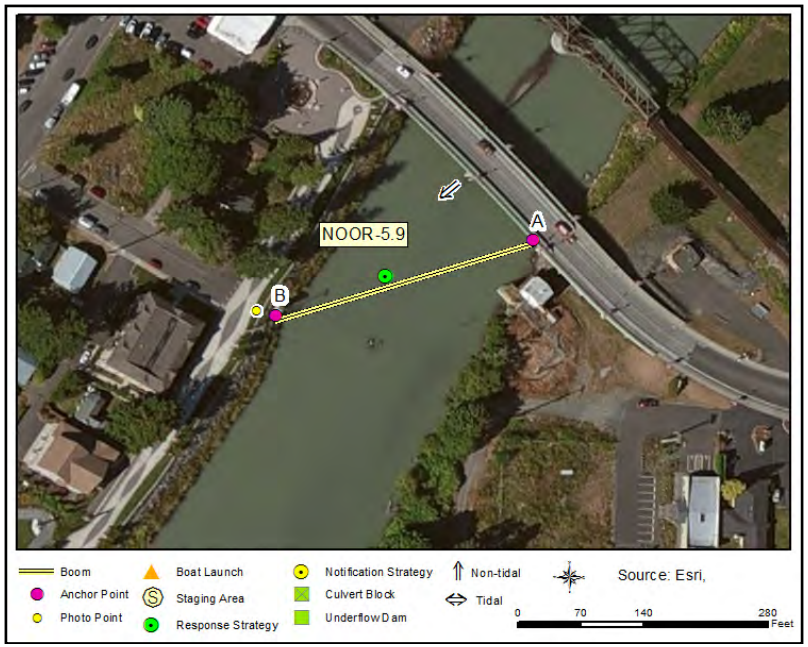
Directions to staging area SA-NOOR-5.8:

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

Nooksack River below Main St Bridge (KM NO-5.9) NOOR-5.9

Position - Location:	48° 50.703', -122° 35.329'	48° 50' 42.2", -122° 35' 19.7"	48.84505, -122.58881	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on Nooksack River
Implementation:	Using workboat, anchor 300 ft section of boom to west bank near A, using anchor posts or tie to bridge pier/abandoned water intake. Extend across river SW to anchor downstream near B and create collection pocket on west bank/river right at USGS gage ladder. Collect to vac truck parked at riverwalk - may need extra pump for height. Adjust number of anchors and boom angle as needed for conditions.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8. Additional staging onsite on paved riverwalk.
Site Safety:	Water Hazard: PFD Required; Pilings Mid-channel; Overhead Lines; Steep Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Access riverwalk and gage via Alder St - cut bollards to drive onto paved walkway. Ladder to water from USGS gage won't hold much weight: one person only. Keep safety backup on top of ladder on land.
Watercourse:	River - With Tidal Influence - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Crabs, Marine Mammals, Sensitive Resources, Shorebirds, Water Intakes, Waterfowl



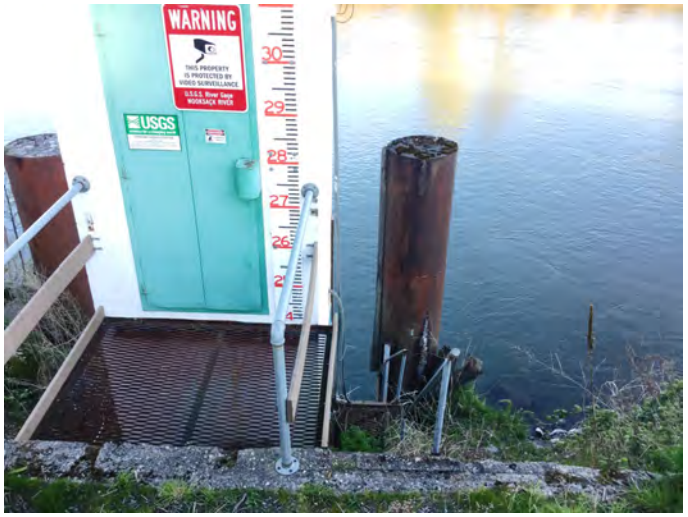
Recommended Equipment

3	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
300	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - of adequate size for type and amount of boom

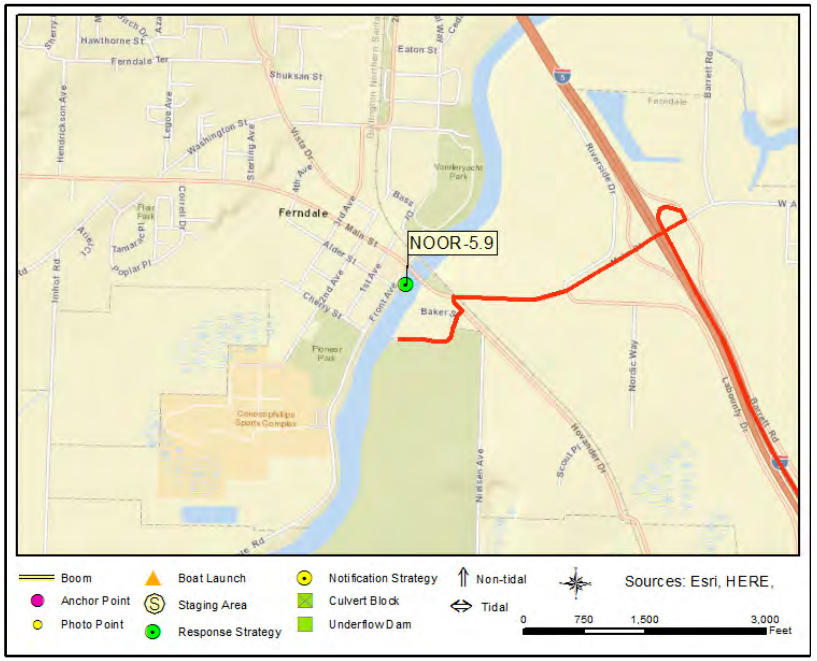
Recommended Personnel

1	Boat Operator
3	Laborer
1	Supervisor

Nooksack River below Main St Bridge (KM NO-5.9) NOOR-5.9



NOOR-5.9 Photo: From riverwalk at top of USGS gage, looking at ladder down bank to water's edge. Taken in late spring at average water, 3500 cfs/7 ft.



Site Contact

City of Ferndale Public Works
Land/Property Contact : Parks & Rec
2095 Main St
Ferndale, WA 98248
360-685-2379

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

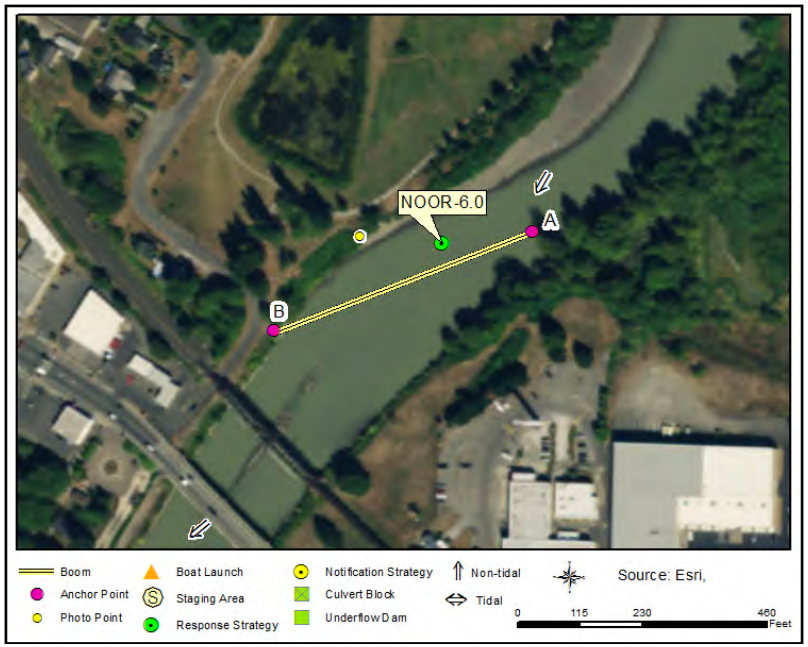
Directions to staging area SA-NOOR-5.8:
1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

DIRECTIONS TO SITE FOR VAC-TRUCK:
1. Head N on I-5 past Bellingham.
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.78 miles)
4. Turn left on 1st Ave (0.06 miles)
5. Make sharp left on Alder St (0.04 miles)
6. At end of street, cut locks on bollards to drive onto paved riverwalk.

VanderYacht Park (KM NO-6.0) NOOR-6.0

Position - Location:	48° 50.808', -122° 35.203'	48° 50' 48.5", -122° 35' 12.2"	48.84680, -122.58671	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on the Nooksack River
Implementation:	Using shallow-water workboat, anchor 600 ft length of boom on river left at/near Point A (48.8469, -122.586). Extend boom downstream and across to river right, securing boom on shore at/near Point B. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. Collection at Point B using vac truck from Bass Dr shoulder or VanderYacht Park.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8. Additional staging available onsite at VanderYacht Park.
Site Safety:	Water Hazard: PFD Required; Steep Banks; Active Railroad Nearby; Public Park; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Paved public road with rip-rap angled Public park.
Watercourse:	River - With Tidal Influence - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Crabs, Marine Mammals, Public Recreation Site/Area, Shorebirds, Water Intakes, Waterfowl



Recommended Equipment

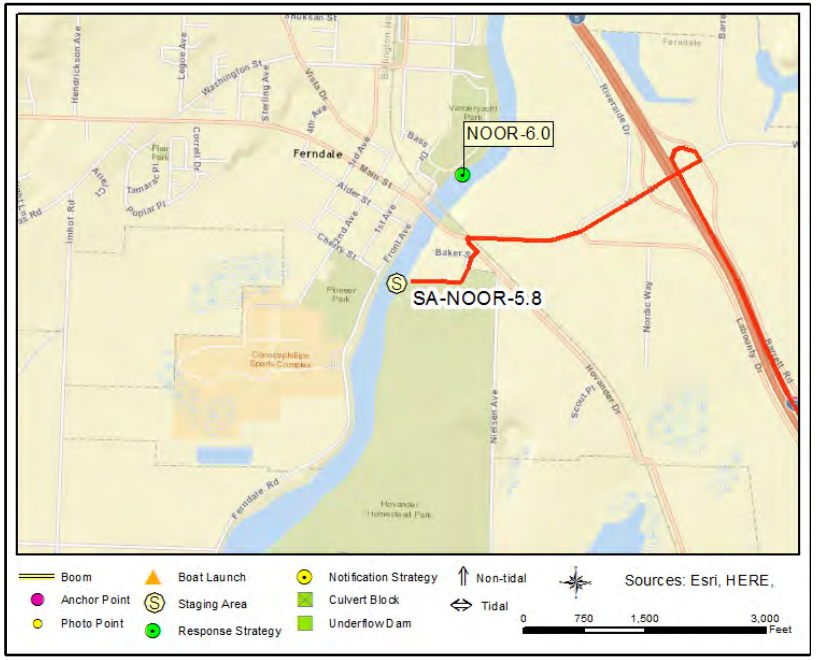
8	Each	Anchoring System(s) - (anchor, lines, floats)
1	Each	Anchoring System(s)- Shoreside
600	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
2	Laborer
1	Supervisor

VanderYacht Park (KM NO-6.0) NOOR-6.0

NOOR-6.0 Photo: From Nooksack River right, looking downstream at B. 1500 cfs at Ferndale gage, low autumn water.



Site Contact

City of Ferndale Public Works
Land/Property Contact : Parks & Rec
2095 Main St
Ferndale, WA 98248
360-685-2379

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

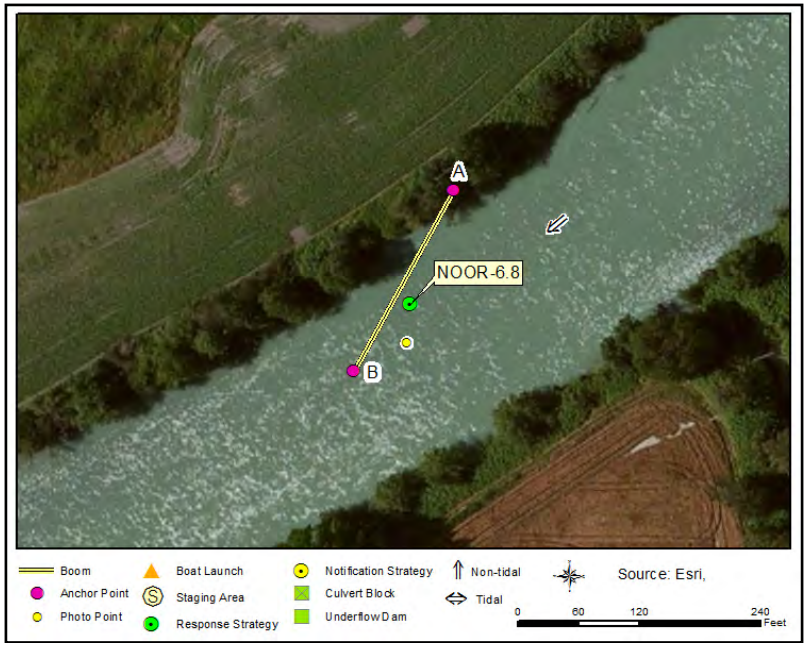
Directions to Staging Area SA-NOOR-5.8:
1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

DIRECTIONS TO SITE NOOR-6.0 VanderYacht Park:
1. Head north on I-5 past Bellingham
2. At exit 263 take ramp on the right to Portal Way (0.24 miles)
3. Turn left on Portal Way (0.15 miles)
4. At roundabout, take the third exit to proceed on 2nd Ave (0.48 miles)
5. Turn left on 2nd Ave and immediately turn right on 2nd Ave (0.16 miles)
6. Turn left on Bass Dr (0.18 miles)
7. Finish at 5605 Bass Dr, 98248, on the right

Nooksack River Deflection Downstream NOOR-6.8

Position - Location:	48° 51.353', -122° 34.696'	48° 51' 21.2", -122° 34' 41.8"	48.85588, -122.57827	Ferndale

Strategy Objective:	Deflection : Divert oil away from shore along river right across from Tenmile Creek
Implementation:	Using shallow-water workboat, use trees or boulders to anchor 200 ft section of boom to shore at A (48.856093, -122.578108), at tall tree across from Tenmile Creek mouth. Do not adjust this anchor point. Extend boom SW downstream to mid-channel near B (48.8557, -122.5785) to divert oil away from the north bank downstream of this point. Adjust mid-channel anchor only as needed for conditions and use anchoring systems as needed to keep boom secure in river. Do not adjust upstream anchor point. Notify Environmental Unit if deploying this strategy.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8, 1 mi downstream.
Site Safety:	Water Hazard: PFD Required; Logs and Hidden Snags; Eroding Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Recommend shallow-draft boat/jet boat. Shallow, in-channel debris, muddy water. Vegetation along steep banks, potential erosion of tree roots.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Sensitive Resources Nearby



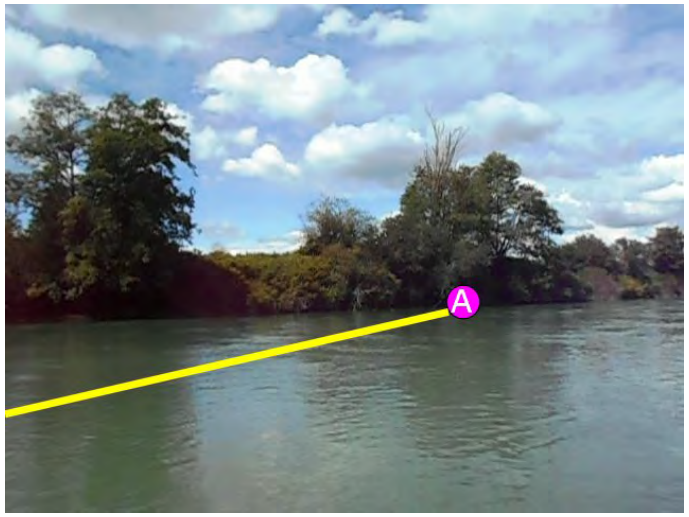
Recommended Equipment

3	Each	Anchoring System(s) - (anchor, lines, floats)
1	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Line - 1/2" poly line
1	Each	Workboat(s) - of adequate size for type and amount of boom

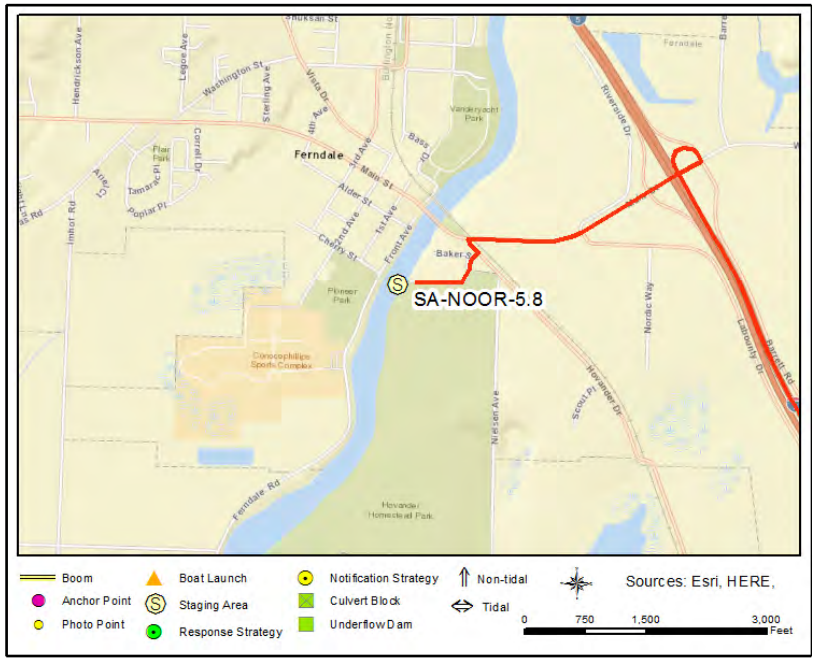
Recommended Personnel

1	Boat Operator
2	Laborer
1	Supervisor

Nooksack River Deflection Downstream NOOR-6.8



NOOR-6.8 Photo: From raft on Nooksack River, looking NE upstream at anchor point A (clump of trees towards right). Taken in summer at low water, 2000 cfs.



Site Contact

No Information
Private Owner :

City of Ferndale Public Works
Secondary Contact : Parks & Rec
360-685-2379

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

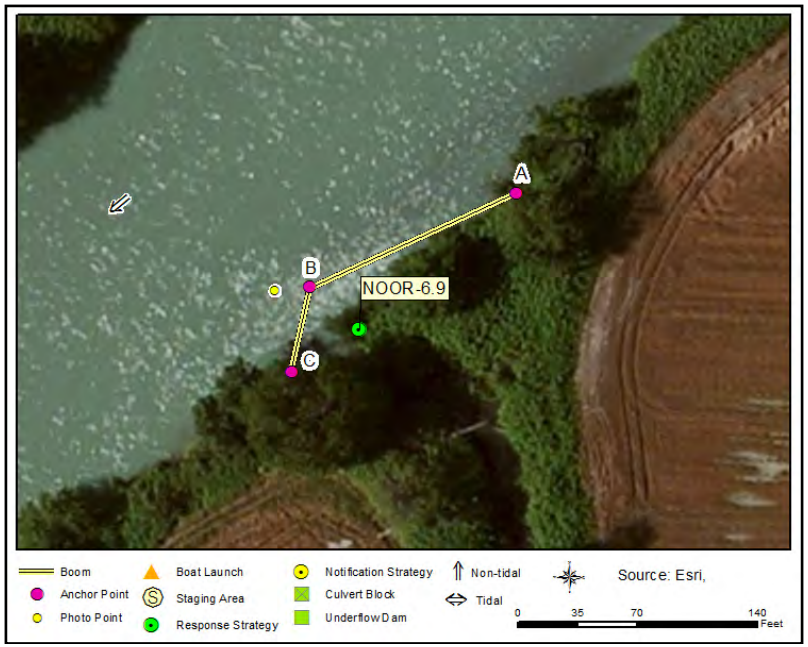
Directions to staging area SA-NOOR-5.8:

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

Tenmile Creek Mouth Exclusion NOOR-6.9

Position - Location:	48° 51.355', -122° 34.625'	48° 51' 21.3", -122° 34' 37.5"	48.85592, -122.57708	Ferndale

Strategy Objective:	Exclusion : Keep oil out of Tenmile Creek
Implementation:	Using shallow-water workboat, anchor 200 ft length of boom on river left upstream of Tenmile Creek, at/near Point A (48.85615, -122.5767). Extend boom downstream and anchor in-channel near Point B (48.856, -122.5772). Securing remaining boom to shore on river left, downstream of Tenmile Creek mouth at/near Point C (48.85585, -122.5773). Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8, 1.1 mi downstream.
Site Safety:	Water Hazard: PFD Required; Logs and Hidden Snags; Eroding Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Recommend shallow-draft boat/jet boat. Shallow, in-channel debris, muddy water. May be debris pile at the mouth. Side outlet on upstream end between 2 large trees. Steep slope banks with vegetation.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Salmonid Concentrations and Habitat, Waterfowl



Recommended Equipment

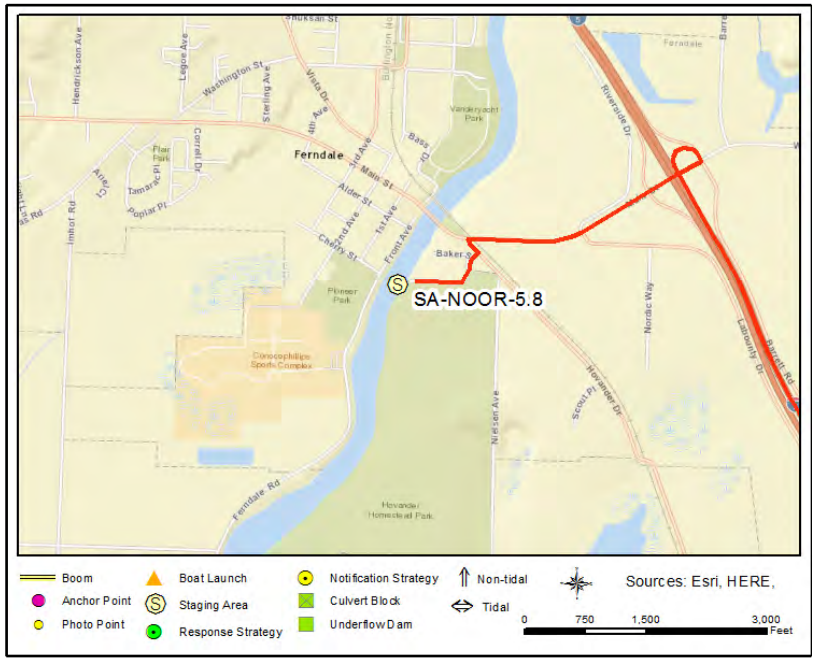
2	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
2	Laborer
1	Supervisor

Tenmile Creek Mouth Exclusion NOOR-6.9

NOOR-6.9 Photo: From raft on Nooksack River, looking SE up Tenmile Creek at mouth. Note debris in front. Taken in summer at low water, 2000 cfs.



Site Contact

No Information
Private Owner :

City of Ferndale Public Works
Municipality (County/City) : Parks & Rec
360-685-2379

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

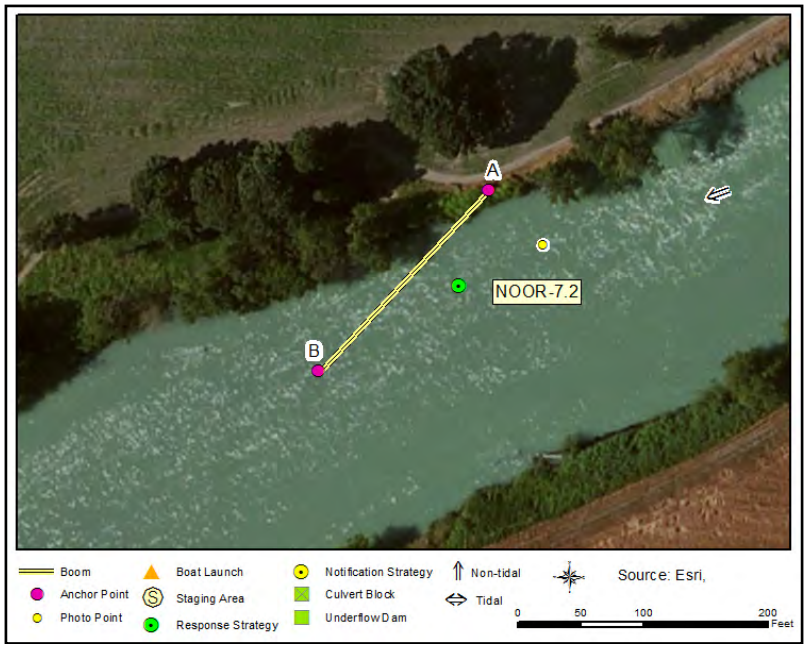
Directions to staging area SA-NOOR-5.8:

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

Nooksack River Deflection Upstream NOOR-7.2

Position - Location:	48° 51.496', -122° 34.409'	48° 51' 29.7", -122° 34' 24.5"	48.85826, -122.57348	Ferndale

Strategy Objective:	Deflection : Keep oil away from river right, downstream of strategy location
Implementation:	Using shallow-water workboat, use trees or boulders to anchor 200 ft length boom at Point A (48.858454, -122.573413). Anchor can ONLY be adjusted to be upstream of this point. Extend boom downstream and anchor in-channel at/near Point B (48.8581, -122.574). Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. Notify Environmental Unit if deploying this strategy.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8, 1.4 mi downstream.
Site Safety:	Swift Water Hazard: PFD Required; Logs and Hidden Snags; Eroding Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Thick cluster of large trees on river right is just downstream of anchor point. Large split-trunk oak or maple is visible back in field, 50 ft N of shoreside anchor point.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Sensitive Resources Nearby



Recommended Equipment

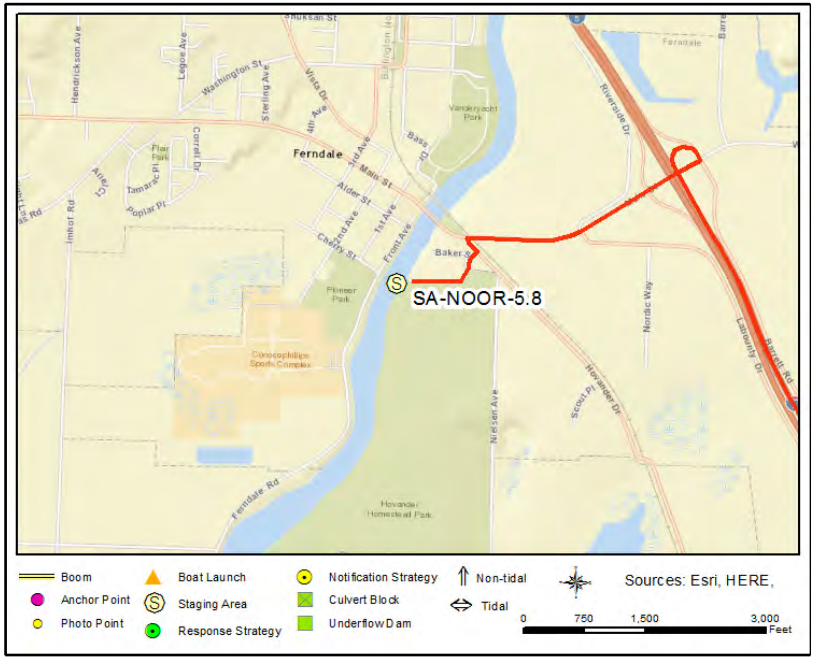
3	Each	Anchoring System(s) - (anchor, lines, floats)
1	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Line - 1/2" poly line
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
2	Laborer
1	Supervisor

Nooksack River Deflection Upstream NOOR-7.2

NOOR-7.2 Photo: From raft on Nooksack River, looking N at shoreside anchor point (near dead tree) with big oak? in background. Taken low summer water, 2000 cfs.



Site Contact

No Information
Private Owner :

City of Ferndale Public Works
Municipality (County/City) : Parks & Rec
360-685-2379

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

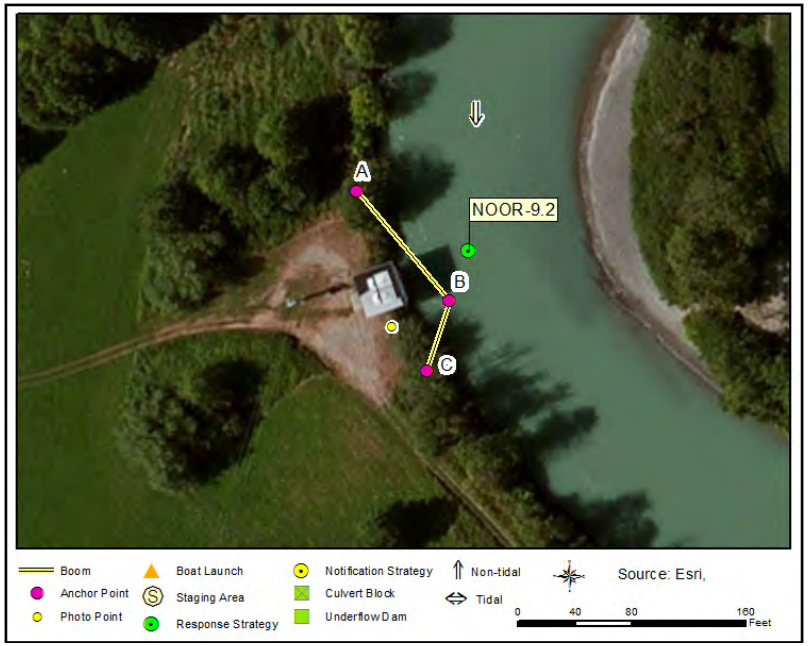
Directions to staging area SA-NOOR-5.8:

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

Whatcom PUD Intake #2 Trigg Rd (KM NO-8.8) NOOR-9.2

Position - Location:	48° 52.792', -122° 33.866'	48° 52' 47.5", -122° 33' 52.0"	48.87986, -122.56444	Ferndale

Strategy Objective:	Exclusion : Keep oil out of water intake
Implementation:	Anchor 200 ft length of boom upstream of water intake on river right, near A. Extend boom SE into river and anchor mid-channel downstream of intake, near B (48.87979, -122.56454). Anchor remaining boom to shore downstream of intake, near C. Back with sorbent. Adjust boom angle as needed for conditions and use anchoring systems as needed to keep boom secure in river. If water is too low for boat access, deploy by foot from land and building's walkway.
Staging Area:	Remote: Stage at Hovander Park SA-NOOR-5.8, 3.4 mi downstream. Alternate staging area onsite at intake.
Site Safety:	Water Hazard: PFD Required; Overhead Electric Lines; Steep Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Recommend shallow-draft boat - debris, shallow, muddy water. Steep bank covered in brush. Dirt road through field at end of Tripp Rd to intake building.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Economic Resource, Water Intakes



Recommended Equipment

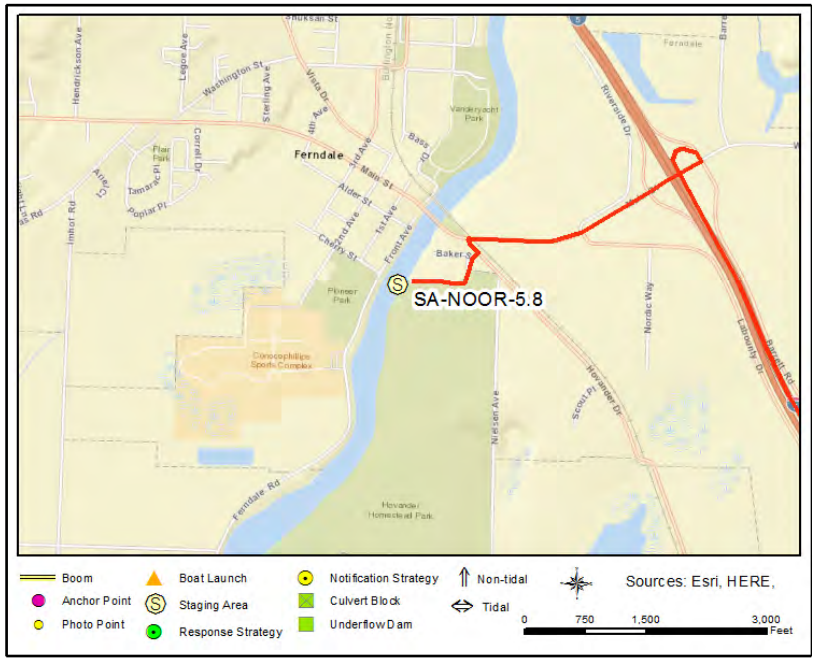
3	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
200	Feet	Line - 1/2" poly line
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
3	Laborer
1	Supervisor

Whatcom PUD Intake #2 Trigg Rd (KM NO-8.8) NOOR-9.2

NOOR-9.2 Photo: From bank on Nooksack River right, just downstream of intake. Looking NE across river. Taken late spring in high water, 3800 cfs.



Site Contact

Whatcom County PUD #1
Emergency Contact : Water intake operator

Ferndale, WA 98248
360-384-4288

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

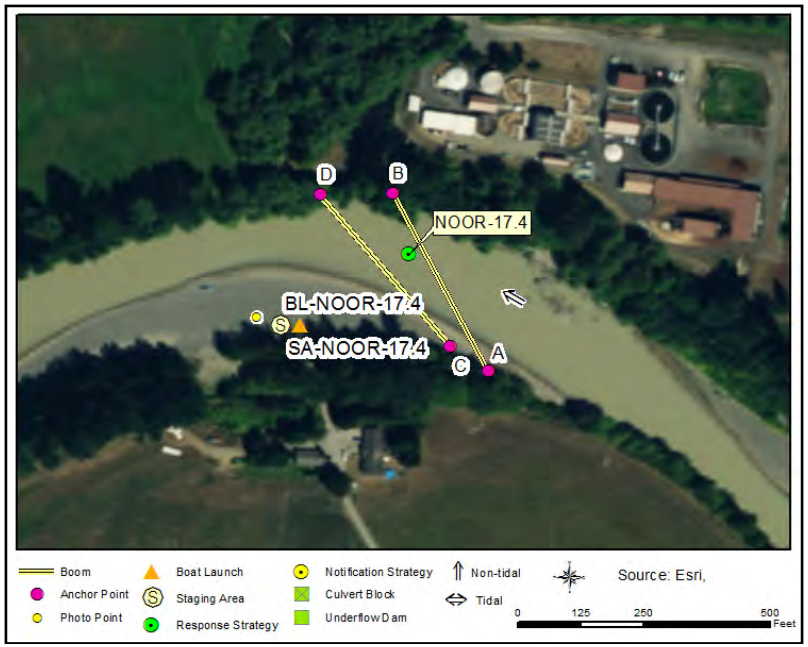
Directions to staging SA-NOOR-5.8 Hovander Park:
1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

DIRECTIONS TO SITE NOOR-9.2
1. Head North on I-5 past Bellingham.
2. At exit 263 take ramp on the right to Portal Way (0.24 miles)
3. Turn right on Portal Way (1.32 miles)
4. Turn right on Trigg Rd (0.67 miles)
5. Turn left through gate to access PUD plant at 1703 Trigg Rd. (0.2 miles)
6. Just after the substation, turn right to drive across dirt road through open field, and across small bridge over stream. (0.7 miles)
7. Site is at outbuilding and electric tower at river's edge.

Lynden Treatment Plant (KM NO-17.4) NOOR-17.4

Position - Location:	48° 56.261', -122° 27.176'	48° 56' 15.7", -122° 27' 10.6"	48.93769, -122.45294	Lynden

Strategy Objective:	Collection : Collect oil moving downstream on the Nooksack River
Implementation:	Secure 400ft length of boom on river left at/near Point A (48.93711, -122.45254). Using shallow-water workboat, extend boom downstream and across to river right, securing boom at/near Point B. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. In fast water (1mph+) deploy downstream strategy in same manner betwee Point C (48.93718, -122.45295) and Point D. Collection at Points B & D using vac-truck from access behind treatment plant or skimmer/storage from boat or shore.
Staging Area:	Remote: Stage at Polinder Beach (SA-NOOR-17.4). Use boat launch BL-NOOR-17.4
Site Safety:	Slips, Trips, Falls; Water Hazard (PFD Required); Steep Banks; Heavy Vegetation; Heavy Equipment
Field Notes:	15 ft steep north bank with thick vegetation. Some breaks to gravel road behind Plant. May have to anchor boat to tend skimmer.
Watercourse:	River - Nooksack River (variable flow is low in summer, high in spring and winter)
Resources at Risk:	Salmon (Coho, Chinook and Chum), Shorebirds, Waterfowl (Wintering)



Recommended Equipment

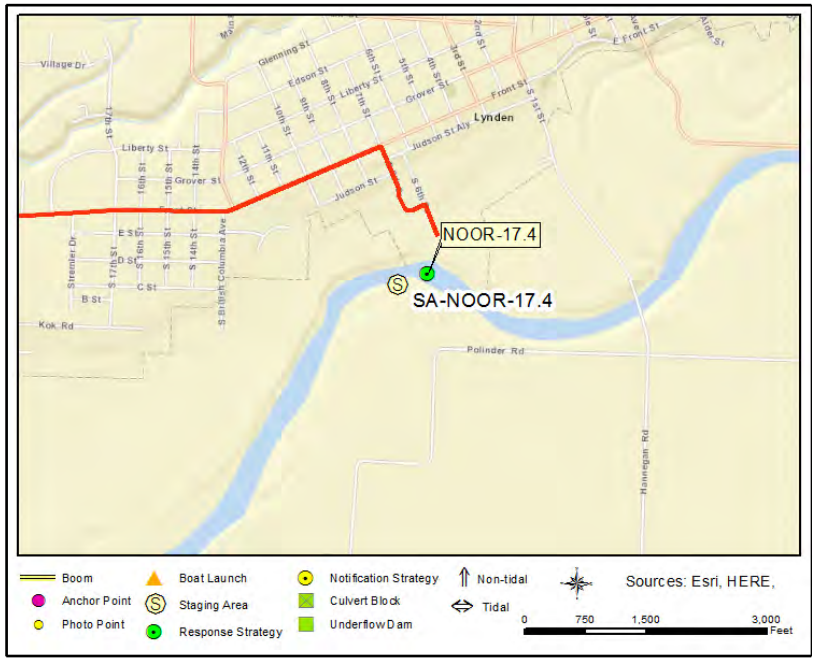
8	Each	Anchoring System(s) - (anchor, lines, floats)
4	Each	Anchoring System(s)- Shoreside
1	Each	Bolt Cutters
800	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Machete(s) - (or other vegetation cutting tool)
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
4	Laborer
1	Supervisor

Lynden Treatment Plant (KM NO-17.4) NOOR-17.4

NOOR-17.4 Photo: From Nooksack River left on south bank, Polinder Beach access/launch, looking east upstream at upstream anchor sites. Taken mid-Jan, 3500 cfs.



Site Contact

City of Lynden Public Works Department
Land/Property Contact : Water/Wastewater Treatment Plant

Lynden, WA 98264
360-354-0633

Nearest Address

670 Polinder Rd
Lynden, WA 98264-9437

Driving Directions

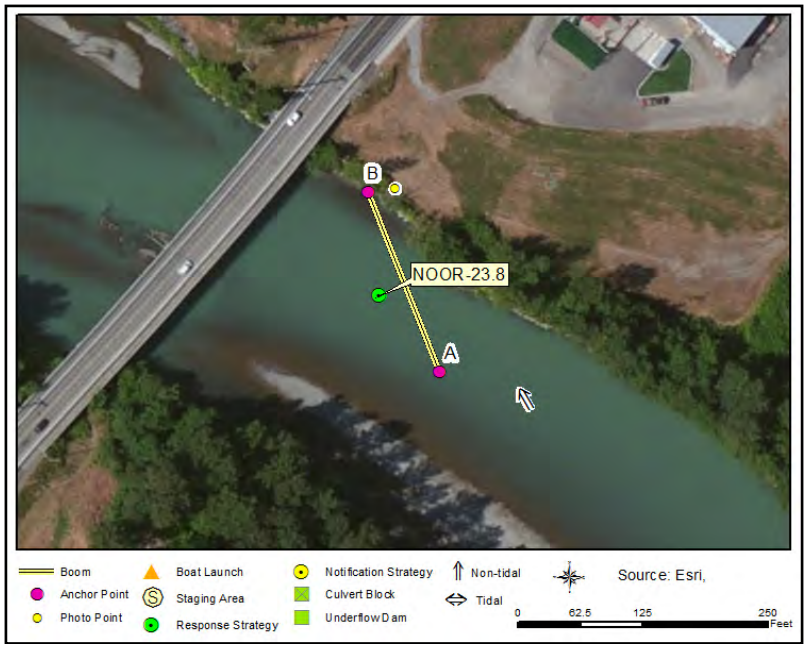
Directions To Staging Area (SA-NOOR-17.4):
1. Head north on I-5 towards Bellingham
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.89 miles)
5. At roundabout, take the second exit to continue straight on WA-539 N (Guide Meridian Rd) (1.52 miles)
6. At roundabout, take the first exit to proceed on WA-544 E (E Pole Rd) (1.95 miles)
7. Turn left on Hannegan Rd (2.99 miles)
10. Turn left on Polinder Rd (0.7 miles)
11. Where Polinder Rd bends left, turn right on private driveway (mailbox for 694).
12. Continue to end of the drive - note 12 foot tall sign of rules for public access. Straight past sign to sandy beach. (694 Polinder Rd, 98264-9437)

DIRECTIONS FOR VAC-TRUCK ACCESS:
1. Take Guide Meridian N towards Lynden.
2. Turn right on Front St.
3. Turn right on S 7th (big windmill) and follow roads south to Treatment Plant gate on S 6th St.
4. Enter gate, then drive around behind plant to gravel road at river's edge.

Nooksack River above Everson bridge (KM NO-23.6) NOOR-23.8

Position - Location:	48° 55.072', -122° 20.896'	48° 55' 4.3", -122° 20' 53.8"	48.91787, -122.34827	Everson

Strategy Objective:	Collection : Collect oil moving downstream on the Nooksack River
Implementation:	Secure 200ft length of boom on river right at/near Point B (48.9182, -122.3483). Using shallow-water workboat, extend boom upstream and towards river left, securing boom mid-channel at/near Point A (48.9177, -122.348). Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. Collection at Points B using vac-truck from access off warehouse parking lot.
Staging Area:	Onsite: Stage on lawn at site. Additional staging available at Everson Riverside Park.
Site Safety:	Water Hazard: PFD Required; Steep Bank; In-channel Debris; Water Hazard; Slips, Trips, Falls
Field Notes:	Upstream of bridge, gentle sloping lawn to site from warehouse parking lot. Short rip-rap bank with large rocks near water's edge. Can hand-launch at site or from park just downstream.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Public Recreation Site/Area, Salmon (Coho, Chinook and Chum)



Recommended Equipment

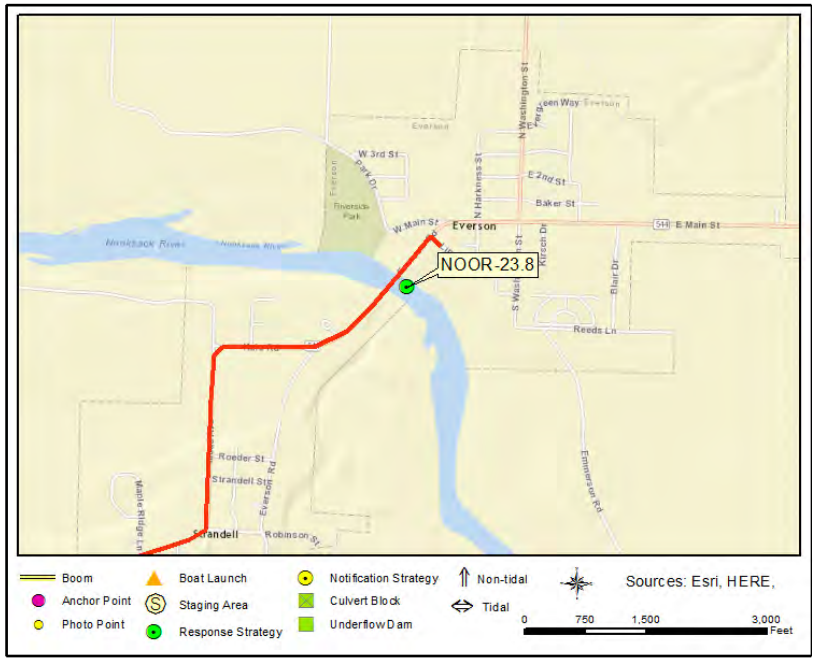
3	Each	Anchoring System(s) - (anchor, lines, floats)
1	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - (hand-launch)

Recommended Personnel

1	Boat Operator
2	Laborer
1	Supervisor

Nooksack River above Everson bridge (KM NO-23.6) NOOR-23.8

NOOR-23.8 Photo: From Nooksack River right at collection point, looking upstream from B to A. Taken late spring in average water.



Site Contact

City of Everson
Municipality (County/City) : Public Works Department

Everson, WA 98247
360-966-3411 ext. 1300

Nearest Address

401 Lincoln St
Everson, WA 98247

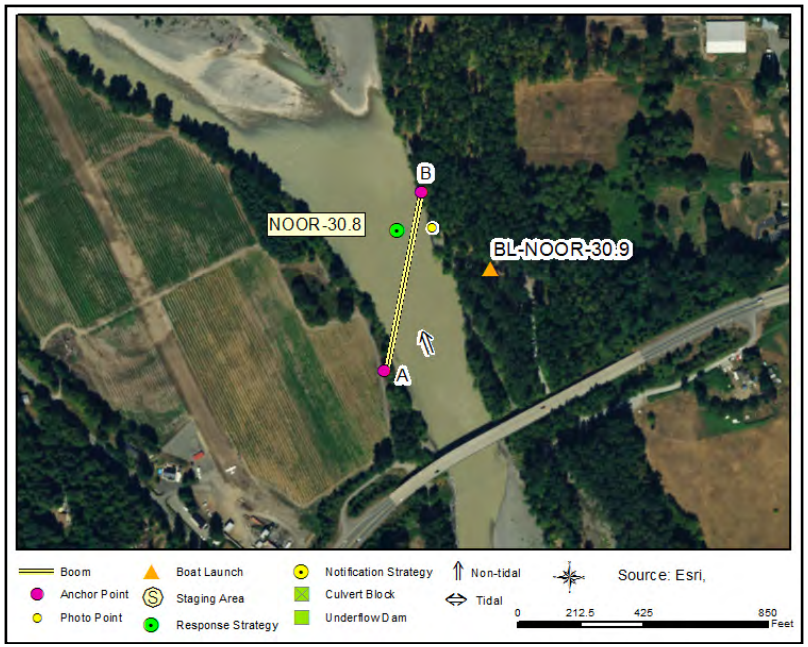
Driving Directions

1. Head North on I-5 towards Bellingham to exit 255.
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (4.73 miles)
4. Turn left on Everson-Goshen Rd (Everson Goshen Rd) (6.07 miles)
5. Turn right at WA-544 to stay on Everson-Goshen Rd (WA-544) (1.72 miles)
6. Bear left on Mead Ave (WA-544) (0.41 miles)
7. Bear right on Kale Rd (WA-544) (0.24 miles)
8. Continue on Everson Rd (WA-544) (0.39 miles)
9. Turn right on Lincoln St (0.03 miles)
10. Finish at 401 Lincoln St, 98247, on the right (first right after the bridge).
11. Proceed south to water's edge.

Nugents Corner downstream NOOR-30.8

Position - Location:	48° 50.629', -122° 17.696'	48° 50' 37.7", -122° 17' 41.8"	48.84381, -122.29494	Everson

Strategy Objective:	Collection : Collect oil moving downstream on the Nooksack River
Implementation:	Using shallow-water workboat, anchor 700 ft length of boom on river left at/near Point A (48.8425, -122.29508). Extend boom downstream and across to river right, securing boom on beach at/near Point B, downstream of boat ramp. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. Collection at Point B using vac truck from boat launch. May need additional hose to reach collection point from ramp.
Staging Area:	Onsite: Stage at boat launch. Additional staging available at park along access road.
Site Safety:	Water Hazard: PFD Required; Logs and Hidden Snags; Eroding Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Sandy beach may be obscured in high water; eddy at this location with braiding and riffles just downstream.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Habitat Restoration Site/Project, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources



Recommended Equipment

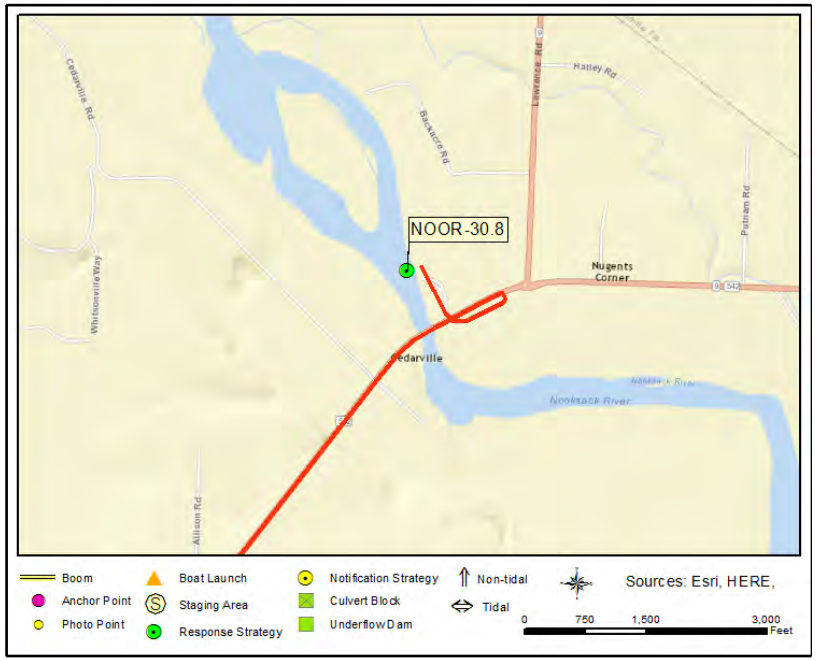
9	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
700	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
3	Laborer
1	Supervisor

Nugents Corner downstream NOOR-30.8

NOOR-30.8 Photo: From Nooksack River right, downstream of boat launch, looking S upstream. Taken mid-Jan, 3100 cfs.



Site Contact

Washington Department of Fish and Wildlife
Land/Property Owner : Region 4
16018 Mill Creek Boulevard
Mill Creek, WA 98012-1296
425-775-1311

Nearest Address

Nugents Corner River Access Road
Everson, WA 98247

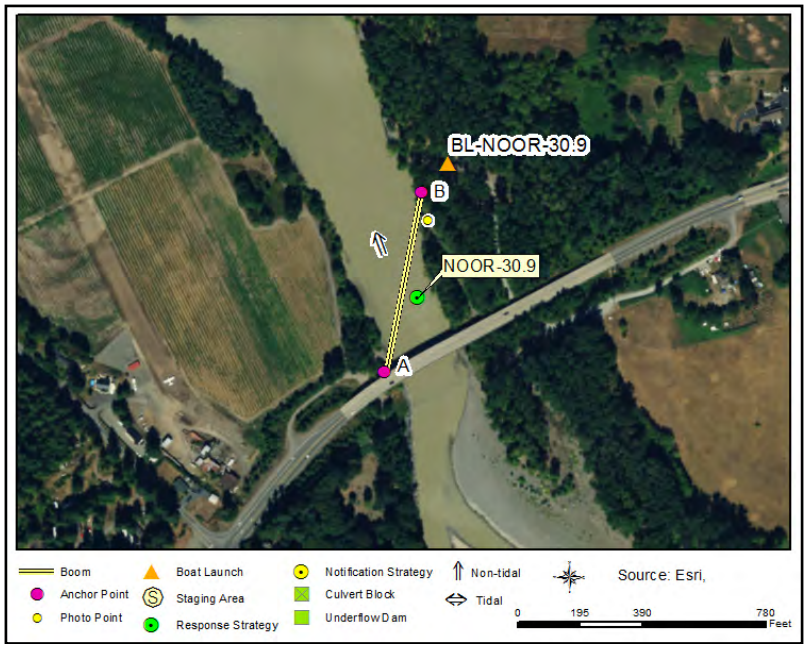
Driving Directions

1. Head north on I-5 towards Bellingham
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (9.86 miles)
4. Turn right on Nugents Corner River Access Rd (Mt Baker Hwy) (0.5 miles)
5. Finish at Nugents Corner River Access Road, at the end of the road.

Nugent's Corner Bridge NOOR-30.9

Position - Location:	48° 50.539', -122° 17.639'	48° 50' 32.4", -122° 17' 38.4"	48.84232, -122.29399	Everson

Strategy Objective:	Collection : Collect oil moving downstream on the Nooksack River.
Implementation:	Using shallow-water workboat, anchor 600 ft length of boom on river left at/near bridge and Point A (48.84168, -122.2944). Extend boom downstream and across to river right, securing boom on beach at/near Point B, upstream of boat ramp. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. Collection at Point B using vac truck from boat launch.
Staging Area:	Onsite: Stage at boat launch. Additional staging available at park along access road.
Site Safety:	Water Hazard: PFD Required; Logs and Hidden Snags; Eroding Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Low banks on either side of the river may be covered in high water flows.
Watercourse:	River - Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Habitat Restoration Site/Project, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources



Recommended Equipment

6	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
600	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - of adequate size for type and amount of boom

Recommended Personnel

1	Boat Operator
3	Laborer
1	Supervisor

Nugent's Corner Bridge NOOR-30.9

NOOR-30.9 Photo: From Nooksack River right, upstream of boat launch, looking S upstream at Highway 542 bridge. Taken mid-Jan, 3100 cfs.

Site Contact

Washington Department of Fish and Wildlife
Land/Property Owner : Region 4
16018 Mill Creek Boulevard
Mill Creek, WA 98012-1296
425-775-1311

Nearest Address

Nugents Corner River Access Rd
Everson, WA 98247

Driving Directions

1. Head north on I-5 towards Bellingham.
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (9.86 miles)
4. Turn right on Nugents Corner River Access Rd (Mt Baker Hwy) (0.05 miles)
5. Finish at Nugents Corner River Access Rd, 98247, on the left

Sandy Point Tide Gates NPS-08

Position - Location:	48° 48.141', -122° 40.851'	48° 48' 8.5", -122° 40' 51.0"	48.80235, -122.68085	Ferndale

Strategy Objective:	Exclusion : Keep oil out of slough
Implementation:	There are two options: block-off tide gates, if that is not possible deploy boom in a chevron in front of the tide gates. To deploy the chevron will require a skiff and 3 people. Piling in the area could be used to help hold the boom in place. Adjust number of anchors based on environmental conditions.
Staging Area:	Onsite:
Site Safety:	Slips, trips, falls. Pilings.
Field Notes:	Paved road access.
Watercourse:	Slough -
Resources at Risk:	Sensitive Habitat, Tribal Lands/Resources

Recommended Equipment

1	Each	Anchor - Danforth (or other appropriate type)
500	Feet	Boom - B2 (Contractor Boom) or equivalent
4	Each	Stake
1	Other	Workboat(s) - (jon boat)

Recommended Personnel

1	Boat Operator
2	Laborer

Sandy Point Tide Gates NPS-08

NPS-08 Photo: Southern most tide gate

Site Contact

Nearest Address

4420 Decatur Drive
Ferndale, WA 98248

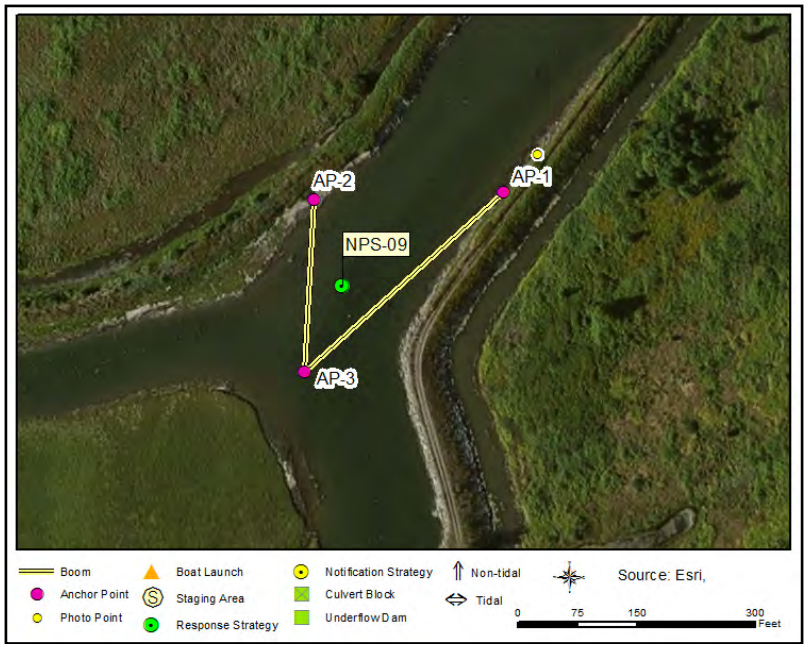
Driving Directions

1. Start at Bellingham, WA
2. Go northwest on Pacific Hwy toward Waldron Rd
3. Turn left on Slater Rd
4. At fork keep left on Slater Rd
5. Turn left on Lake Terrell Rd
6. Turn right on Waldron Dr
7. Turn left on Orcas Way
8. Turn left on Decatur Dr
9. Finish at 4420 Decatur Drive, 98248, on the left

Lummi River NPS-09

Position - Location:	48° 47.621', -122° 39.844'	48° 47' 37.2", -122° 39' 50.6"	48.79368, -122.66406	Bellingham

Strategy Objective:	Collection, Exclusion : Exclusion, Collection- Keep oil out of river, collect oil if possible.
Implementation:	Deploy boom in a chevron, adjust angle and anchors based on real-time conditions. At tides below +2.5 should be able to deploy without a boat. But mud can be sticky. Site is vac. Truck accessible. Adjust number of anchors based on environmental conditions.
Staging Area:	Onsite: Gravel road can be used for Vac truck.
Site Safety:	Narrow dirt road, bank is steep and slippery.
Field Notes:	There are two access routes to the site. Hillaire RD and Kwina RD or Hilaire Rd just east of the Lummi River bridge. Get local tribal guide.
Watercourse:	River - With Tidal Influence - Mouth of the Lummi River
Resources at Risk:	Salmonids (anadromous), Sensitive Habitat, Tribal Lands/Resources



Recommended Equipment

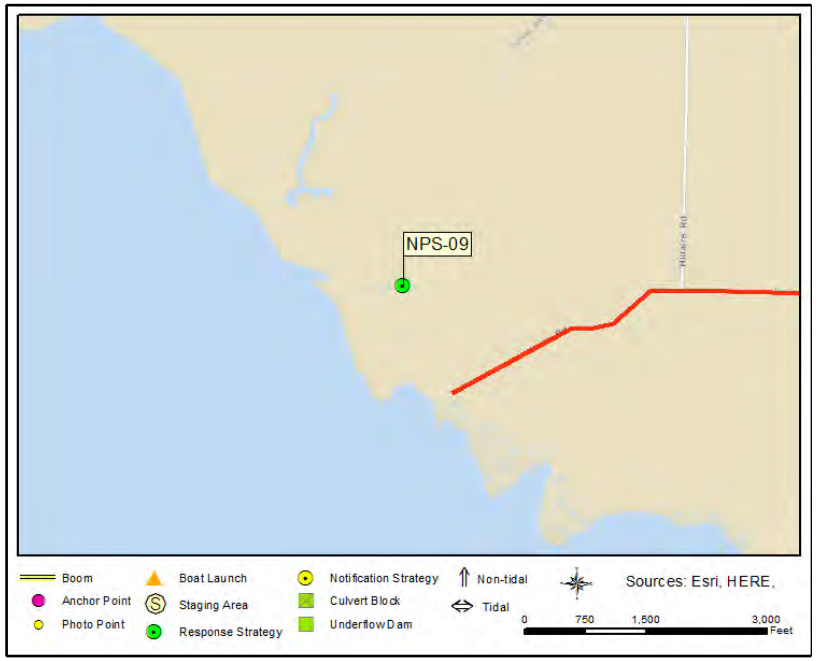
1	Each	Anchor - Danforth (or other appropriate type)
6	Each	Anchoring Post(s) - (shoreside)
400	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Vac Truck or Skimmer and Storage (if collection)
1	Each	Workboat(s) - (jet drive)

Recommended Personnel

1	Boat Operator
1	Laborer

Lummi River NPS-09

NPS-09 Photo: Shot from road, pilings can be used to help anchor.



Site Contact

Nearest Address

2865 Kwina Road
Bellingham, WA 98226

Driving Directions

1. Start at 1350 Slater Rd Ferndale
2. Go west on Slater Rd toward Kester Ave
3. Turn left on Haxton Way
4. Turn right on Kwina Rd
5. Finish at 2865 Kwina Road, 98226, on the left
6. At corner of Kwina and Hillaire go down the narrow dirt road to the river.

Water Intake Nooksack River NPS-10

Position - Location:	48° 47.477', -122° 35.451'	48° 47' 28.6", -122° 35' 27.1"	48.79128, -122.59085	Bellingham

Strategy Objective: Notification : Keep oil from entering water intake.

Implementation: Provide notice, Lummi Nation to put eyes on the water, if oil observed pump to be shut down.

Staging Area: Remote: Notification Strategy

Site Safety:

Field Notes: Pump only runs certain times of year, Aug.- Dec. and Feb. - May. Water in-take depth about 10 feet. The fish being fed with this water can only live a few hours with the pump off.

Watercourse: River - With Tidal Influence -

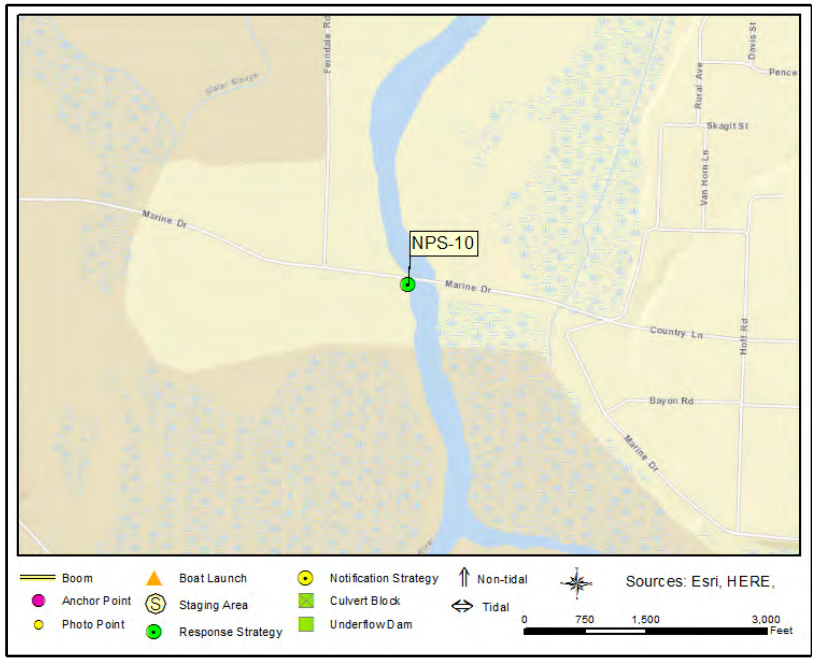
Resources at Risk: Water Intakes

Recommended Equipment

Recommended Personnel

Water Intake Nooksack River NPS-10

NPS-10 Photo: Overview of water intake.



Site Contact

Nearest Address

2031 Marine Drive
Bellingham, WA 98226

Driving Directions

Smuggler Slough Tide Gates NPS-13

Position - Location:	48° 47.393', -122° 39.753'	48° 47' 23.6", -122° 39' 45.2"	48.78989, -122.66255	Bellingham

Strategy Objective:	Exclusion : Keep oil out of slough.
Implementation:	Block the five tide gates with plywood or sorbent boom. Note: no need to deploy on outgoing tide cycle.
Staging Area:	Onsite:
Site Safety:	Remote dirt road - will need high clearance vehicle.
Field Notes:	No need to block on out going tide.
Watercourse:	Slough -
Resources at Risk:	Sensitive Habitat, Tribal Lands/Resources

Recommended Equipment

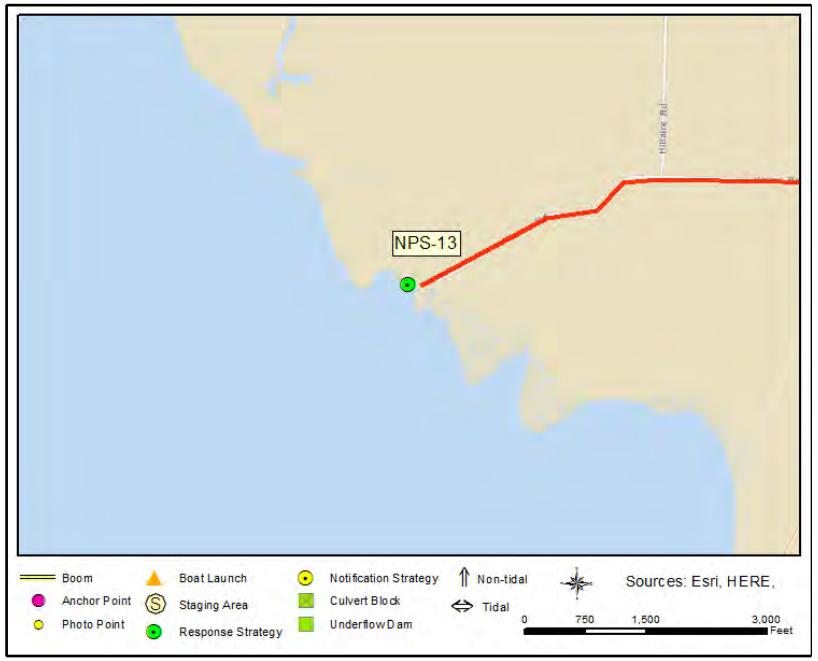
10	Each	Anchoring Post(s) - (shoreside)
50	Feet	Boom - Sorbent
5	Each	Plywood sheets (4ft x 4ft)

Recommended Personnel

2	Laborer

Smuggler Slough Tide Gates NPS-13

NPS-13 Photo: Flapper tide gates



Site Contact

Lummi Nation
Pre-Notification Required : Tribal contact

Nearest Address

2865 Kwina Road
Bellingham, WA 98226

Driving Directions

1. Start at 2138 Slater Rd Ferndale
2. Go west on Slater Rd toward Imhof Rd
3. Turn left on Haxton Way
4. Turn right on Kwina Rd
5. Finish at 2865 Kwina Road, 98226, on the left
6. At corner of Kwina and Hillaire Road go down the gravel road.

Samish River at Innis Creek Rd SAMR-26.9

Position - Location:	48° 40.636', -122° 11.758'	48° 40' 38.1", -122° 11' 45.5"	48.67726, -122.19597	Acme

Strategy Objective:	Collection : Collect oil moving downstream on the Samish River
Implementation:	Deploy 100 ft lengths of boom on both sides of Innis Creek Rd bridge and back with sorbent. May be able to loop rope around existing timbers instead of setting new anchors. No road shoulder or stable off-road ground nearby. Follow WSDOT work zone traffic control guidelines when working on or near roadway.
Staging Area:	Onsite: Shut down lane of road to work, use nearby front yards, or restaurant parking around corner on Hwy 9 at Doran Rd.
Site Safety:	Rail crossing nearby. Road traffic - no shoulder. Slips, trips, falls, vegetation, cougars.
Field Notes:	Call BNSF 800-832-5452 to alert of heavy equipment near unsignaled crossing at mile 100.6 on Sumas sub. No road shoulder but very quiet road. Wetland vegetation and muddy ground.
Watercourse:	River - Samish River - lake-like, almost no flow. Wetlands in area.
Resources at Risk:	Critical Wetland Area, Raptors, Reptiles and Amphibians, Waterfowl

Recommended Equipment

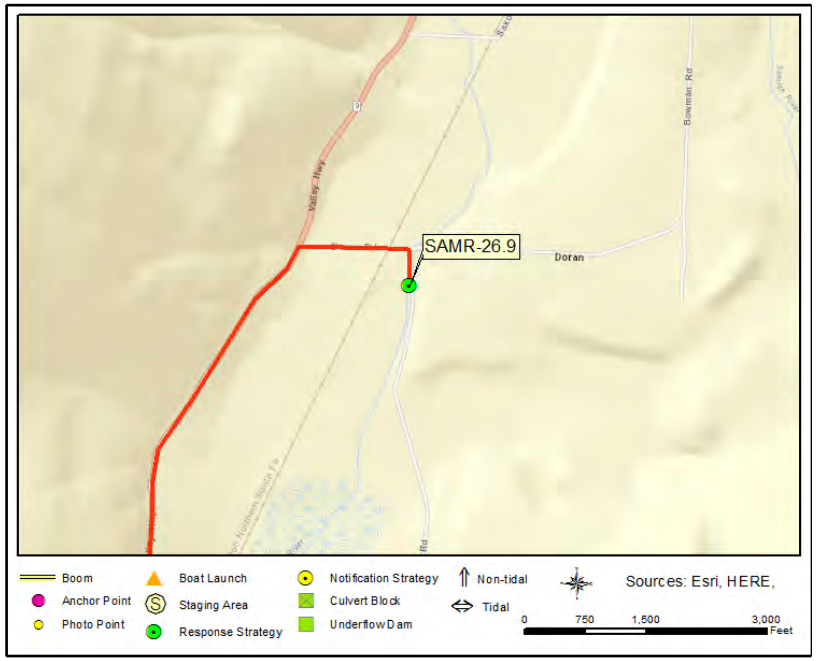
4	Kit	Anchoring System(s)- Shoreside
200	Feet	Boom - B2 (Contractor Boom) or equivalent
200	Feet	Boom - Sorbent
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Samish River at Innis Creek Rd SAMR-26.9

SAMR-26.9 Photo: On Samish River right, upstream/NE side of Innis Creek Rd bridge. Looking due S from A to B. Taken in high spring water, 380 cfs at Burlington gage.



Site Contact

Whatcom Land Trust
Land/Property Owner : Property owner
412 N. Commercial St.
Bellingham, WA 98227
360.650.9470

Nearest Address

978 Innis Creek Rd
Acme, WA 98220

Driving Directions

1. Head N on I-5 towards Sedro-Woolley.
2. At exit 218 take ramp on the right and go on Starbird Rd. (14.25 miles)
3. At exit 232 bear right onto ramp to Cook Road toward Sedro-Woolley (0.26 miles)
4. Turn right on Cook Rd (4.21 miles)
5. At roundabout, take the second exit to proceed on Cook Rd (0.13 miles)
6. At roundabout, take the second exit to proceed on North Cascades Scenic Hwy (WA-20) (0.34 miles)
7. At roundabout, take the second exit to proceed on WA-9 (WA-20 E) (0.74 miles)
8. Turn left at Moore St / Township St to stay on WA9 (N Township St) (12.13 miles)
9. Turn right on Doran Rd (Doren Rd) (0.26 miles)
11. Take the first right on Innis Creek Rd (0.08 miles)
12. Site is at small bridge crossing over Samish River.

Samish River at Doran Rd SAMR-27.0

Position - Location:	48° 40.710', -122° 11.748'	48° 40' 42.6", -122° 11' 44.9"	48.67850, -122.19580	Acme

Strategy Objective:	Collection : Collect oil moving downstream on the Samish River
Implementation:	On both sides of Doran Rd, deploy 100 ft length of hard boom across wooden box culvert. Back both sections with sorbent or pack underside of bridge with sorbent as available. Collect oil using a vac truck or skimmer and storage. Follow WSDOT work zone traffic control guidelines when working on or near roadway.
Staging Area:	Onsite: Road shoulder and nearby yards. Parking lot at burger place .4 mi W on Hwy 9.
Site Safety:	Unsignaled rail crossing just W of site. Road traffic. Slips, trips, falls. Vegetation.
Field Notes:	Call BNSF 800-832-5452 to alert of heavy equipment near unsignaled crossing at mile 100.6 on Sumas sub. Wood bank shoring on either side of bridge.
Watercourse:	River - Extremely low flow even in rainy season. Narrow spot between wetlands.
Resources at Risk:	Critical Wetland Area, Raptors, Reptiles and Amphibians, Waterfowl

Recommended Equipment

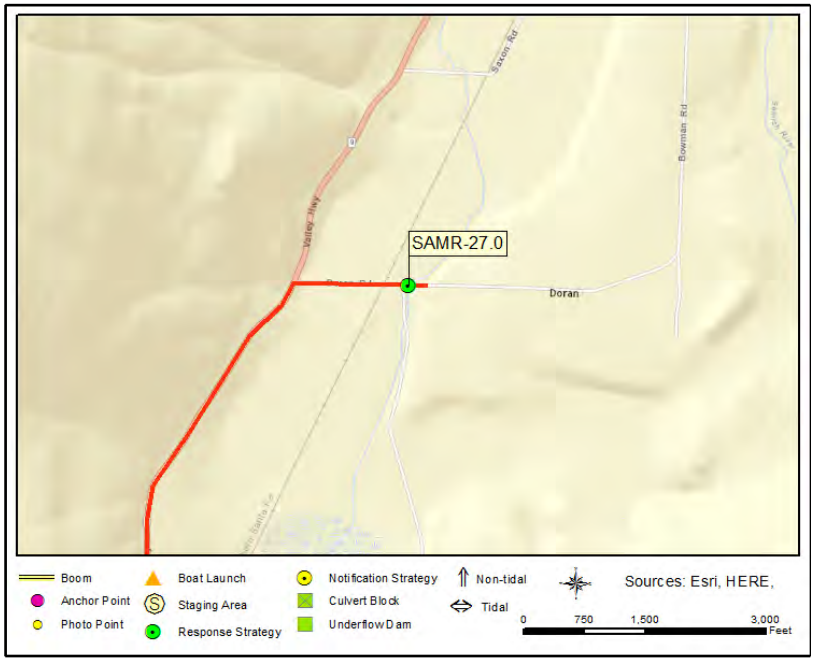
4	Kit	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Samish River at Doran Rd SAMR-27.0

SAMR-27.0 Photo: From Samish River right, upstream side of Doran Rd. Looking E, taken in high spring water, 380 cfs at Burlington gage.



Site Contact

No Information
Private Owner :

Whatcom Land Trust
Alternate Contact : Property owner
360.650.9470

Nearest Address

5453 Doran Rd
Acme, WA 98220

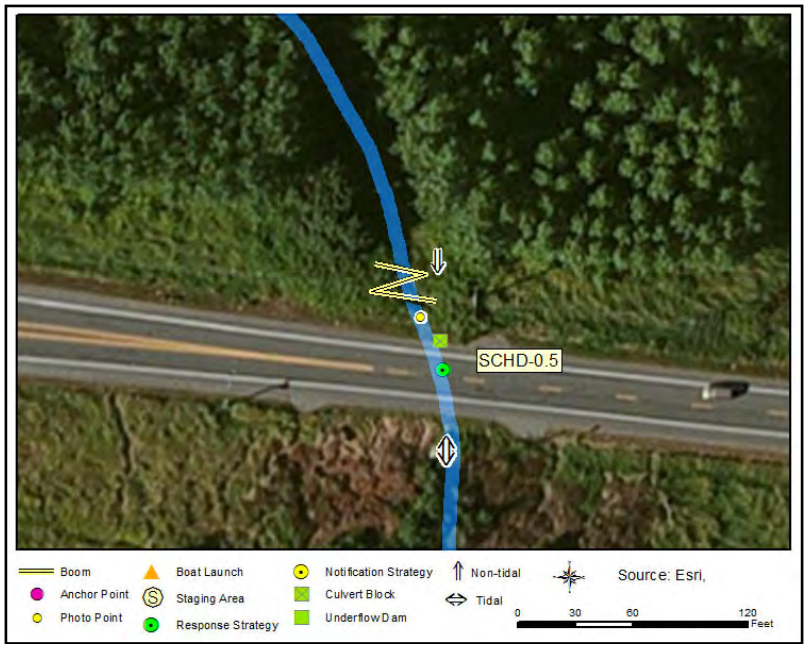
Driving Directions

1. Head N on I-5 towards Sedro-Woolley.
2. At exit 218 take ramp on the right and go on Starbird Rd. (14.25 miles)
3. At exit 232 bear right onto ramp to Cook Road toward Sedro-Woolley (0.26 miles)
4. Turn right on Cook Rd (4.21 miles)
5. At roundabout, take the second exit to proceed on Cook Rd (0.13 miles)
6. At roundabout, take the second exit to proceed on North Cascades Scenic Hwy (WA-20) (0.34 miles)
7. At roundabout, take the second exit to proceed on WA-9 (WA-20 E) (0.74 miles)
8. Turn left at Moore St / Township St to stay on WA9 (N Township St) (12.13 miles)
9. Turn right on Doran Rd (Doren Rd) (0.32 miles)
10. Site is just past railroad crossing at small bridge over Samish River.

Schell Ditch at Slater Rd (KM LU(T)-0.5) SCHD-0.5

Position - Location:	48° 49.153', -122° 37.505'	48° 49' 9.2", -122° 37' 30.3"	48.81921, -122.62509	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on Schell Ditch
Implementation:	Deploy multiple lengths of sorbent boom across creek on upstream (north side) of Slater Rd. If time allows, use plywood and plastic to create culvert block or underflow dam on upstream side of culvert, as needed based on stream flow conditions. Use vac-truck or skimmer/storage for collection.
Staging Area:	Onsite: Stage on small roadway shoulder near site. Additional staging available at Silver Reef Casino.
Site Safety:	Use caution when walking along Slater Rd: high speed roadway hazard. Water hazard. Slips, trips, falls; heavy vegetation.
Field Notes:	CONTACT LUMMI POLICE BEFORE DEPLOYMENT. Follow WSDOT work zone traffic control guidelines when working on or near roadway. Lummi Reservation lands south of Slater Rd.
Watercourse:	Ditch - Schell Ditch (May be tidal influence. Variable flow is low in summer, high in winter.)
Resources at Risk:	Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources



Recommended Equipment

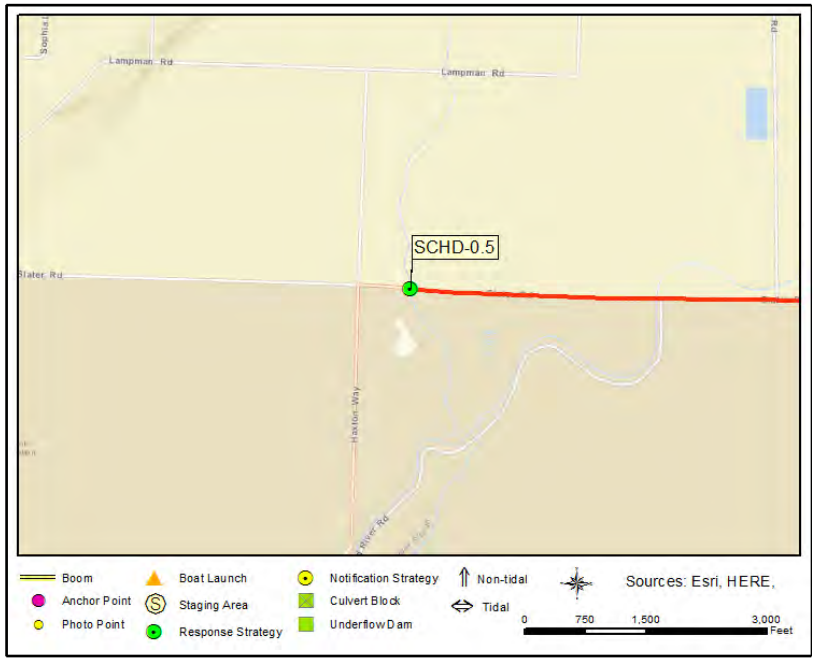
2	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - Sorbent
1	Assort	Fill material (sand, earth, gravel, sandbags)
20	Feet	Plastic Sheeting
2	Each	Plywood sheets (4ft x 8ft)
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Schell Ditch at Slater Rd (KM LU(T)-0.5) SCHD-0.5

SCHD-0.5 Photo: From N side of Slater Rd, looking N at upstream culvert of Schell Ditch. Taken early Jan in average water, near high tide.



Site Contact

Lummi Nation Police Department
Pre-Notification Required : Non-emergency number
360-312-2274

Lummi Nation Oil Spill Response Team
Secondary Contact : Natural Resources Department
360-410-1706

Nearest Address

2808 Slater Rd
Ferndale, WA 98248

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. Turn left on Slater Rd (3.62 miles)
4. Finish at 2808 Slater Rd, 98248, on the right - across from the casino.

Schell Ditch at Lampman Rd (KM LU(T)-0.9) SCHD-0.9

Position - Location:	48° 49.596', -122° 37.424'	48° 49' 35.8", -122° 37' 25.4"	48.82660, -122.62373	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on Schell Ditch.
Implementation:	Deploy multiple lengths of sorbent boom across creek on upstream (north side) and downstream (south side) of Lampman Rd. If time allows, use plywood and plastic to create culvert block or underflow dam on upstream side of culvert, as needed based on stream flow conditions. Use vac-truck or skimmer/storage for collection.
Staging Area:	Onsite: Stage on driveways and yards north of ditch. Additional staging available at Silver Reef Casino.
Site Safety:	Low overhead power lines. Roadway hazard. Farm animals and equipment. Homes nearby. Water hazard. Slips, trips, falls; heavy
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. No shoulder, narrow road with some traffic.
Watercourse:	Ditch - Schell Ditch (May be tidal influence. Variable flow is low in summer, high in winter.)
Resources at Risk:	Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources

Recommended Equipment

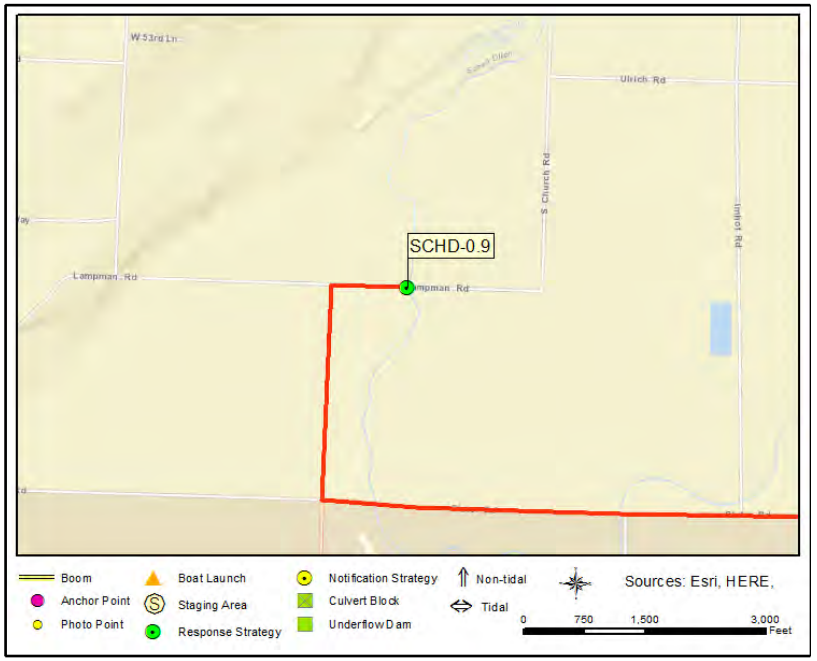
100	Feet	Boom - Sorbent
20	Feet	Plastic Sheeting
2	Each	Plywood sheets (4ft x 8ft)
4	Each	Stake
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Schell Ditch at Lampman Rd (KM LU(T)-0.9) SCHD-0.9

SCHD-0.9 Photo: On N side of Lampman Rd, looking N at Schell Ditch culvert. Taken late Jan in average water at high tide.



Site Contact

No Information
Private Owner :

Nearest Address

2634 Lampman Rd
Ferndale, WA 98248

Driving Directions

1. Head North on I-5 towards Bellingham.
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. At roundabout, take the third exit to proceed on Slater Rd (0.22 miles)
4. At roundabout, take the first exit to proceed on Slater Rd (3.56 miles)
5. Turn right on Haxton Way (0.51 miles)
6. Turn right on Lampman Rd (0.16 miles)
7. Finish at 2634 Lampman Rd, 98248, on the left

South Fork Nooksack at Strand Rd SFNOOR-4.2

Position - Location:	48° 45.605', -122° 13.059'	48° 45' 36.3", -122° 13' 3.5"	48.76008, -122.21765	Deming

Strategy Objective:	Collection : Collect oil moving downstream on the South Fork Nooksack River
Implementation:	Secure 400ft length of boom on river right at/near Point A (48.7598, -122.2172). Using shallow-water workboat, extend boom downstream and across to river left, securing boom at/near Point B. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. In fast water (1mph+) deploy downstream strategy in same manner betwee Point C (48.7604, -122.2173) and Point D. Collection at Points B & D using vac-truck from private property at end of Hillside Rd, or using skimmer/storage from boat or shore.
Staging Area:	Onsite: Stage on sandy beach on river right and paved dead-end of Strand Rd. Logs block vehicle access from road.
Site Safety:	Water Hazard: PFD Required; Rafters and Kayakers; Logs and Hidden Snags; Eroding Banks; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Put-in/take out point for rafters, floaters and kayakers. May have summer crowds. Shallow water. River right has sand/gravel beach and eddies. River left has old pilings and rip-rap.
Watercourse:	River - South Fork Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Marbled Murrelets, Reptiles and Amphibians, Salmon (Coho, Chinook and Chum)

Recommended Equipment

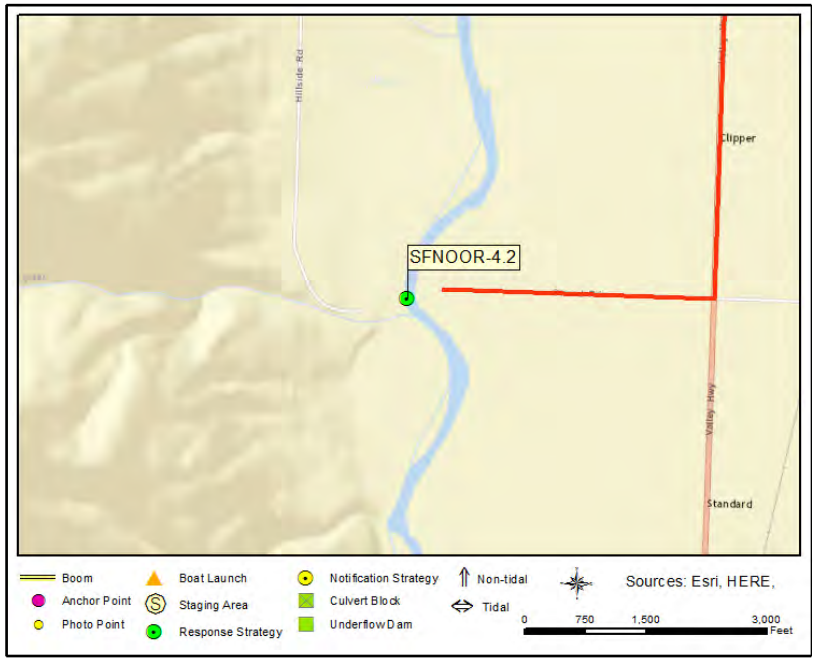
8	Each	Anchoring System(s) - (anchor, lines, floats)
4	Each	Anchoring System(s)- Shoreside
800	Feet	Boom - B3 (River Boom) or equivalent
400	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - (hand-launch)

Recommended Personnel

1	Boat Operator
3	Laborer
1	Supervisor

South Fork Nooksack at Strand Rd SFNOOR-4.2

SFNOOR-4.2 Photo: On SF Nooksack River right, near Strand Rd, looking W at pilings and farm field. Taken at 260cfs/2.2 ft at Saxon gage.



Site Contact

No Information
Private Owner :

Nearest Address

5000 Strand Rd
Deming, WA 98244

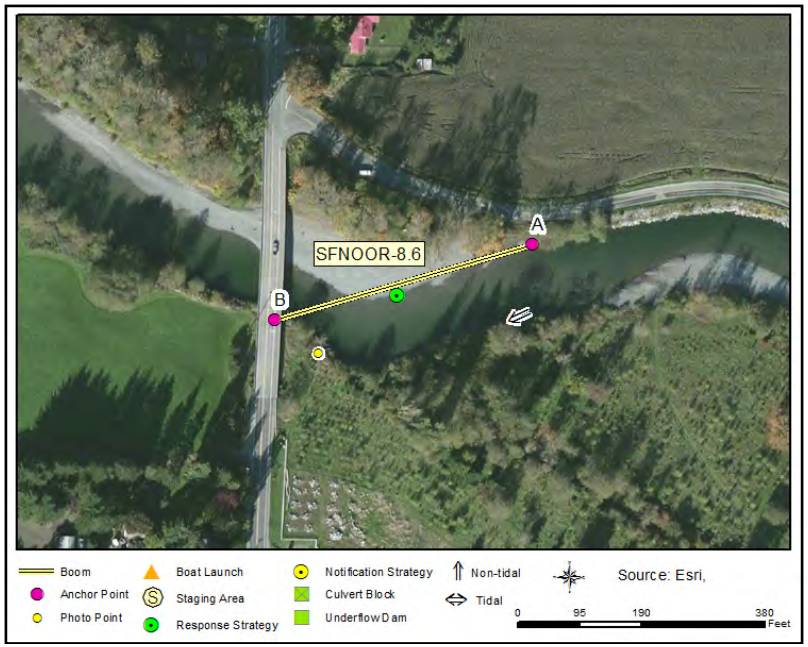
Driving Directions

1. Head north on I-5 towards Bellingham
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (9.91 miles)
4. At roundabout, take the first exit to proceed on WA-9 (WA-542 E) (4.59 miles)
5. Turn right at WA-542 to stay on WA-9 (Valley Hwy) (4.27 miles)
6. Turn right on Strand Rd (0.64 miles)
7. Public river access is at the end of Strand Rd

South Fork Nooksack at Highway 6 Acme — SFNOOR-8.6

Position - Location:	48° 43.195', -122° 12.154'	48° 43' 11.7", -122° 12' 9.3"	48.71991, -122.20257	Deming

Strategy Objective:	Collection : Collect oil moving downstream on the South Fork Nooksack River
Implementation:	Using shallow-water workboat, anchor 500 ft length of boom on river right upstream of sandbar at/near A (48.7202, -122.2017). Extend boom downstream and across to river left, securing boom on beach at/near B, just upstream of bridge. Adjust boom angle as needed for flow conditions, and use anchoring systems as needed to keep boom secure in river. Collection at Point B using vac truck from bridge.
Staging Area:	Onsite: Stage on south shoulder of Mosquito Lake Rd, and sandbar river right. Additional gravel parking south on Hwy 9.
Site Safety:	Water Hazard: PFD Required; Road Hazard; Cougars and Wildlife; Logs and Hidden Snags; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Use bridge to drop equipment/vac hose. River left owned by Whatcom Land Trust with small parking area, narrow ped path with fallen logs to site. Mosquito Lake Rd busy and no shoulder but small pull-off for one car leads to large sandbar.
Watercourse:	River - South Fork Nooksack River (Variable flow is low in late summer, high in spring and winter)
Resources at Risk:	Habitat Restoration Site/Project, Marbled Murrelets, Reptiles and Amphibians, Salmon (Coho, Chinook and Chum)



Recommended Equipment

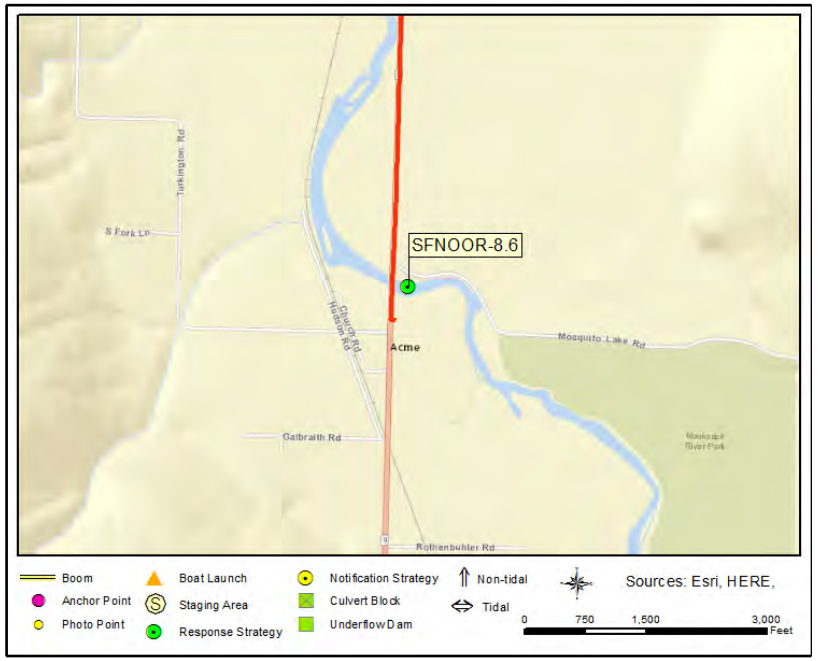
5	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
500	Feet	Boom - B3 (River Boom) or equivalent
500	Each	Line - 1/2" poly line
1	Each	Pump(s)
1	Each	Vac Truck or Skimmer and Storage (if collection)
1	Each	Workboat(s) - (hand-launch)

Recommended Personnel

1	Boat Operator/Supervisor
3	Laborer

South Fork Nooksack at Highway 6 Acme SFNOOR-8.6

SFNOOR-8.6 Photo: From SF Nooksack River left, near Hwy 9 bridge, looking E upstream at Mosquito Lake Rd. Taken 260 cfs/2.2 ft at Saxon gage.



Site Contact

Whatcom Land Trust
Land/Property Owner : Property owner
412 N. Commercial St.
Bellingham, WA 98227
360.650.9470

Nearest Address

2112 Valley Highway
Deming, WA 98244

Driving Directions

1. Head north on I-5 towards Bellingham
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (9.91 miles)
4. At roundabout, take the first exit to proceed on WA-9 (WA-542 E) (4.59 miles)
5. Turn right at WA-542 to stay on WA-9 (Valley Hwy) (7.07 miles)
6. Finish at 2112 Valley Highway,98244, on the left - gravel parking area with white fencing.

Silver Creek at Shady Lane Rd (KM SC-1.8) SILVC-1.8

Position - Location:	48° 48.605', -122° 34.140'	48° 48' 36.3", -122° 34' 8.4"	48.81009, -122.56900	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Silver Creek
Implementation:	Secure 100ft hard boom to creek left, upstream of the Shady Lane bridge, near A. Extend boom downstream and across creek, securing it at bridge on creek right, near B. Secure second 100ft section of hard boom downstream of bridge near D, and extend it downstream and across creek, securing it to bank on creek left at/near C. Keep vac truck south of Shady Lane bridge - not weight-rated. Collect oil using vac-truck or skimmer/storage at Points B or D on creek right.
Staging Area:	Onsite: Stage on roadway or nearby fields or driveways. Lane closure may be needed.
Site Safety:	DO NOT DRIVE VAC TRUCK OVER BRIDGE. Water hazard: PFD required. Roadway hazard. Slips, trips, falls. Heavy vegetation.
Field Notes:	Bridge may not support heavy equipment. Follow WSDOT work zone traffic control guidelines when working on or near roadway. Quiet road, wetland-type area near creek.
Watercourse:	Creek - Silver Creek (May have tidal influence. Variable flow is low in summer, high in winter)
Resources at Risk:	Raptors, Salmon (Coho, Chinook and Chum), Shorebirds, Waterfowl, Wetlands Restoration Site

Recommended Equipment

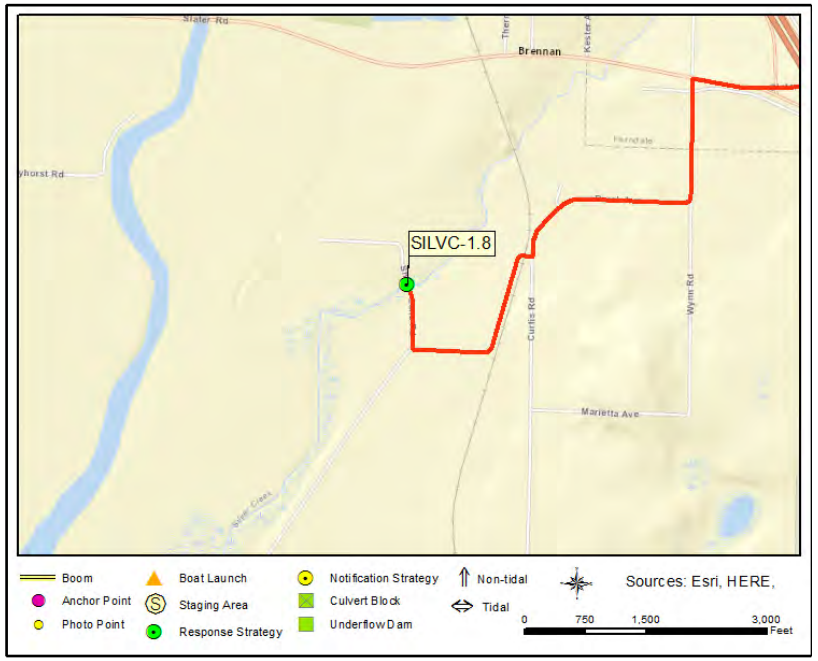
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Silver Creek at Shady Lane Rd (KM SC-1.8) SILVC-1.8

SILVC-1.8 Photo: From Silver Creek right, looking SE from west side of Shady Lane. Avg winter water.



Site Contact

No Information
Private Owner :

Nearest Address

1671 Shady Lane Rd
Bellingham, WA 98226

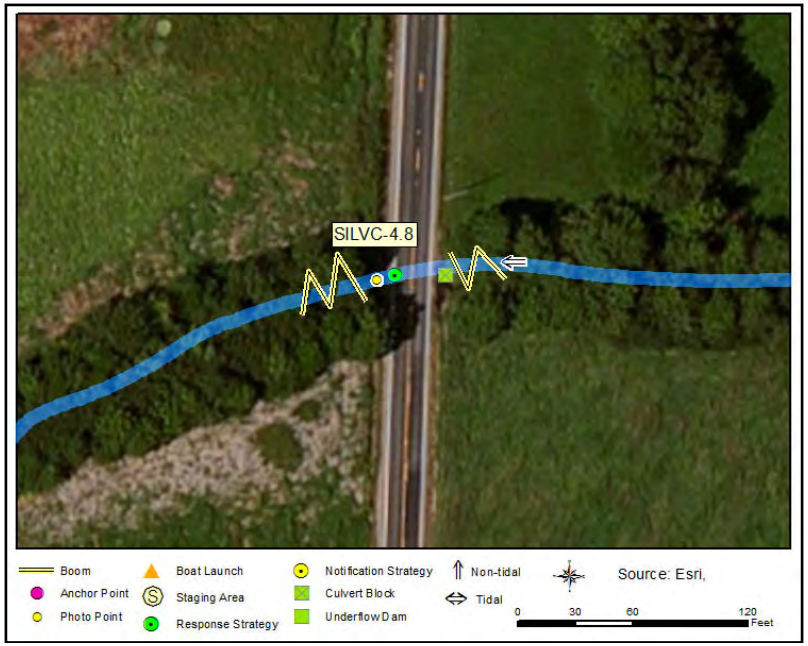
Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. Turn left on Slater Rd (0.39 miles)
4. Turn left on Rural Ave (0.74 miles)
5. Turn right at Curtis Rd to stay on Rural Ave (0.47 miles)
6. Turn right on Shady Lane Rd (Shady Ln) (0.13 miles)
7. Finish at 1671 Shady Lane Rd, 98226, on the left

Silver Creek at Aldrich Rd (KM SC-4.8) SILVC-4.8

Position - Location:	48° 49.265', -122° 31.139'	48° 49' 15.9", -122° 31' 8.4"	48.82109, -122.51899	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Silver Creek
Implementation:	Deploy multiple lengths of sorbent boom across creek on upstream (east side) and downstream (west side) of Aldrich Rd. If time allows, use plywood and plastic to create culvert block or underflow dam on downstream side of culvert, as needed based on stream flow conditions. Use vac-truck or skimmer/storage for collection.
Staging Area:	Onsite: Stage on roadway. Lane closure required. Nearby fields or driveways may be used for additional staging.
Site Safety:	Roadway Hazard; Water Hazard; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. 3 ft concrete culverts, grassy vegetation at roadside. New wetland restoration project immediately SW of site.
Watercourse:	Creek - Silver Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Salmon (Coho, Chinook and Chum), Shorebird Concentrations, Wetlands Restoration Site



Recommended Equipment

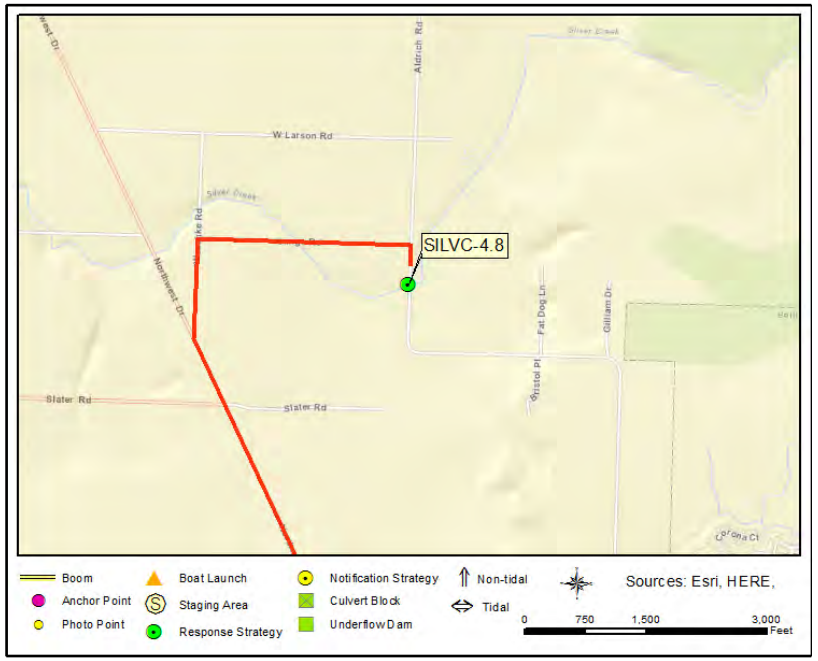
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - Sorbent
1	Assort	Fill material (sand, earth, gravel, sandbags)
20	Feet	Plastic Sheeting
2	Each	Plywood sheets (4ft x 8ft)
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Silver Creek at Aldrich Rd (KM SC-4.8) SILVC-4.8

SILVC-4.8 Photo: Downstream Silver Creek culvert under Aldrich Rd, but similar to upstream culvert. Taken avg winter water.



Site Contact

No Information
Private Owner :

Nearest Address

4988 Aldrich Rd
Bellingham, WA 98226

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 257 take ramp on the right to Northwest Ave (0.22 miles)
3. Bear right on Northwest Dr (0.06 miles)
4. At roundabout, take the first exit to proceed on Northwest Dr (2.63 miles)
5. Bear right on Waschke Rd (0.23 miles)
6. Turn right on Lange Rd (0.5 miles)
7. Turn right on Aldrich Rd (0.05 miles)
8. Finish at 4988 Aldrich Rd, 98226, on the left

Tenmile Creek at Barrett Rd (KM TC-0.2) TNMIC-0.2

Position - Location:	48° 51.213', -122° 34.419'	48° 51' 12.8", -122° 34' 25.1"	48.85355, -122.57365	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on Tenmile Creek
Implementation:	Secure 100ft hard boom to creek left, upstream of the Barret Rd bridge, near A. Extend boom downstream and across creek, securing it at bridge on creek right, near B. Secure second 100ft section of hard boom downstream of bridge near C, and extend it downstream and across creek, securing it to bank on creek right at/near D. Back boom with sorbent. Collect oil using vac-truck or skimmer/storage at Points B or D on creek right.
Staging Area:	Onsite: Stage on roadway or nearby fields or driveways. Lane closure may be needed.
Site Safety:	Roadway Hazard; Overhead Power Lines; Water Hazard; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Small pull-off areas at shoulder. Barrett Road popular for large trucks. Restoration plantings at site.
Watercourse:	Creek - Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Endangered Plant Species, Public Recreation Site/Area, Salmon, Sensitive Resources Nearby, Shorebirds, Waterfowl, Wetlands

Recommended Equipment

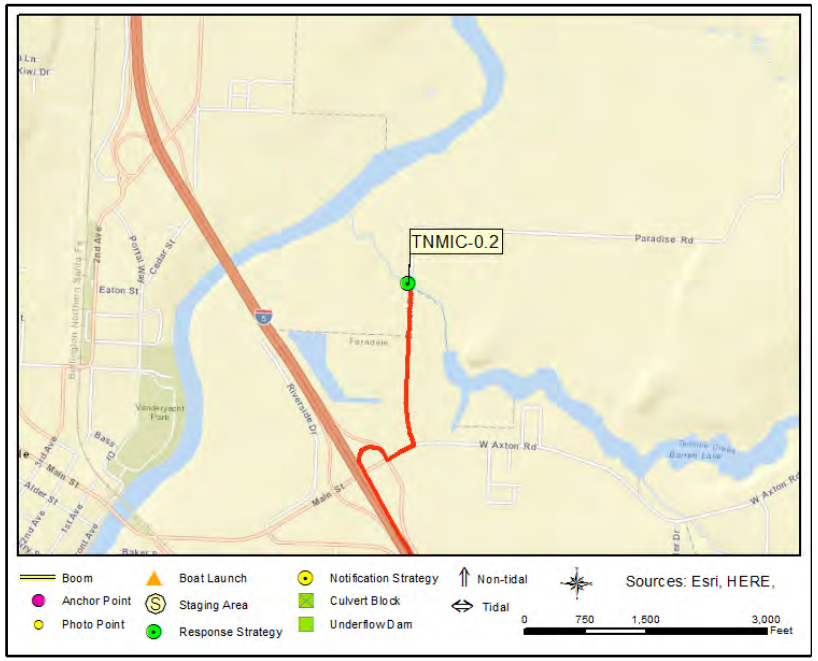
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
200	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Tenmile Creek at Barrett Rd (KM TC-0.2) TNMIC-0.2

TNMIC-0.2 Photo: From Tenmile Creek right, upstream of Barrett bridge. Facing SW, taken average winter water.



Site Contact

No Information
Private Owner :

Nearest Address

5852 Barrett Rd
Ferndale, WA 98248

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn left on Main St (W Axton Rd) (0.07 miles)
4. Turn left on Barrett Rd (0.38 miles)
5. Finish at 5852 Barrett Rd, 98248, on the right

Tenmile Creek at W Laurel Rd (KM TC-2.7) TNMIC-2.7

Position - Location:	48° 51.313', -122° 32.062'	48° 51' 18.8", -122° 32' 3.7"	48.85521, -122.53437	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on Tenmile Creek
Implementation:	Secure 100ft hard boom to creek left, upstream of the W Laurel Rd bridge, near A. Extend boom downstream and across creek, securing it at bridge on creek right, near B. Secure second 100ft section of hard boom downstream of bridge near C, and extend it downstream and across creek, securing it to bank on creek right at/near D. Back boom with sorbent. Collect oil using vac-truck or skimmer/storage at Points B or D on creek right.
Staging Area:	Onsite: Stage on roadway. Lane closure required. Nearby fields or driveways may be used for additional staging.
Site Safety:	Natural Gas Pipeline; Roadway Hazard; Water Hazard; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Natural gas pipeline on bridge. Follow WSDOT work zone traffic control guidelines when working on or near roadway. No shoulder on road.
Watercourse:	Creek - Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Endangered Plant Species, Raptors, Salmon (Coho, Chinook and Chum), Waterfowl, Wetland Habitat

Recommended Equipment

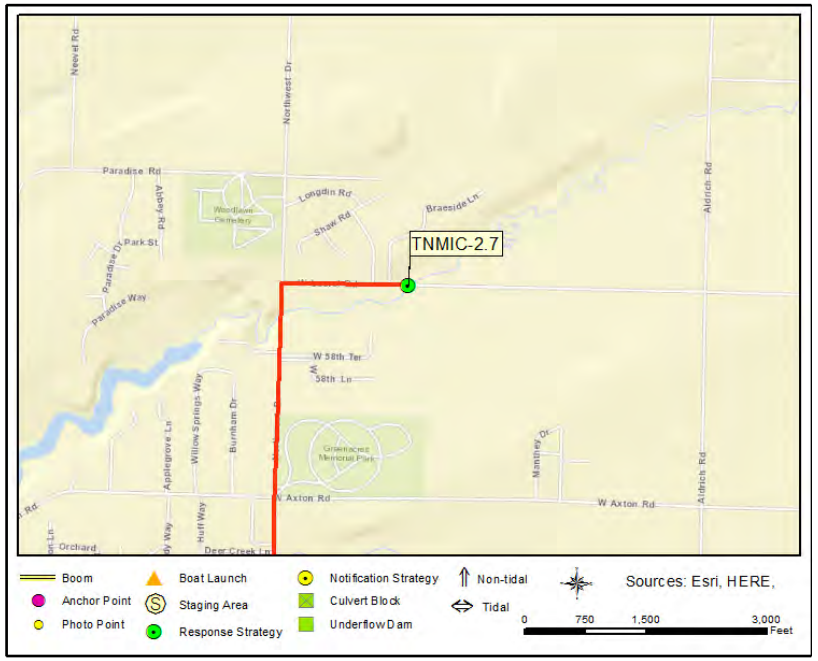
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
200	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Tenmile Creek at W Laurel Rd (KM TC-2.7) TNMIC-2.7

TNMIC-2.7 Photo: On Tenmile Creek right, upstream side of W Laurel. Looking due E at maintained lawn. Taken average winter water.



Site Contact

No Information
Private Owner :

Nearest Address

971 W Laurel Rd
Ferndale, WA 98248

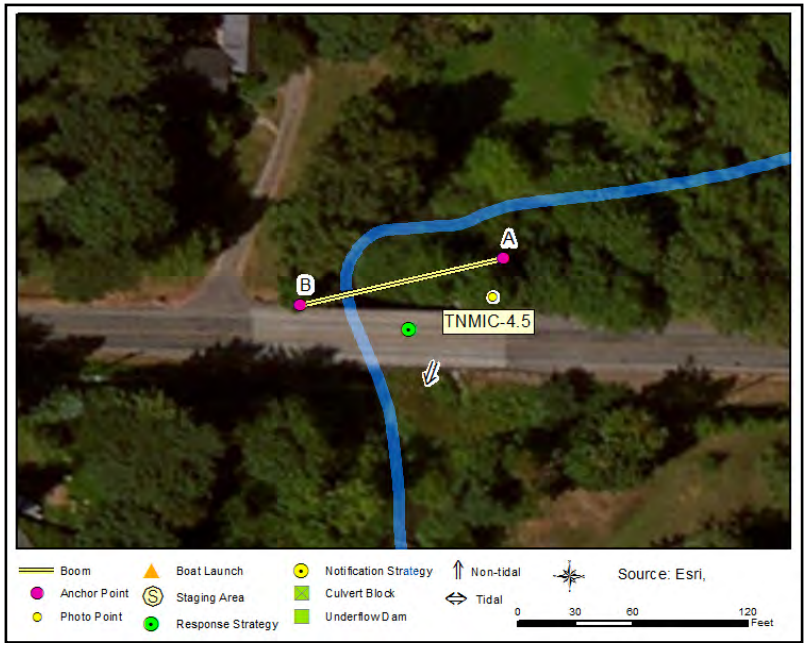
Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 257 take ramp on the right to Northwest Ave (0.22 miles)
3. Bear right on Northwest Dr (0.06 miles)
4. At roundabout, take the first exit to proceed on Northwest Dr (5.24 miles)
5. Turn right on W Laurel Rd (0.3 miles)
6. Finish at 971 W Laurel Rd, 98248, on the right

Tenmile Creek at W Hemmi Rd (KM TC-4.5) TNMIC-4.5

Position - Location:	48° 51.747', -122° 30.847'	48° 51' 44.8", -122° 30' 50.8"	48.86245, -122.51412	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Tenmile Creek
Implementation:	Secure 100ft hard boom to creek left, upstream of the W Hemmi Rd bridge, near A. Extend boom downstream and across creek, securing it at bridge on creek right, near B. Back boom with sorbent. Collect oil using vac-truck or skimmer/storage at Point B on creek right.
Staging Area:	Onsite: Stage on driveway. Roadway or nearby fields may be used for additional staging. Lane closure may be needed.
Site Safety:	Roadway Hazard; Water Hazard; Slips, Trips, Falls; Heavy Vegetation; Homes Nearby
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Upstream side has veg cleared next to bridge and wide bank in low water; driveway to west is paved. Downstream is thicket.
Watercourse:	Creek - Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Emergent Wetlands, Salmon (Coho, Chinook and Chum), Waterfowl



Recommended Equipment

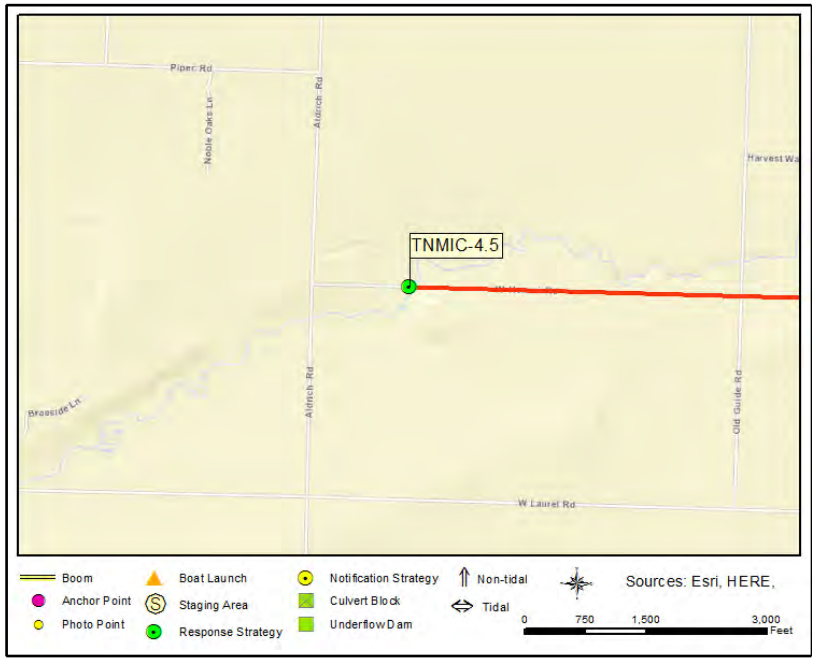
2	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - B3 (River Boom) or equivalent
100	Feet	Boom - Sorbent
100	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Tenmile Creek at W Hemmi Rd (KM TC-4.5) TNMIC-4.5

TNMIC-4.5 Photo: Upstream side of W Hemmi Rd, looking W. Taken early Jan in avg/low water.



Site Contact

No Information
Private Owner :

Nearest Address

608 W Hemmi Rd
Bellingham, WA 98226

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.45 miles)
5. Turn left on W Hemmi Rd (1.28 miles)
6. Finish at 608 W Hemmi Rd, 98226, on the right

Tenmile Creek at Old Guide Rd (KM TC-6.0) TNMIC-6.0

Position - Location:	48° 51.821', -122° 29.823'	48° 51' 49.3", -122° 29' 49.4"	48.86369, -122.49705	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on Tenmile Creek
Implementation:	Secure 100ft hard boom to creek left, upstream of the Old Guide Rd bridge, near A. Extend boom downstream and across creek, securing it at bridge on creek right, near B. Using hand-launch boat, extend boom across side channel/ditch on creek right and anchor near C. Secure second 100ft section of hard boom downstream of bridge near D, and extend it downstream and across creek, securing it to bank on creek right at/near E. Back boom with sorbent. Collect oil using vac-truck or skimmer/storage at Points B or E on creek right.
Staging Area:	Onsite: Stage on roadway. Lane closure required. Additional staging available at Slavic Gospel Church parking, 0.3 mi north
Site Safety:	Natural Gas Pipeline; Wire Livestock Fencing; Roadway Hazard; Water Hazard; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Natural gas pipeline on bridge. Livestock fencing in area, may need to cut to access banks. No road shoulder. Slow and wide stream in winter that floods wetland area upstream.
Watercourse:	Creek - Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Emergent Wetlands, Riparian Habitat, Salmon (Coho, Chinook and Chum), Waterfowl

Recommended Equipment

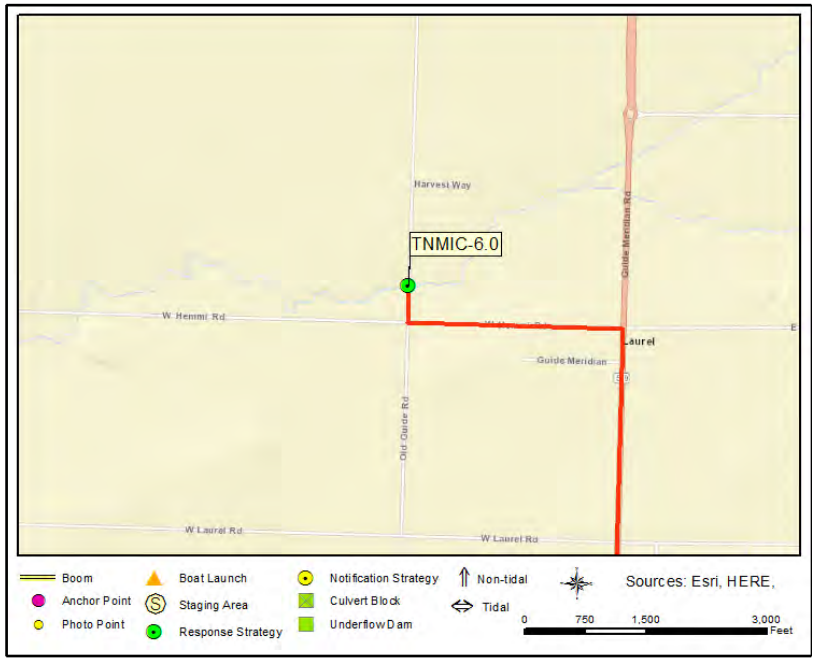
5	Each	Anchoring System(s)- Shoreside
1	Each	Bolt Cutters
200	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
200	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage
1	Each	Workboat(s) - (hand-launch)

Recommended Personnel

2	Laborer
1	Supervisor

Tenmile Creek at Old Guide Rd (KM TC-6.0) TNMIC-6.0

TNMIC-6.0 Photo: From Tenmile Creek left bank,upstream of Old Guide Rd, looking N at side channel. Winter avg water.



Site Contact

No Information
Private Owner :

Nearest Address

6131 Old Guide Rd
Bellingham, WA 98226

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.45 miles)
5. Turn left on W Hemmi Rd (0.51 miles)
6. Turn right on Old Guide Rd (0.09 miles)
7. Finish at 6131 Old Guide Rd, 98226, on the left

Tenmile Creek at Chasteen Rd (KM TC-7.5) TNMIC-8.2

Position - Location:	48° 52.217', -122° 27.878'	48° 52' 13.0", -122° 27' 52.7"	48.87029, -122.46463	Lynden

Strategy Objective:	Collection : Collect oil moving downstream on Tenmile Creek
Implementation:	Secure 100ft hard boom to creek right, downstream of the Chasteen Rd bridge, near A. Extend boom downstream below forked section and across creek, securing it on creek left, near B. Deploy multiple lengths of sorbent upstream of bridge. Collect oil using vac-truck or skimmer/storage at Point B on creek right.
Staging Area:	Onsite: Stage on roadway or nearby fields or driveways. Lane closure may be needed.
Site Safety:	Roadway Hazard; Water Hazard; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. Narrow to no shoulder on road but small pull-off into field just north of collection site.
Watercourse:	Creek - Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Riparian Habitat, Salmon (Coho, Chinook and Chum), Waterfowl, Wetlands

Recommended Equipment

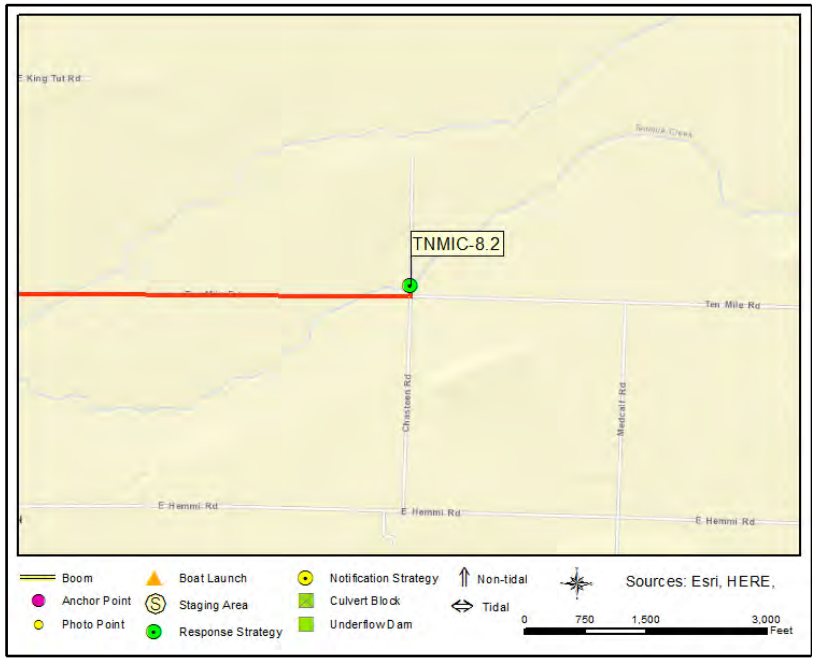
4	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - B3 (River Boom) or equivalent
200	Feet	Boom - Sorbent
2	Each	Plywood sheets (4ft x 8ft)
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Tenmile Creek at Chasteen Rd (KM TC-7.5) TNMIC-8.2

TNMIC-8.2 Photo: From Tenmile Creek right, looking SW at upstream anchor and collection point (pond just past juncture). Taken in late spring at high water.



Site Contact

No Information
Private Owner :

Nearest Address

6407 Chasteen Rd
Lynden, WA 98264

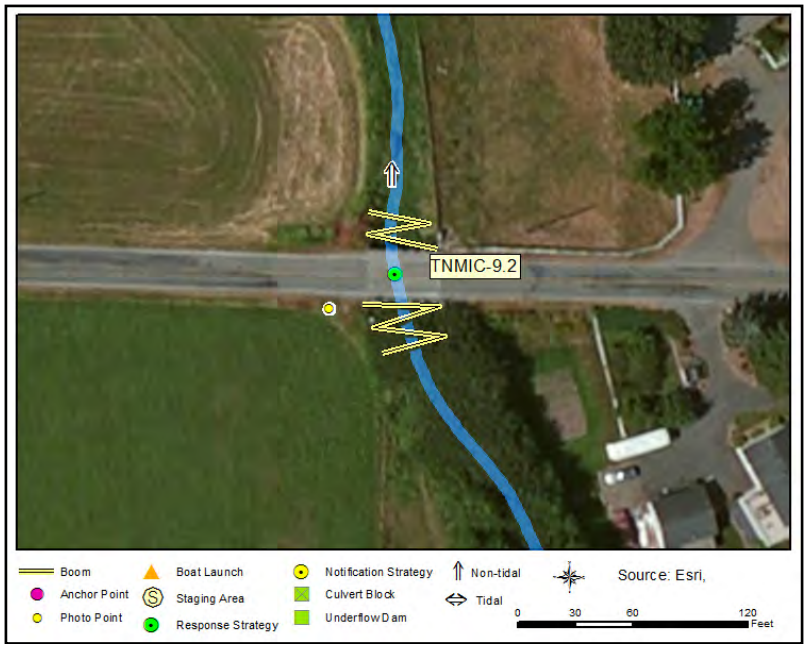
Driving Directions

1. Head North on I-5 towards Bellingham.
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.9 miles)
5. Bear right (0.05 miles)
6. At roundabout, take the first exit to proceed on Ten Mile Rd (0.97 miles)
7. Turn left on Chasteen Rd (0.03 miles)
8. Finish at 6407 Chasteen Rd, 98264, on the left

Tenmile Creek at Ten Mile and McClue (KM TC-9.2) TNMIC-9.2

Position - Location:	48° 52.191', -122° 26.224'	48° 52' 11.5", -122° 26' 13.4"	48.86985, -122.43706	Everson

Strategy Objective:	Collection : Collect oil moving downstream on Tenmile Creek
Implementation:	Deploy multiple lengths of sorbent or sweep across the upstream and downstream sides of the Ten Mile Rd bridge across Tenmile Creek Use stakes, anchor posts or trees to secure ends of sorbent boom to banks of tributary. Replace saturated sorbents as needed.
Staging Area:	Onsite: Stage on roadway or nearby fields or driveways. Lane closure may be needed.
Site Safety:	Roadway Hazard; Farm Animals and Equipment; Homes Nearby; Water Hazard. Slips, Trips, Falls; Heavy Vegetation.
Field Notes:	Follow WSDOT work zone traffic control guidelines when working on or near roadway. East side of creek is very close to homes with farm animals & equipment. Downside of bridge has more open space, less vegetation.
Watercourse:	Creek - Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Downstream Resources, Riparian Habitat, Salmon (Coho, Chinook and Chum), Steelhead



Recommended Equipment

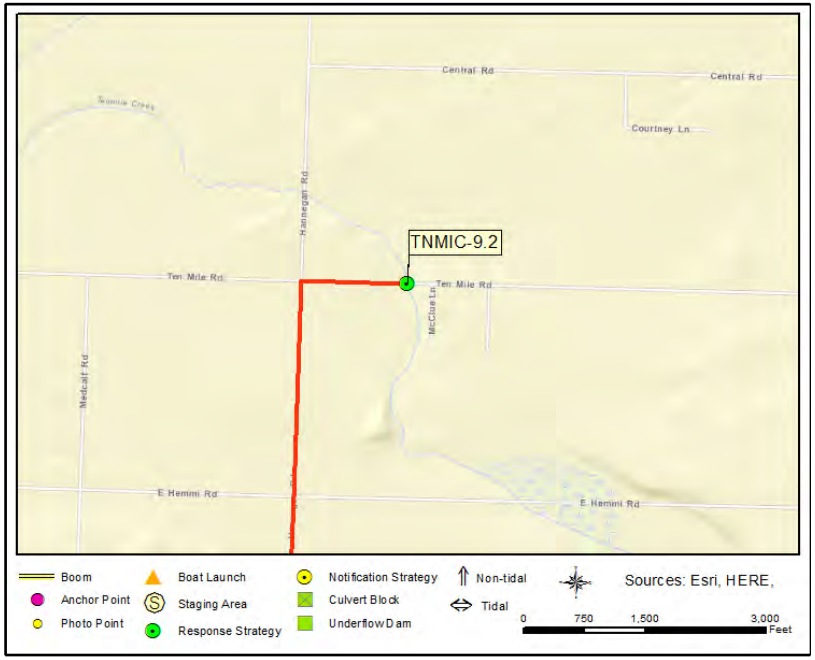
4	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - Sorbent

Recommended Personnel

2	Laborer
1	Supervisor

Tenmile Creek at Ten Mile and McClue (KM TC-9.2) TNMIC-9.2

TNMIC-9.2 Photo: Upstream bridge over Tenmile Creek, looking E. Taken early Jan in average water.



Site Contact

No Information
Private Owner :

Nearest Address

1015 Ten Mile Rd
Everson, WA 98247-9783

Driving Directions

1. Head north on I-5 toward Bellingham
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on E Sunset Dr (WA-542) (0.87 miles)
4. Turn left on Hannegan Rd (6.53 miles)
5. Turn right on Ten Mile Rd (0.28 miles)
6. Finish at 1015 Ten Mile Rd, 98247-9783, on the right

Shuksan Golf Course Tenmile Creek Tributary — TNMICU-11.6

Position - Location:	48° 51.204', -122° 24.014'	48° 51' 12.2", -122° 24' .8"	48.85340, -122.40023	Bellingham

Strategy Objective:	Collection : Collect oil moving downstream on unnamed tributary of Tenmile Creek
Implementation:	Secure 100ft hard boom to creek right, upstream of the log waterfalls, east of the golf cart bridge, near A. Extend boom downstream and across creek, securing it on creek left, near B. Collect oil using vac-truck or skimmer/storage at Point B on creek left. Keep vac truck or heavy equipment off golf cart bridge.
Staging Area:	Onsite: Stage onsite on rough and cart path. Additional staging available at Shuksan clubhouse, 1500 E Axton Rd.
Site Safety:	Bridge Not Weight Rated for Heavy Equipment; Active Golf Course; Water Hazard; Slips, Trips, Falls
Field Notes:	Best access to site is from gates on Noon Rd or High Noon Rd and drive across rough/golf cart paths. Site is on large pond by 13th Hole that drains into creek flowing through golf course. Transmountain Pipeline ROW goes under golf course nearby.
Watercourse:	Creek - Unnamed Tributary of Tenmile Creek (Variable flow is low in summer, high in winter)
Resources at Risk:	Riparian Habitat, Salmon (Coho, Chinook and Chum), Wetlands

Recommended Equipment

2	Each	Anchoring System(s)- Shoreside
1	Each	Bolt Cutters
100	Feet	Boom - B2 (Contractor Boom) or equivalent
100	Feet	Boom - Sorbent
100	Feet	Line - 1/2" poly line
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

2	Laborer
1	Supervisor

Shuksan Golf Course Tenmile Creek Tributary TNMICU-11.6

TNMICU-11.6 Photo: From golf cart bridge just downstream of collection site, looking east at log waterfalls. Taken late spring at average water.

Site Contact

Shuksan Golf Course
Pre-Notification Required : Land owner
360-398-8888

Kinder Morgan Trans Mountain Pipeline
Alternate Contact : Maintains resident contact info
888-876-6711

Nearest Address

5849 Noon Rd
Bellingham, WA 98226

Driving Directions

Driving directions to strategy site:
1. Head North on I-5 towards Bellingham.
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (3.74 miles)
4. Turn left on Noon Rd (3.67 miles)
5. Enter through golf cart fence (cut lock if needed) and drive through rough along south side of pond to collection site at golf cart trail bridge.

DRIVING DIRECTIONS TO ADDITIONAL STAGING AT GOLF CLUBHOUSE:
To access main golf course entrance, 1500 E Axton Rd:
1. From WA-542/E Sunset Dr, turn west on E Smith Rd. 2. Make the next right onto Starry Rd.
3. Where Starry Rd makes a sharp left turn and changes names to Axton Road, proceed straight into golf course parking lot.
4. Collection site is next to green at 13th Hole (between 14 & 15).

Tennant Creek at Fragrance Garden (KM TL-0.1) TNTC-0.1

Position - Location:	48° 49.837', -122° 35.091'	48° 49' 50.2", -122° 35' 5.5"	48.83061, -122.58485	Ferndale

Strategy Objective:	Collection : Collect oil moving downstream on Tennant Creek
Implementation:	Deploy multiple lengths of sorbent boom across Tennant Creek, upstream of unnamed WDFW road. Use stakes, anchor posts or trees to secure ends of sorbent boom to banks of tributary. Anchor 100 ft segment of hard boom on creek left, downstream of road, near A. Extend boom downstream and across creek, securing it to creek right, near B. Collect oil using vac truck or skimmer/storage at Point B. Replace saturated sorbents as needed.
Staging Area:	Onsite: Stage on roadway. Additional staging available at paved parking area at interpretive center.
Site Safety:	Hunting Nearby; Public Park; Water Hazard; Slips, Trips, Falls; Heavy Vegetation
Field Notes:	High water may flood road. Gravel hand-launch just south of site. Just upstream of critical habitat: Tennant Lake is shallow with dense vegetation.
Watercourse:	Creek - Tennant Creek - feeds Tennant Lake. May flow over road in high water.
Resources at Risk:	Critical Wetland Area, Public Recreation Site/Area, Salmon - Coho, Waterfowl Concentrations, Wildlife Refuge

Recommended Equipment

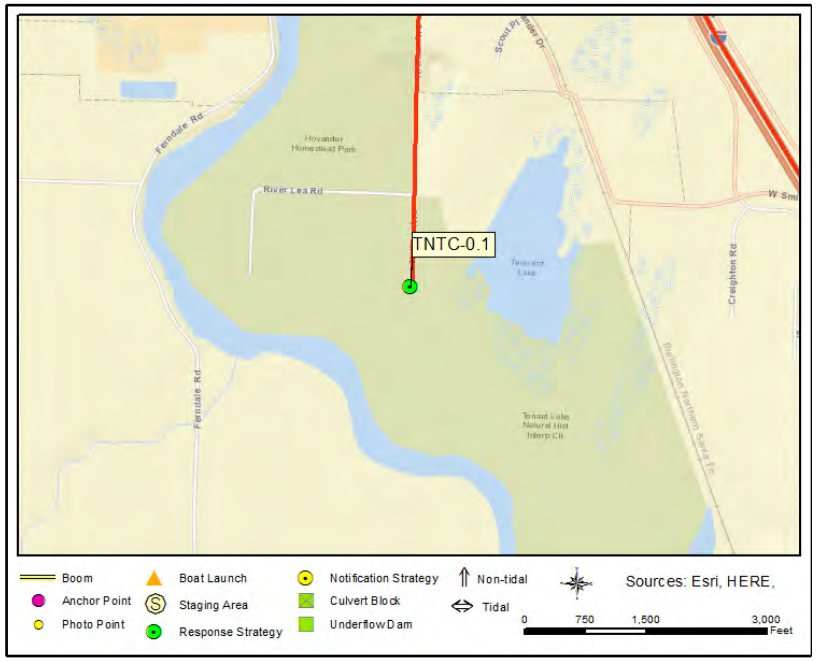
4	Each	Anchoring System(s)- Shoreside
100	Feet	Boom - B3 (Contractor Boom) or equivalent
300	Feet	Boom - Sorbent
1	Each	Vac Truck or Skimmer and Storage

Recommended Personnel

3	Laborer
1	Supervisor

Tennant Creek at Fragrance Garden (KM TL-0.1) TNTC-0.1

TNTC-0.1 Photo: From gravel road S of parking area, looking E at Tennant Creek and wetlands. Average winter water.



Site Contact

Washington Department of Fish and Wildlife
Land/Property Contact : Region 4
425-775-1311

Whatcom County Parks and Recreation
Alternate Contact : Land owner
360.778.5850

Nearest Address

5209 Neilsen Ave
Ferndale, WA 98248

Driving Directions

1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.11 miles)
5. Turn right on Nielsen Ave - sign for Hovander Homestead Park (0.85 miles)
6. Continue past Interpretive Center parking lot at 5209 Neilsen Ave, 98248, to gravel road and culvert.

APPENDIX 4B

Notification Strategy 2-Pagers

NOTIFICATION STRATEGIES – LIST

NFNOOR-45.5-N NOOR-5.4-N NOOR-9.2-N NOOR-17.9-N SFNOOR-14.1-N

WDFW Kendall Creek Hatchery NFNOOR-45.5-N

Position - Location:	48° 49.050', -122° 11.041'	48° 49' 3.0", -122° 11' 2.4"	48.81750, -122.18401	Deming

Strategy Objective: Notification : Notify WDFW hatchery so they can protect their fish

Implementation: Call Kendall Creek Hatchery at (360) 599-2841 and inform them of the spill. Advise they take action to protect the resources under their control, which may include delaying or relocating any planned fish releases so as to avoid the Nooksack or its tributaries until water quality is appropriate.

Field Notes: Located on Kendall Creek, a tributary of the North Fork Nooksack River, 45 miles NE of main fork.

Watercourse: Creek - Kendall Creek - tributary of North Fork

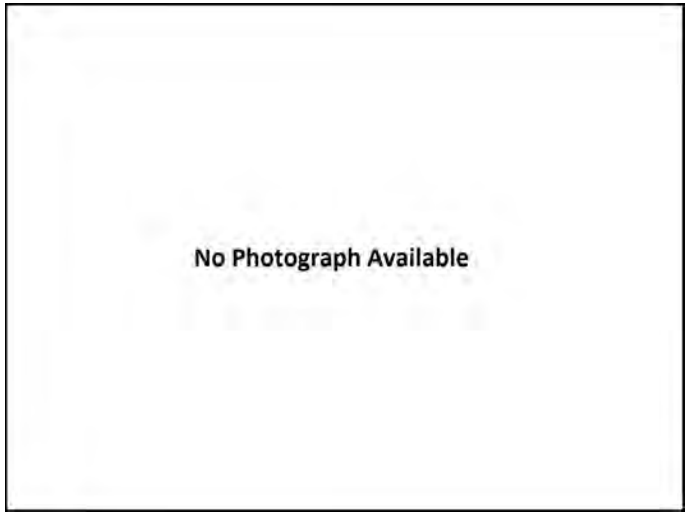
Resources at Risk: Fish Hatchery

Communication Process and Action:

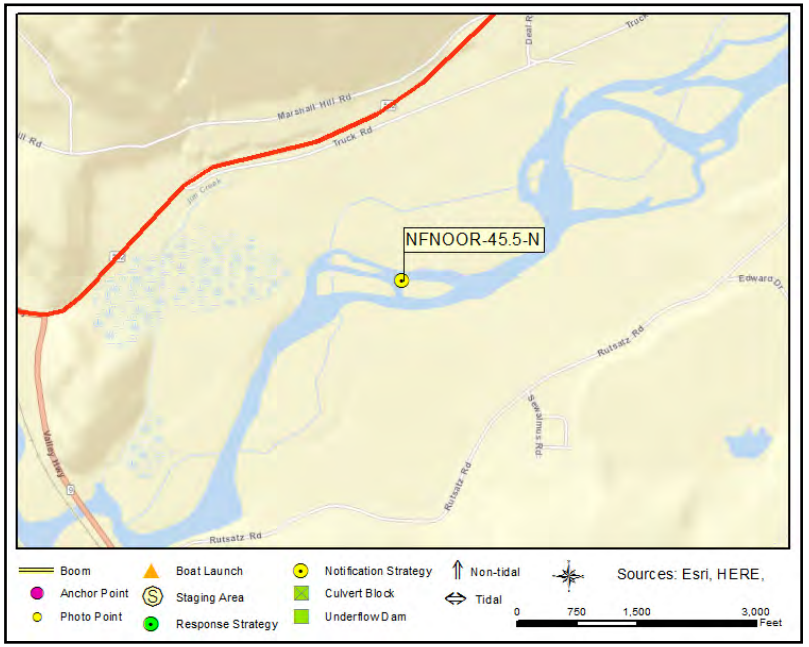
Call Kendall Creek Hatchery at (360) 599-2841 and inform them of the spill. Advise they take protective action, which may include delaying any planned fish releases to the Nooksack or its tributaries, relocating the release to a different watershed, or other similar action.

If no answer at the hatchery, call the following numbers and inform them of the need to notify Kendall Creek Hatchery.
WDFW Oil Spill Response Team: (360) 534-8233
WDFW Region 4 HQ: (425) 775-1311

WDFW Kendall Creek Hatchery NFNOOR-45.5-N



NFNOOR-45.5-N Photo: No photo available.



Site Contact

WDFW Kendall Creek Hatchery
Primary Contact : Hatchery phone
360-534-8233

Washington Department of Fish and Wildlife
Alternate Contact : Region 4
425-775-1311

Nearest Address

6263 Mt Baker Hwy
Deming, WA 98244

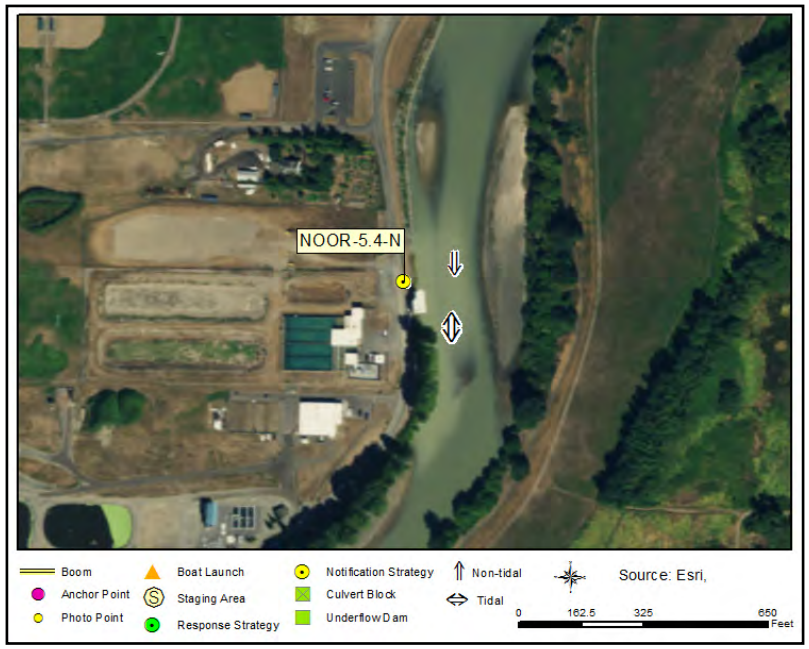
Driving Directions

1. Head N on I-5 towards Bellingham.
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (9.93 miles)
4. At roundabout, take the first exit to proceed on WA-542 E (WA-9 S) (7.41 miles)
5. At fork keep left on WA-542 E (Mount Baker Highway Route 542) (3.93 miles)
6. Take the hairpin turn right at signs for WDFW hatchery, then take the first left.

Whatcom PUD #1 Downstream Intake (KM NO-5.4) NOOR-5.4-N

Position - Location:	48° 50.343', -122° 35.538'	48° 50' 20.6", -122° 35' 32.3"	48.83905, -122.59230	Ferndale

Strategy Objective:	Notification : Notify Whatcom PUD #1 so they can protect their water intakes
Implementation:	Call Whatcom PUD #1 and advise them of the spill, and that they take protective action, which may include shutting down their water intakes.
Field Notes:	Intake provides 50 cfs of industrial grade water to Cherry Point refinery and irrigation customers.
Watercourse:	River - Nooksack River
Resources at Risk:	Water Intakes



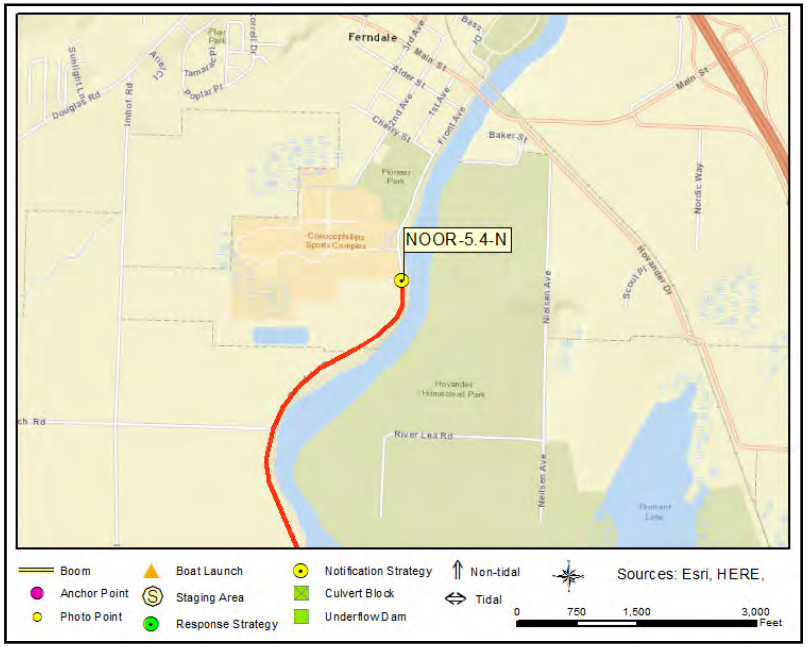
Communication Process and Action:

Call Whatcom PUD #1 and advise them of the spill, and that they take protective action, which may include shutting down their water intakes.

Steps to reach the PUD:
1. Call 360-384-4288
2. After the prompts, press 5 to call the Water Plants or maintenance building.
3. If there is no answer, press 1 to call the emergency line and reach the operator on call. (There may be a long silent pause.)
4. If nobody answers and it goes to voicemail, leave a callback number and a detailed message, and specify that the Plant is involved.
5. Wait for callback.

Whatcom PUD #1 Downstream Intake (KM NO-5.4) NOOR-5.4-N

NOOR-5.4-N Photo: View of water intake, from upstream side, looking south on Nooksack River right.



Site Contact

Whatcom County PUD #1
Emergency Contact : Water intake operator

Ferndale, WA 98248
360-384-4288

Nearest Address

5431 Ferndale Rd
Ferndale, WA 98248

Driving Directions

1. Head N on I-5 towards Bellingham.
2. At exit 260 take ramp on the right to Slater Rd toward Lummi Is. (0.25 miles)
3. At roundabout, take the third exit to proceed on Slater Rd (0.22 miles)
4. At roundabout, take the first exit to proceed on Slater Rd (2.08 miles)
5. Turn right on Ferndale Rd (1.55 miles)
6. Finish at 5431 Ferndale Rd, 98248, on the left

Whatcom PUD #1 Upstream Water Intake (KM NO-8.8) NOOR-9.2-N

Position - Location:	48° 52.787', -122° 33.885'	48° 52' 47.2", -122° 33' 53.1"	48.87978, -122.56475	Ferndale

Strategy Objective: Notification : Notify Whatcom PUD #1 so they can protect their water intakes

Implementation: Call Whatcom PUD #1 and inform them of the spill, so they take action to protect the resources under their control, which may include closing their water intakes.

Field Notes: Intake supplies 28 cfs of industrial-grade water to Cherry Point refinery and irrigation customers.

Watercourse: River - Nooksack River

Resources at Risk: Water Intakes

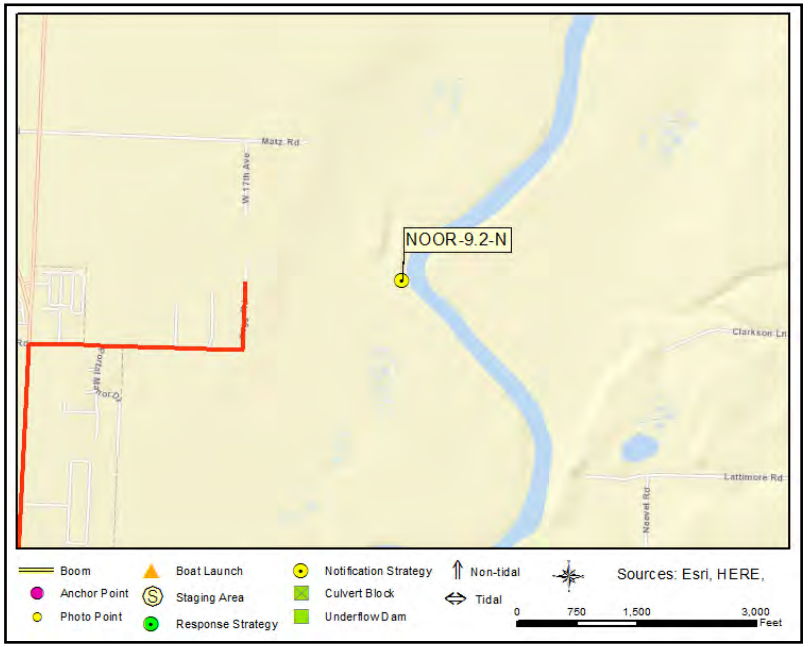
Communication Process and Action:

Call Whatcom PUD #1 and advise them of the spill, and that they take protective action, which may include shutting down their water intakes.

Steps to reach the PUD:
1. Call 360-384-4288
2. After the prompts, press 5 to call the Water Plants or maintenance building.
3. If there is no answer, press 1 to call the emergency line and reach the operator on call. (There may be a long silent pause.)
4. If nobody answers and it goes to voicemail, leave a callback number and a detailed message, and specify that the Plant is involved.
5. Wait for callback.

Whatcom PUD #1 Upstream Water Intake (KM NO-8.8) NOOR-9.2-N

NOOR-9.2-N Photo: Downstream side of water intake on Nooksack River right, looking NE at river.



Site Contact

Whatcom County PUD #1
Emergency Contact : Water intake operator

Ferndale, WA 98248
360-384-4288

Nearest Address

1703 Trigg Rd
Ferndale, WA 98248

Driving Directions

1. Head North on I-5 N towards Bellingham.
2. At exit 263 take ramp on the right to Portal Way (0.24 miles)
3. Turn right on Portal Way (1.33 miles)
4. Turn right on Trigg Rd (0.67 miles)
5. Finish at 1703 Trigg Rd, 98248, on the right

City of Lynden Water Intake (KM NO-17.9) NOOR-17.9-N

Position - Location:	48° 56.196', -122° 26.497'	48° 56' 11.8", -122° 26' 29.8"	48.93660, -122.44161	Lynden

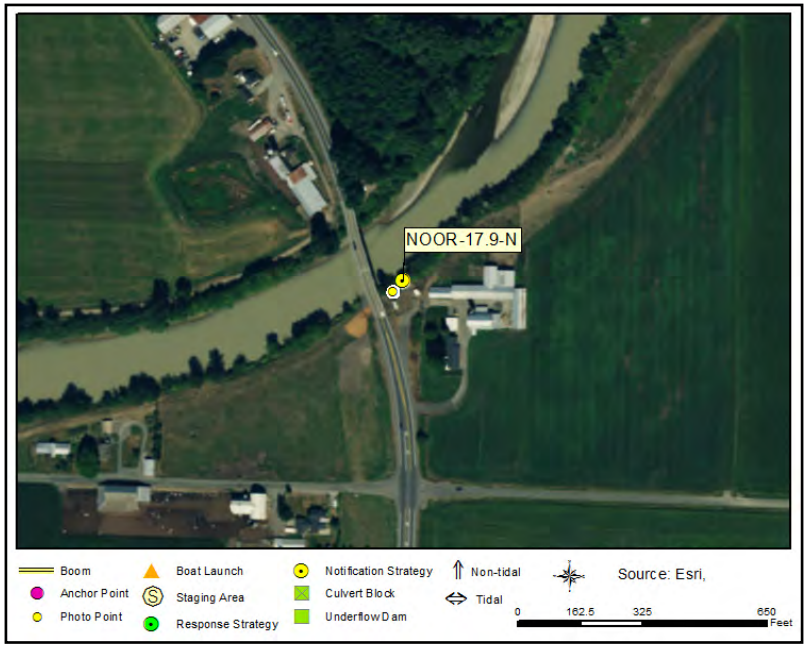
Strategy Objective: Notification : Notify City of Lynden so they can protect their water intakes

Implementation: Call City of Lynden Public Works at 360-354-0633 and advise of spill, and that they take protective action, which may include shutting down their water intakes.

Field Notes: Intake is just upstream of Hannegan Rd.

Watercourse: River - Nooksack River

Resources at Risk: Water Intakes



Communication Process and Action:

Notify City of Lynden of the spill, so they take action to protect the resources under their control, which may include closing their water intakes. Try the following numbers until someone at the City has been properly notified:

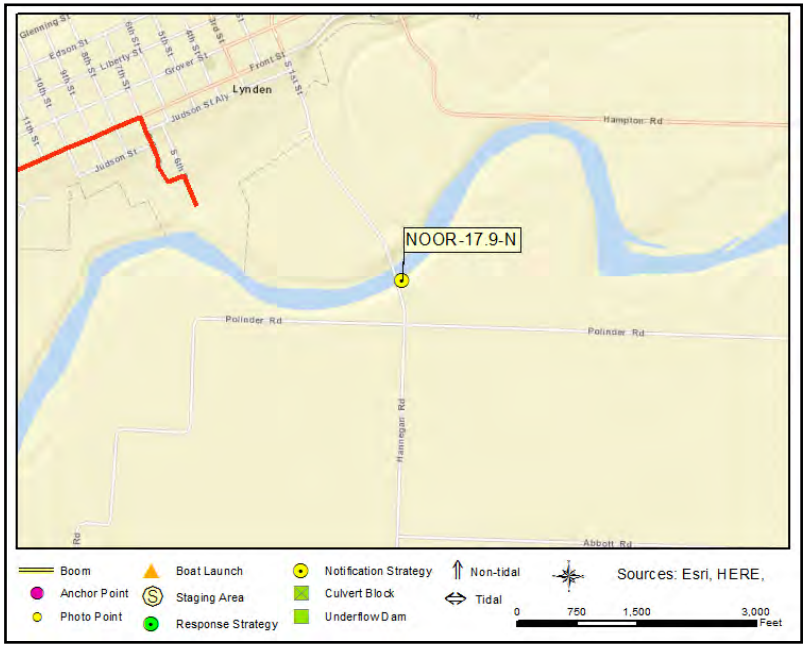
Main office:
City of Lynden Public Works 360-354-0633

Pagers:
360-758-9125
360-758-6629
360-714-4059

Telephones:
360-354-3446
360-592-2131

City of Lynden Water Intake (KM NO-17.9) NOOR-17.9-N

NOOR-17.9-N Photo: From south bank on Nooksack River left, looking NE upstream at water intake. Taken in very low winter water, <2000 cfs.



Site Contact

City of Lynden Public Works Department
Primary Contact : Water/Wastewater Treatment Plant

Lynden, WA 98264
360-354-0633

Nearest Address

800 S 6th St
Lynden, WA 98264

Driving Directions

1. Head N on I-5 towards Bellingham.
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.9 miles)
5. At roundabout, take the second exit to proceed on WA-539 N (Guide Meridian Rd) (4.56 miles)
6. Turn right on Kok Rd (0.73 miles)
7. Bear left on S 17th St (0.28 miles)
8. Turn right on Front St (0.65 miles)
9. Turn right on S 7th St (0.17 miles)
10. Bear left on Riverview Rd (0.04 miles)
11. Turn right on S 6th St (0.08 miles)
12. Finish at gated entrance to Treatment Plant, 800 S 6th St, 98264

Lummi Hatchery on Skookum Creek SFNOOR-14.1-N

Position - Location:	48° 41.802', -122° 9.998'	48° 41' 48.1", -122° 9' 59.9"	48.69670, -122.16664	Acme

Strategy Objective: Notification : Notify hatchery so they can protect their fish and water intakes

Implementation: Call Lummi Natural Resources Director at 360-410-1706 at notify of spill. Advise Skookum Creek hatchery to protect the resources under their control, which may include delaying or relocating any fish releases.

Field Notes: Water intake is on Skookum Creek. Hatchery is located on South Fork Nooksack River at RM 14.1.

Watercourse: Creek - Skookum Creek/ SF Nooksack

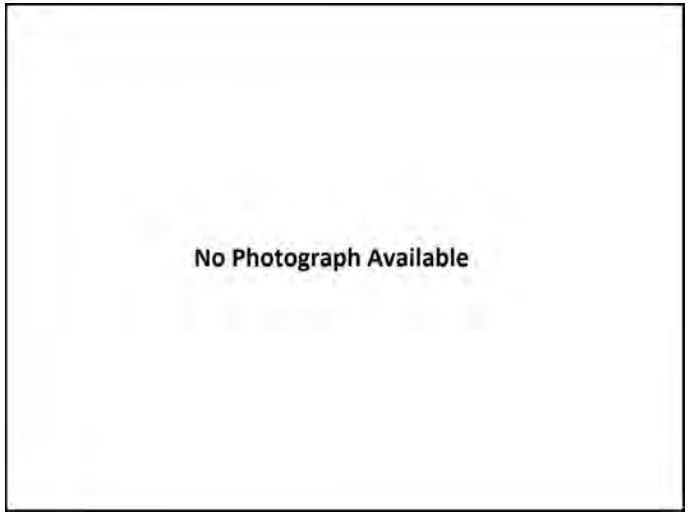
Resources at Risk: Fish Hatchery, Tribal Lands/Resources, Water Intakes

Communication Process and Action:

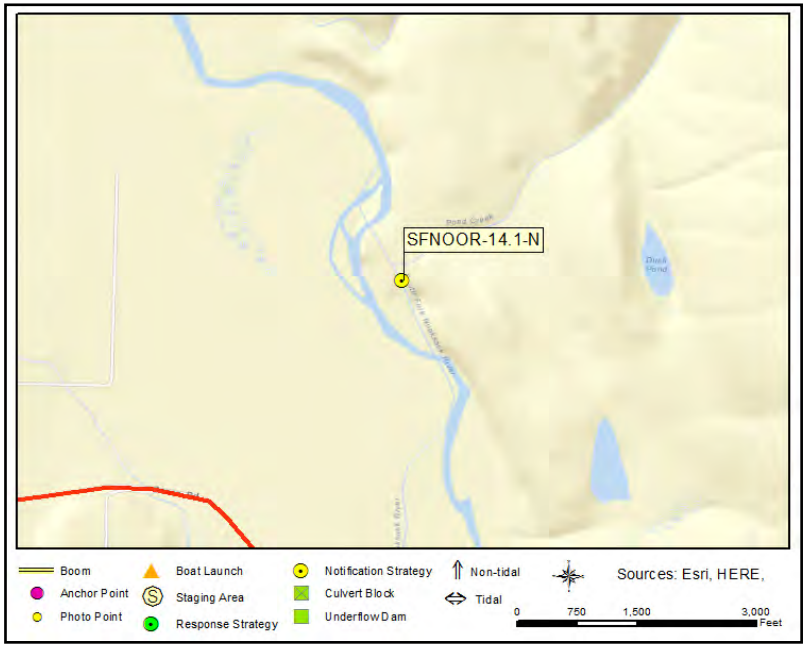
Call Lummi Natural Resources Director at 360-410-1706 at notify of spill. Advise that they take protective action, which may include delaying or relocating any fish releases. If spill is to Skookum Creek, advise they consider shutting down their surface water intake.

If the Director is unavailable, try the following numbers in order until someone at Lummi has been notified:
Bill Finkbonner (Hatchery Manager): 360-410-9992 (cell)
360-595-2142 (office)
Marlon Dennis (Assistant Hatchery Manager): 360-305-2260 (cell)
360-595-2093 (office)

Lummi Hatchery on Skookum Creek SFNOOR-14.1-N



SFNOOR-14.1-N Photo: No photo available.



Site Contact

Lummi Nation Oil Spill Response Team
Emergency Contact : Natural Resources Department
2665 Kwina Road
Bellingham, WA 98226
360-410-1706

Nearest Address

6473 Saxon Rd
Acme, WA 98220

Driving Directions

1. From Mt Vernon, Follow I-5 N to exit 232. (9.6 mi)
2. Turn right onto Cook Rd (4.2 mi)
3. At the traffic circle, take the 2nd exit and stay on Cook Rd (0.1 mi)
4. At the traffic circle, take the 2nd exit onto Borseth St (0.2 mi)
5. Continue onto W Moore St (466 ft)
6. At the traffic circle, continue straight to stay on W Moore St (0.7 mi)
7. Turn left onto WA-9 N/N Township St. Continue to follow WA-9 N (12.7 mi)
8. Turn right onto Saxon Rd (2.6 mi)
9. The Skookum Creek Fish Hatchery will be on the left near 6473 Saxon Road, Acme, WA 98220.

APPENDIX 4C

Staging Area 2-Pagers

STAGING AREAS - LIST

SA-NOOR-5.8 **SA-NOOR-17.4**

Ferndale Boat Launch - Hovander SA-NOOR-5.8

Staging Area

Position - Location:	48° 50.583', -122° 35.363'	48° 50' 35.0", -122° 35' 21.8"	48.84305, -122.58939	Ferndale

Comments: Large gravel parking area at public park. Large fields and restrooms.

Location Information

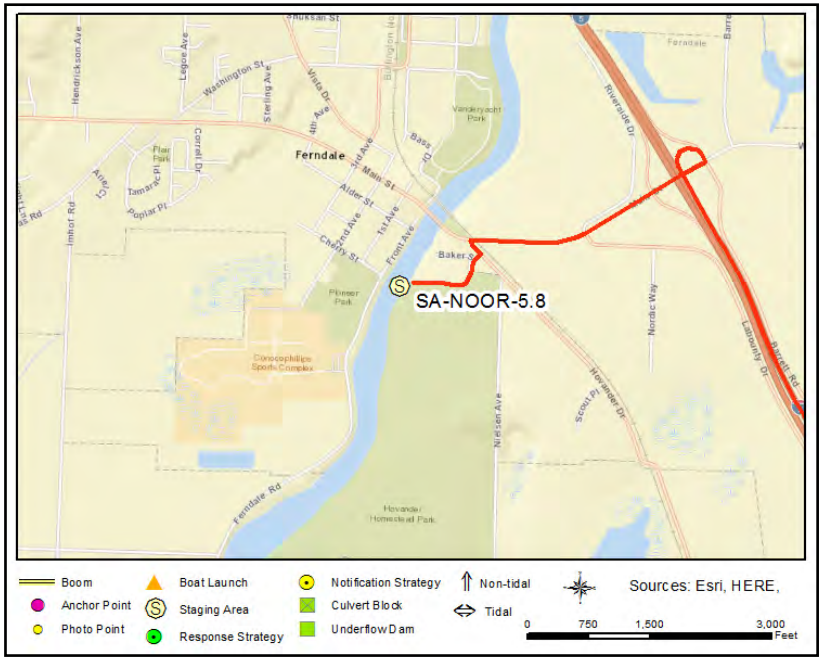
Asset	Type/Status	Amount/Number
Boat Dock(s)	No	
Boat Ramp(s)	Concrete, Solid	1
Cell Phone Coverage	Yes	3/4 bars on Sprint + Verizon
Covered Spaces	Yes	In S part of park
Estimated Lot Size		9000 Sq Ft (gravel)
Fuel	No	
Lot Cover (Primary)	Gravel	
Parking - Car	Gravel	20
Parking - Trailer	Gravel	20
Power	No	
Restroom	Restroom - Portable	1 More in S part of park
User Fee	No	
Waste Disposal	None	
Water (potable)	No	

GRP Response Strategies Served:

NOOR-6.8, NOOR-6.0, NOOR-6.9, NOOR-7.2, NOOR-5.4, NOOR-9.2

Ferndale Boat Launch - Hovander SA-NOOR-5.8

SA-NOOR-5.8 Photo: On Nooksack River left, looking SW down boat launch. Taken at 4200 cfs, avg winter water.



Site Contact

Washington Department of Fish and Wildlife
Land/Property Contact : Region 4
16018 Mill Creek Boulevard
Mill Creek, WA 98012-1296
425-775-1311

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

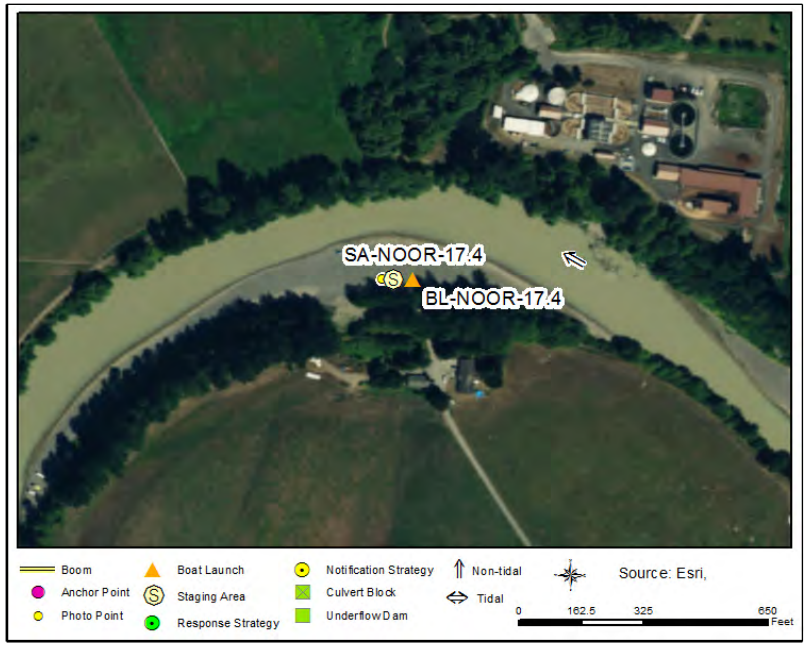
1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

Polinder Private Beach SA-NOOR-17.4

Staging Area

Position - Location:	48° 56.237', -122° 27.234'	48° 56' 14.2", -122° 27' 14.0"	48.93729, -122.45389	Lynden

Comments: Private property across from Wastewater Plant. Unimproved dirt/sand road to large beach. Privately owned - sign with instructions/ restrictions at exit. In low to average water will be very large workspace; may be unusable in high water.



GRP Response Strategies Served:

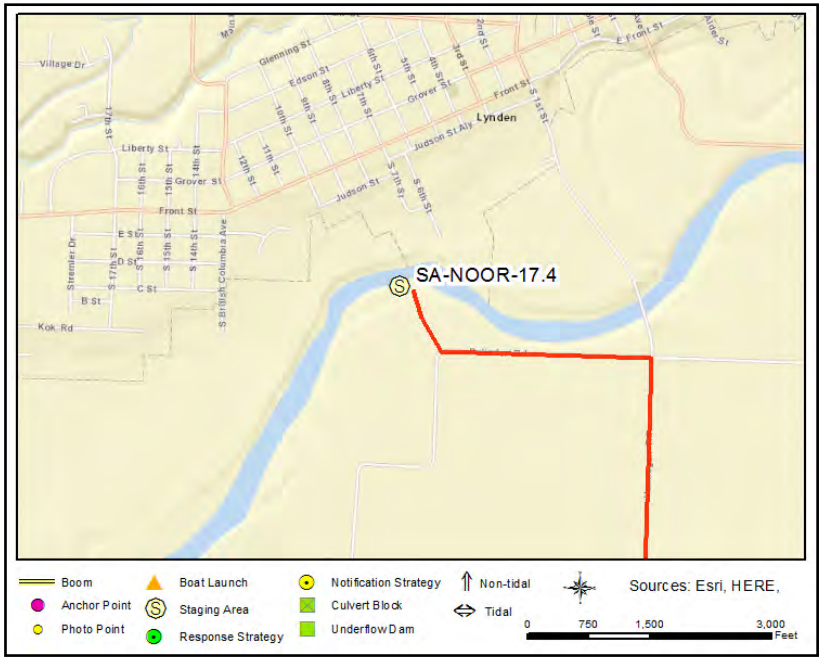
NOOR-17.4

Location Information

Asset	Type/Status	Amount/Number
Boat Dock(s)	No	
Boat Ramp(s)	Natural (Grass/Dirt)	
Cell Phone Coverage	Yes	3 bars Sprint/Verizon
Covered Spaces	No	
Estimated Lot Size		60000 Sq Ft or less (sandbar - variable)
Fuel	No	
Lot Cover (Primary)	Dirt	
Parking - Car	Dirt Trail	20
Parking - Trailer	Dirt Trail	20
Power	No	
Restroom	None	
User Fee	No	
Waste Disposal	None	
Water (potable)	No	

Polinder Private Beach SA-NOOR-17.4

SA-NOOR-17.4 Photo: From Nooksack River left on south bank, looking west downstream at beach and workspace. Taken mid-Jan, 3500 cfs.



Site Contact

Kinder Morgan Trans Mountain Pipeline
Alternate Contact : Maintains resident contact info
888-876-6711

City of Lynden Public Works Department
Municipality (County/City) : Water/Wastewater Treatment Plant
360-354-0633

Nearest Address

670 Polinder Rd
Lynden, WA 98264-9437

Driving Directions

1. Head north on I-5 towards Bellingham
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.89 miles)
5. At roundabout, take the second exit to continue straight on WA-539 N (Guide Meridian Rd) (1.52 miles)
6. At roundabout, take the first exit to proceed on WA-544 E (E Pole Rd) (1.95 miles)
7. Turn left on Hannegan Rd (2.99 miles)
10. Turn left on Polinder Rd (0.7 miles)
11. Where Polinder Rd bends left, turn right on private driveway (mailbox for 694).
12. Continue to end of the drive - note 12 foot tall sign of rules for public access. Straight past sign to sandy beach. (694 Polinder Rd, 98264-9437)

APPENDIX 4D

Boat Launch 2-Pagers

BOAT LAUNCHES – LIST

BL-NOOR-5.8 BL-NOOR-17.4 BL-NOOR-30.9

Ferndale Boat Launch - Hovander BL-NOOR-5.8

Boat Launch Location

Position - Location:	48° 50.583', -122° 35.363'	48° 50' 35.0", -122° 35' 21.8"	48.84305, -122.58939	Ferndale

Comments: Concrete slab - can be deep in mud

Location Information

Asset	Type/Status	Amount/Number
Boat Dock(s)	No	
Boat Ramp(s)	Concrete, Solid	1
Cell Phone Coverage	Yes	3/4 bars on Sprint + Verizon
Covered Spaces	Yes	In S part of park
Estimated Lot Size		9000 Sq Ft (gravel)
Fuel	No	
Lot Cover (Primary)	Gravel	
Parking - Car	Gravel	20
Parking - Trailer	Gravel	20
Power	No	
Restroom	Restroom - Portable	1 More in S part of park
User Fee	No	
Waste Disposal	None	
Water (potable)	No	

GRP Response Strategies Served:

NOOR-6.8, NOOR-6.0, NOOR-6.9, NOOR-7.2, NOOR-5.4, NOOR-5.9, NOOR-9.2

Ferndale Boat Launch - Hovander BL-NOOR-5.8

SA-NOOR-5.8 Photo: On Nooksack River left, looking SW down boat launch. Taken at 4200 cfs, avg winter water.

Site Contact

Washington Department of Fish and Wildlife
Land/Property Contact : Region 4
16018 Mill Creek Boulevard
Mill Creek, WA 98012-1296
425-775-1311

Nearest Address

5528 Baker St
Ferndale, WA 98248

Driving Directions

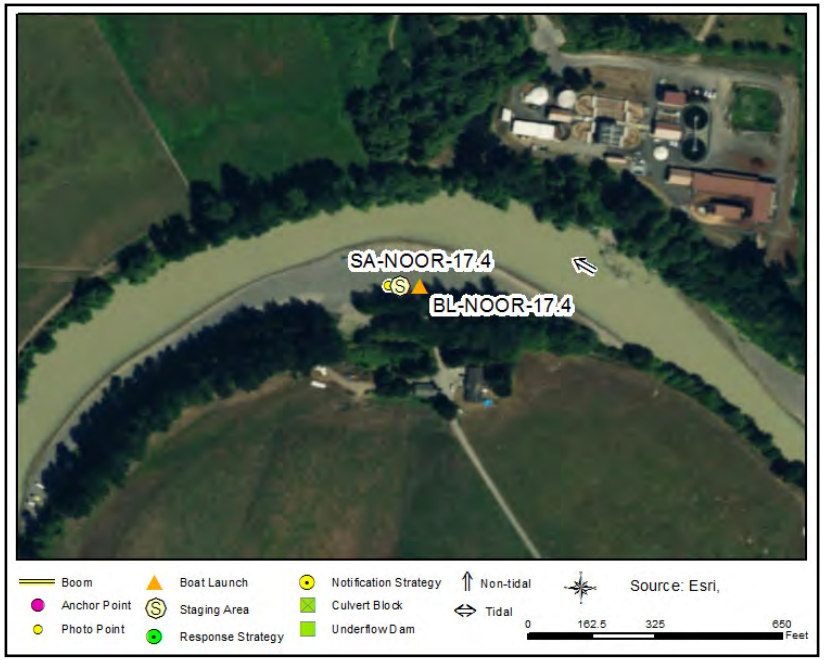
1. Head north on I-5 past downtown Bellingham
2. At exit 262 take ramp on the right to Main St toward City Center (0.3 miles)
3. Turn right on Main St (W Axton Rd) (0.6 miles)
4. Make sharp left on Hovander Dr (0.04 miles)
5. Take a right at the sign for public boat launch/park (0.2 mi)
6. Continue past parking area to boat launch.

Polinder Private Beach BL-NOOR-17.4

Boat Launch Location

Position - Location:	48° 56.237', -122° 27.234'	48° 56' 14.2", -122° 27' 14.0"	48.93729, -122.45389	Lynden

Comments: Private property across from Wastewater Plant. Unimproved dirt/sand road to large beach. Shallow entry to sudden dropoff - use caution when launching. Privately owned - sign with instructions/ restrictions at exit. In low to average water will be very large workspace; may be unusable in high water.



Location Information

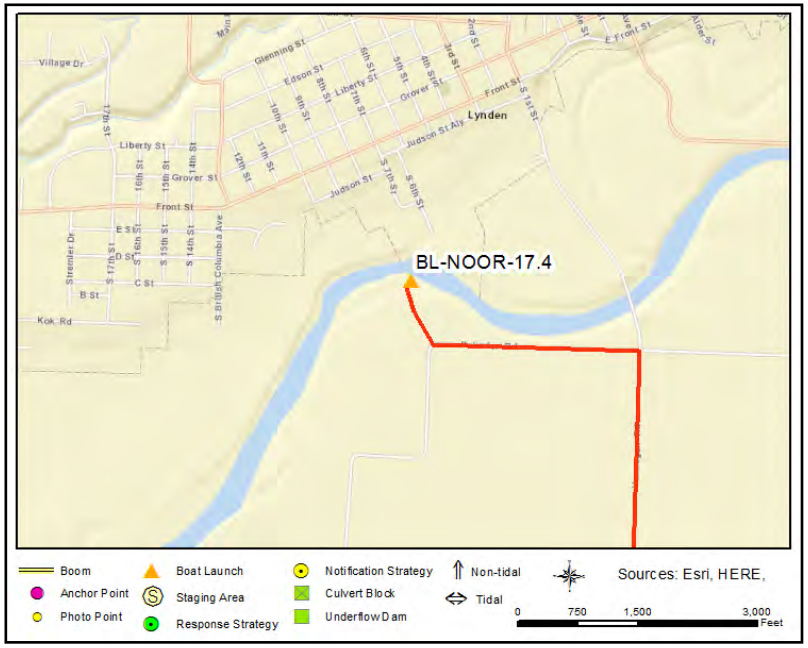
Asset	Type/Status	Amount/Number
Boat Dock(s)	No	
Boat Ramp(s)	Natural (Grass/Dirt)	
Cell Phone Coverage	Yes	3 bars Sprint/Verizon
Covered Spaces	No	
Estimated Lot Size		60000 Sq Ft or less (sandbar - variable)
Fuel	No	
Lot Cover (Primary)	Dirt	
Parking - Car	Dirt Trail	20
Parking - Trailer	Dirt Trail	20
Power	No	
Restroom	None	
User Fee	No	
Waste Disposal	None	
Water (potable)	No	

GRP Response Strategies Served:

NOOR-17.4

Polinder Private Beach BL-NOOR-17.4

SA-NOOR-17.4 Photo: From Nooksack River left on south bank, looking west downstream at beach and workspace. Taken mid-Jan, 3500 cfs.



Site Contact

Kinder Morgan Trans Mountain Pipeline
Alternate Contact : Maintains resident contact info
888-876-6711

City of Lynden Public Works Department
Municipality (County/City) : Water/Wastewater Treatment Plant
360-354-0633

Nearest Address

670 Polinder Rd
Lynden, WA 98264-9437

Driving Directions

1. Head north on I-5 towards Bellingham
2. At exit 256A-B take ramp on the right to Bellis Fair-Mall Pkwy / WA-539 N / Meridian St (0.16 miles)
3. At exit 256A keep right on WA-539 N / Meridian St. toward Lynden (0.14 miles)
4. Turn right on Guide Meridian Rd (WA-539) (5.89 miles)
5. At roundabout, take the second exit to continue straight on WA-539 N (Guide Meridian Rd) (1.52 miles)
6. At roundabout, take the first exit to proceed on WA-544 E (E Pole Rd) (1.95 miles)
7. Turn left on Hannegan Rd (2.99 miles)
10. Turn left on Polinder Rd (0.7 miles)
11. Where Polinder Rd bends left, turn right on private driveway (mailbox for 694).
12. Continue to end of the drive - note 12 foot tall sign of rules for public access. Straight past sign to sandy beach. (694 Polinder Rd, 98264-9437)

Nugent's Corner BL-NOOR-30.9

Boat Launch Location

Position - Location:	48° 50.609', -122° 17.625'	48° 50' 36.5", -122° 17' 37.5"	48.84348, -122.29375	Everson

Comments: WDFW launch area with large mud/gravel turnaround and minimal facilties. Additional paved parking on access road in, with large grassy park and picnic tables. Grocery store next to access road entrance.

GRP Response Strategies Served:

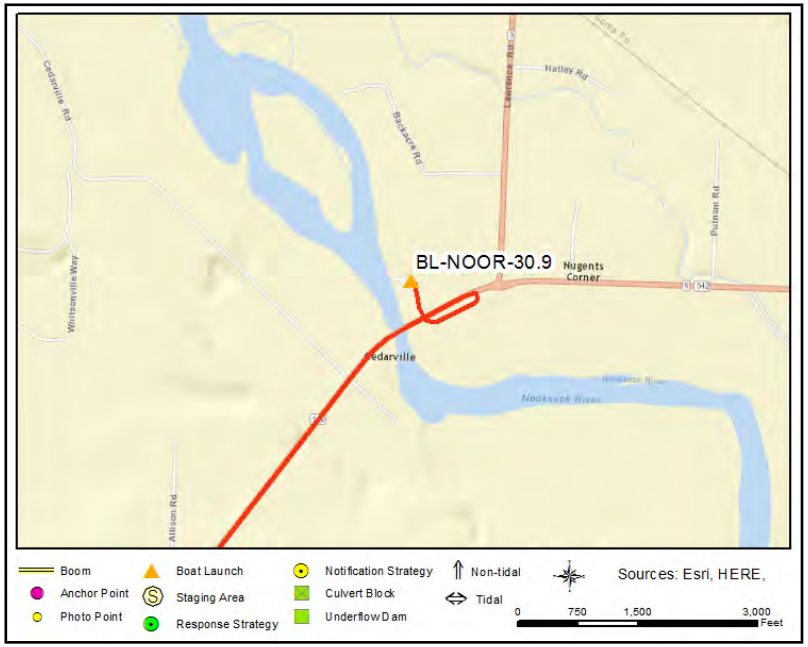
NOOR-30.8, NOOR-30.9

Location Information

Asset	Type/Status	Amount/Number
Boat Dock(s)	No	
Boat Ramp(s)	Concrete, Plank	1
Cell Phone Coverage	Yes	2 bars on Sprint/Verizon
Covered Spaces	No	
Estimated Lot Size		25000 Sq Ft at launch more at park
Fuel	No	
Lot Cover (Primary)	Dirt/Gravel	
Parking - Car	Dirt Trail	10
Parking - Trailer	Dirt Trail	8
Power	No	
Restroom	Restroom - Portable	1
User Fee	No	
Waste Disposal	None	
Water (potable)	No	Store nearby

Nugent's Corner BL-NOOR-30.9

Photo: From Nooksack River right, looking W at Nugent's Corner boat launch. Taken mid-Jan at 3100 cfs.



Site Contact

Washington Department of Fish and Wildlife
Land/Property Owner : Region 4
16018 Mill Creek Boulevard
Mill Creek, WA 98012-1296
425-775-1311

Nearest Address

Nugents Corner River Access Rd
Everson, WA 98247

Driving Directions

1. Head north on I-5 towards Bellingham.
2. At exit 255 take ramp on the right to WA-542 E / Sunset Dr toward Mt Baker (0.2 miles)
3. Turn right on WA-542 (E Sunset Dr) (9.86 miles)
4. Turn right on Nugents Corner River Access Rd (Mt Baker Hwy) (0.5 miles)
5. Follow the road past the park to the turnaround and boat launch.

CHAPTER 5

(Reserved)

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CHAPTER 6

Resources at Risk

6.1 CHAPTER INTRODUCTION

This chapter provides a summary of natural, cultural, and economic resources at risk in the planning area. It provides general information on habitat, fish, and wildlife resources, and locations in the area where sensitive natural resource concerns exist. It offers a summary of cultural resources that include fundamental procedures for the discovery of cultural artifacts and human skeletal remains. General information about flight restrictions, hazing, and oiled wildlife can be found near the end of this chapter. A list of economic resources in the area is provided in the chapter's appendix.

This chapter is purposely broad in scope and should not be considered comprehensive. Some of the sensitive resources provided in this chapter are listed because they could not be addressed in Chapter 4 (Response Strategies and Priorities). Additional information from private organizations or federal, state, tribal, and local government agencies should also be sought during spills and considered.

The information provided in this chapter can be used in:

- Assisting the Environmental Unit (EU) and Operations in developing additional response strategies beyond those found in Chapter 4.
- Providing resource-at-risk "context" to responders, clean-up workers, and others during the initial phase of a spill response in the GRP area.
- Briefing responders and incident command staff that may be unfamiliar with sensitive resource concerns in the GRP area.
- Providing background information for personnel involved in media presentations and public outreach during a spill incident.

6.2 NATURAL RESOURCES AT RISK – SUMMARY

Most biological communities are susceptible to the effects of oil spills. Plant communities on land, eelgrass and marsh grasses in estuaries, and kelp beds in the ocean; microscopic plants and animals; and larger animals, such as fish, amphibians and reptiles, birds, mammals, and a wide variety of invertebrates, are all potentially at risk from smothering, acute toxicity, and/or the chronic long-term effects that may result from being exposed to spilled oil.

The Nooksack River basin includes a wide variety of aquatic, riparian, and upland habitats. These varied habitats support a complex diversity of wildlife species, including various salmonid species;

large and small mammals; passerine (i.e. song) birds, raptors, upland birds, and waterfowl; reptiles; and amphibians. Some species are resident throughout the year; others are migratory either within the basin or, in many cases, seasonally migrate outside the basin. Many wildlife species found in the Nooksack River basin are classified as threatened, endangered, sensitive, or of special concern under the federal Endangered Species Act or Washington State guidelines. Classification types are listed below, with the abbreviation of each type provided in the brackets (to the right of the classification).

- Federal Endangered (FE)
- Federal Threatened (FT)
- Federal Candidate (FC)
- Federal Species of Concern (FCo)
- State Endangered (SE)
- State Threatened (ST)
- State Candidate (SC)
- State Monitored (SM)
- State Sensitive (SS)

Listed species that may occur within this area, at some time of year, include:

Birds:

- Marbled Murrelet [FT/ST]
- Sandhill Crane [SE]
- Streaked Horned Lark [FT/SE]
- Yellow-billed Cuckoo [FT/SC]

Fish:

- Bull Trout [FT/SC]
- Chinook [FT/SC]
- Coho [FCo/SC]
- Dolly Varden [FT]
- Steelhead [FT]

Reptiles/Amphibians:

- Oregon Spotted Frog [FT/SE]

6.2.1 General Resource Concerns

6.2.1a Habitats

- ***Wetlands*** in this region include areas along the main stem of the Nooksack River. All wetland types support a diverse array of bird, insect and fish and wildlife species.
- ***Islands*** provide important nesting habitat for a variety of bird species, as well as habitat for a variety of mammals. Associated gravel bars provide spawning habitat for Chinook salmon.
- ***Stream mouths*** may be concentration areas for anadromous fish and are feeding areas for a variety of birds.
- ***Human-made structures*** such as pilings, rock jetties or log rafts may be used as roosting or nesting areas for a variety of birds.
- ***Shallow intertidal and subtidal habitats*** in the delta and lower reach of the river are critically important as rearing areas for juvenile salmon, Dungeness crab, hardshell clams and other fish and shellfish. These habitats are often important feeding areas for marine birds, shorebirds and herons.
- The ***tributaries*** of this river provide abundant habitat for spawning salmonids.
- The ***riparian areas*** adjacent to the Nooksack River, and its tributaries, contain elements of both aquatic and terrestrial ecosystems and provide rich and vital resources to a wide variety of fish and wildlife. ***Riparian vegetation*** is heavily used by a variety of wildlife and provides nearshore fish habitat. Approximately 85 percent of Washington's terrestrial vertebrate wildlife species depend on riparian habitats for all or critical portions of their life histories.

6.2.1b Fish & Shellfish

Salmonids (including **Chinook [FT/SC]**, **coho [FCo/SC], chum, pink**, **sockeye**, **cutthroat trout** (resident and coastal), **steelhead [FT]**, **bull trout [FT/SC]** are present in the river system throughout the year. Spawning occurs throughout the system and juvenile salmonids use backwaters, nearshore areas, and protected bays as rearing and foraging areas prior to migration into the ocean. Returning adult salmonids support significant tribal, commercial and recreational fisheries.

In addition to salmonids, several dozen species of ***freshwater fish*** exist in the Nooksack River basin. These species all provide important contributions to stream ecology.

- ***Hardshell clams*** are found intertidally along marine shorelines throughout the Nooksack Delta. Extensive geoduck beds also occur intertidally and sub-tidally throughout much of the region.
- ***Dungeness crabs*** are commonly found within the Nooksack Delta and throughout Bellingham Bay.

- ***Freshwater mussels*** have been documented in tributaries to the Nooksack River.

6.2.1c Wildlife

- ***Seabird concentrations*** routinely occur year-round in marine areas adjacent to the river mouth and adjacent shoreline. The largest concentrations occur in these areas during the fall through spring seasons. There are no significant seabird nesting colonies in this region.
- ***Bald eagles and great blue herons*** nest throughout the region and forage in intertidal and nearshore waters year-round. Peregrine falcons occur along the lower river and delta.
- ***Waterfowl concentrations***, including trumpeter swans, may be found seasonally throughout the region with heavy concentrations in the lower river and delta.
- ***Shorebird concentrations*** are common at along the outer part of the delta and other scattered sites.
- ***Harbor seal haulouts*** are present in the area in the vicinity of the river delta. In addition, California sea lions are often observed using navigational buoys in adjacent areas as haulouts.
- ***Mammals*** common to the region include deer and elk, bats, and various semi-aquatic species such as muskrat, beaver, river otter, etc. throughout the basin. In general, this group is dependent on riverine areas, ponds, tributaries, and riparian forests for den sites and foraging areas.

6.2.3 Specific Geographic Areas of Concern

1. **Lower Nooksack River (~RM 0 to ~RM 6.5)**: The river reach from the I-5 bridge to the mouth serves as a transition area from freshwater to saltwater and includes Tennant Lake, Tennant Wildlife Area and nearby critical habitats for a variety of species including waterfowl, shorebirds, raptors, salmonids, crabs, multiple bat species, and harbor seals.
2. **Smith Road/Wiser Road shorebird staging area**. Farm fields and wetlands north of Bellingham in the vicinity of Smith and Wiser roads are used by shorebirds during spring migration for staging, feeding, and resting habitat.

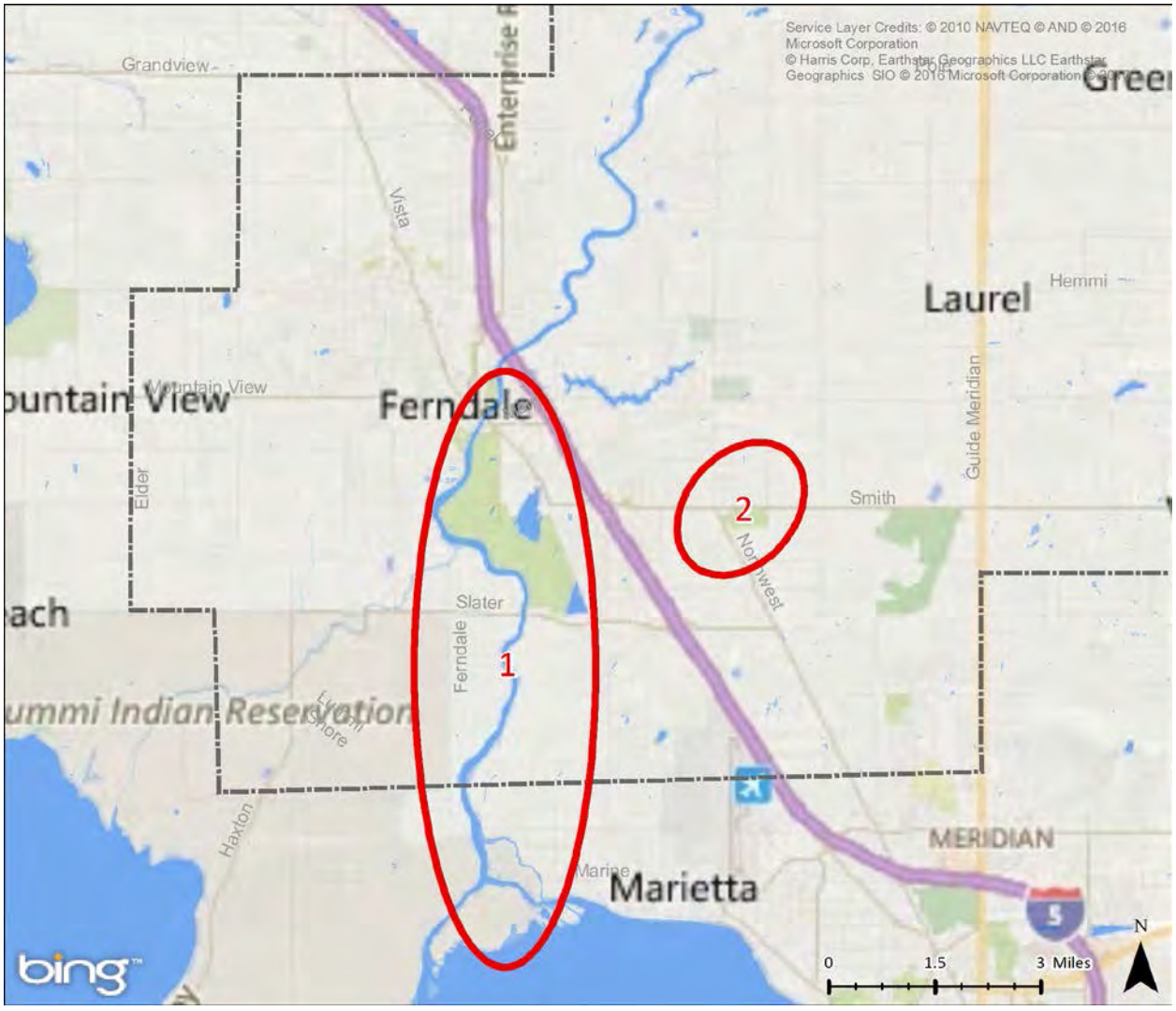

Figure 6-1: Specific Geographic Areas of Concern (1 and 2)

3. **Whatcom County shorebird and waterfowl wintering area**. Bird concentrations present along river main stem (~RM 11 thru RM 16), farm fields, wetlands, and Wiser Lake. Species present may include various geese, swans, cormorants, grebes, ducks and a shorebirds.
4. **Green Lake and Fountain Lake.** Waterfowl concentrations, especially geese and swans.
5. **Lake Fazon.** Waterfowl concentrations, especially geese and swans.
6. **Squaw Creek sandhill crane staging area**. Wetlands and farm fields located between Squaw Creek and Kamm Ditch provide sandhill crane staging areas during spring migration.

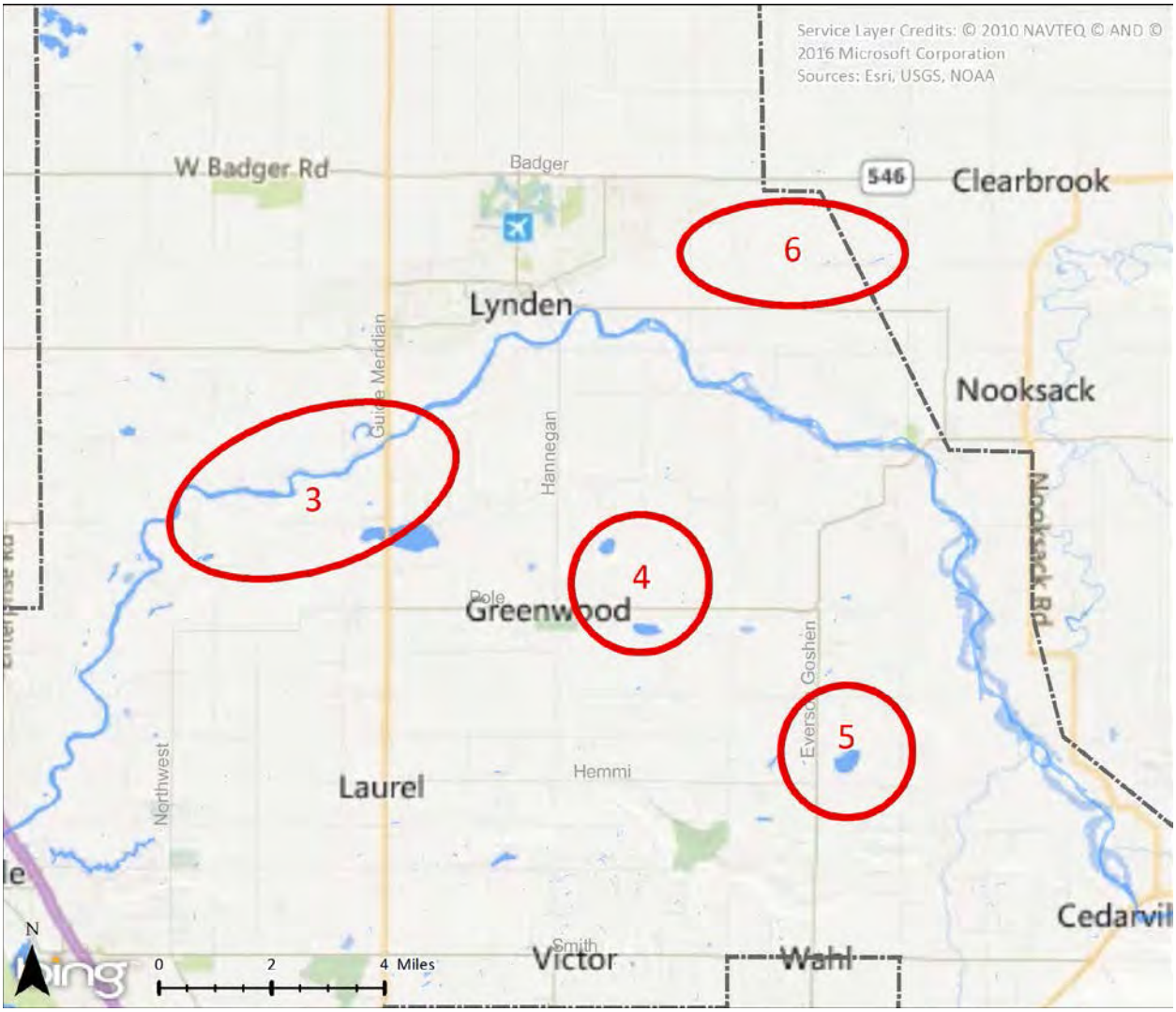

Figure 6-2: Specific Geographic Areas of Concern (3 - 6)

7. **South Fork of the Nooksack River (~RM 10 to ~RM 0)**. From Acme to the confluence with the main stem. Oregon spotted frog breeding – particularly in Black Slough. This reach is also adjacent to documented marbled murrelet breeding habitat.

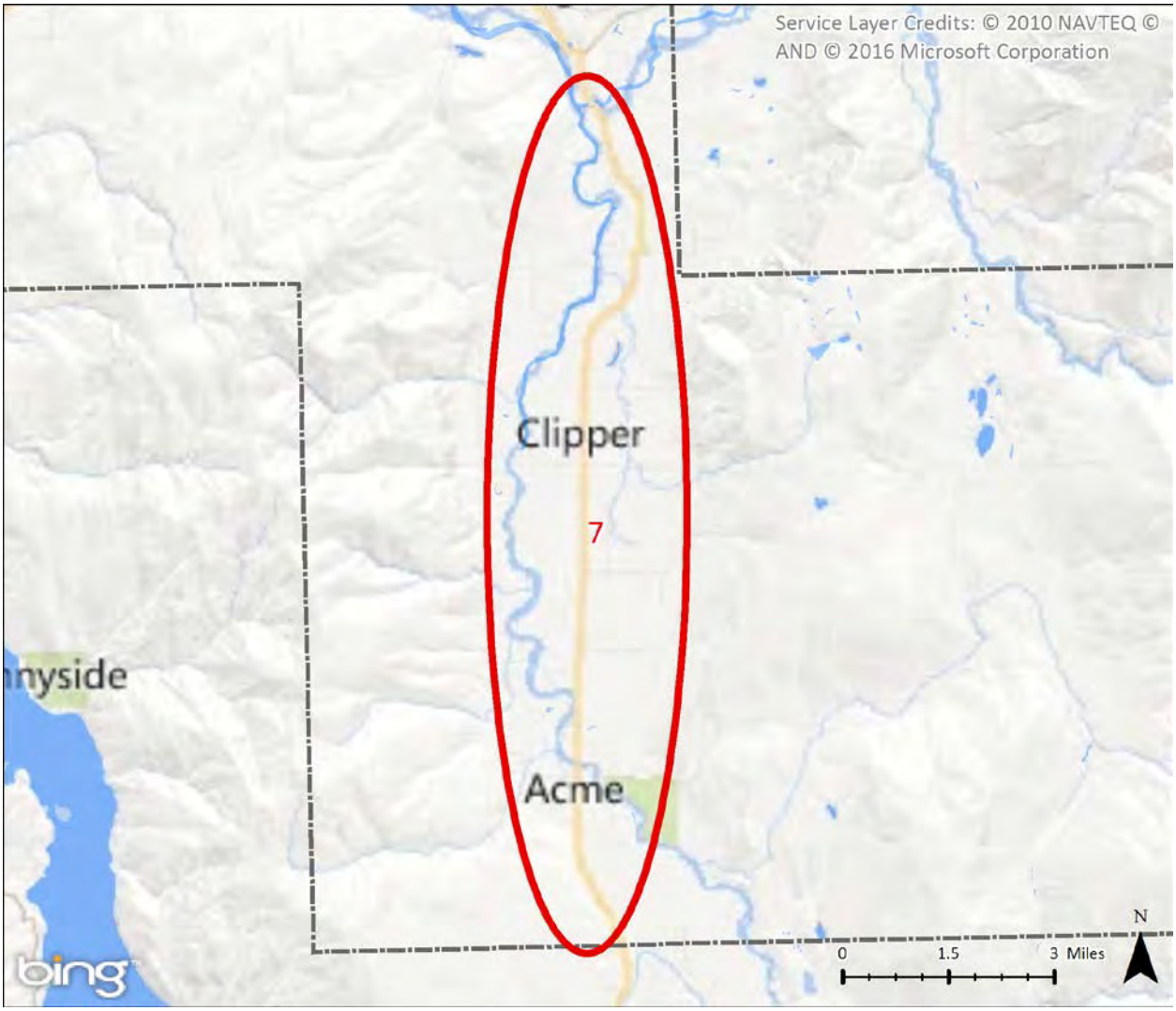

Figure 6-3: Specific Geographic Areas of Concern (7)

6.3 CULTURAL RESOURCES AT RISK - SUMMARY

Culturally significant resources are present within the Nooksack River area. Information regarding the types of cultural resources and their locations is maintained by the Washington Department of Archeology and Historic Preservation (WDAHP). This sensitive information is made available to the Washington Department of Ecology for oil spill preparedness and response planning. The Tribal Historic Preservation Offices (THPOs) or Cultural Resource Departments of the Lummi Nation, Muckleshoot Tribe, Nooksack Tribe, Samish Nation, Sauk-Suiattle Tribe, Stillaguamish Tribe of Indians, Suquamish Tribe, Swinomish Tribe, Tulalip Tribes or Upper Skagit Tribe may also be able to provide information on cultural resources at risk in the area and should be contacted, along with WDAHP, through normal trustee notification processes when significant oil spills, or smaller spills above reportable thresholds, occur in the Nooksack River area.

During a spill response, after the Unified Command is established, information related to specific archeological concerns will be coordinated through the Environmental Unit. In order to ensure that tactical response strategies do not inadvertently harm culturally sensitive sites, WDAHP should be consulted before disturbing any soil or sediment during a response action. WDAHP and/or the Tribes may assign a person, or provide a list of professional archeologists that can be contracted, to monitor response activities and cleanup operations for the protection of cultural resources at risk. Due to the sensitive nature of such information, details regarding the location and type of cultural resources present are not included in this document.

Contact	Phone	Email
Washington Department of Archaeology and Historic Preservation	(360) 586-306	Rob.Whitlam@dahp.wa.gov
Lummi Nation, THPO	(360) 312-2257, (360) 961-7752	lenat@lummi-nsn.gov
Muckleshoot Tribe, Archaeologist	(253) 876-3272	laura.murphy@muckleshoot.nsn.us
Nooksack Tribe, THPO	(360) 592-5176 (work) (360) 305-9126 (cell)	george.swanasetjr@nooksack.nsn.gov
Samish Nation, THPO	(360) 293-6404 ext 126	jferry@samishtribe.nsn.us
Sauk-Suiattle Tribe	(360) 436-0347	njoseph@sauk-suiattle.com
Stillaguamish Tribe of Indians	(360) 652-3687 ext 14	KLyste@stillaguamish.com
Suquamish Tribe, THPO	(360) 394-8529	dlewarch@suquamish.nsn.us
Swinomish Tribe, THPO	(360) 466-7352	lcampbell@swinomish.nsn.us
Tulalip Tribes	(425) 239-0182	ryoung@tulaliptribes-nsn.gov
Upper Skagit Tribe	(360) 854-7009	sschuyler@upperskagit.com

6.3.1 Discovery of Human Skeletal Remains

Any human remains, burial sites, or burial-related materials that are discovered during a spill response must be treated with respect at all times (photographing human remains is prohibited to all except the appropriate authorities). Refer to Section 9403 of the Northwest Area Contingency Plan for National Historic Preservation Act Compliance Guidelines during an emergency response.

6.3.2 Procedures for the Discovery of Cultural Resources

If any person monitoring work activities or involved in spill response believes that they have encountered cultural resources, all work must be stopped immediately and the Incident Commander and Cultural Resource Specialist notified. The area of work stoppage must be adequate to provide for the security, protection, and integrity of the material or artifact(s) discovered.

Prehistoric Cultural Resources: (May include, but are not limited to, any of the following items)

- Lithic debitage (stone chips and other tool-making byproducts)
- Flaked or ground stone tools
- Exotic rock, minerals, or quarries
- Concentrations of organically stained sediments, charcoal, or ash
- Fire-modified rock
- Rock alignments or rock structures
- Bone (burned, modified, or in association with other bone, artifacts, or features)
- Shell or shell fragments
- Petroglyphs and pictographs
- Fish weirs, fish traps, and prehistoric water craft
- Culturally modified trees
- Physical locations or features (traditional cultural properties)

Historic cultural material: (May include any of the following items over 50 years old)

- Bottles, or other glass
- Cans
- Ceramics
- Milled wood, brick, concrete, metal, or other building material
- Trash dumps
- Homesteads, building remains
- Logging, mining, or railroad features
- Piers, wharves, docks, bridges, dams, or shipwrecks

6.4 ECONOMIC RESOURCES AT RISK SUMMARY

Socio-economic sensitive resources are facilities or locations that rely on a body of water to be economically viable. Because of their location, they could be severely impacted if an oil spill were to occur. Economically sensitive resources are separated into three categories: critical infrastructure, water dependent commercial areas, and water dependent recreation areas. Appendix 6A of this chapter provides a list of economic resources for this planning area.

6.5 GENERAL INFORMATION

6.5.1 Flight restriction zones

Flight restriction zones may be recommended by the Environmental Unit (Planning Section) for the purpose of minimizing disturbance that could result in injury to wildlife during an oil spill. By keeping a safe distance or altitude from identified sensitive areas, pilots can minimize the risk of aircraft/bird collisions, prevent the accidental hazing of wildlife into oiled areas, and avoid causing abandonment of nests.

Implementation of Flight Restriction Zones will take place within the Air Operations Branch (Operations Section) after a Unified Command is formed. The Planning Section's Environmental Unit will work with the Air Ops Branch Director to resolve any potential conflicts with flight activities that are essential to the spill response effort. Typically, the area within a 1,500 ft. radius and below 1,000 ft. in altitude is restricted to flying in areas that have been identified as sensitive; however, some areas have more restrictive zones. In addition to restrictions associated with wildlife, Tribal authorities may also request notification when overflights are likely to affect culturally sensitive areas within reservations. See Section 9301.3.2 and Section 9301.3.3 of the Northwest Area Contingency Plan for more information on the use of aircraft and helicopters in open water and shoreline responses.

6.5.2 Hazing

After a Unified Command is formed, the Wildlife Branch (Operations Section) in consultation with the appropriate trustee agencies and the Environmental Unit will evaluate hazing options for the purpose of keeping un-oiled birds and mammals away from oil during a spill. Hazing options might include the use of acoustic or visual deterrent devices, boats, aircraft or other situation-appropriate tools. For more information see the Northwest Wildlife Response Plan (NWACP Section 9310) and Northwest Area Wildlife Deterrence Resources (NWACP Section 9311).

6.5.3 Oiled Wildlife

Attempting to capture oiled wildlife can be hazardous to both the animal and the person attempting to capture it. Response personnel should not approach or attempt to recover oiled wildlife. Responders should report their observations of oiled wildlife to the Wildlife Branch so appropriate action can be taken. Information provided should include the location, date, and time of the

sighting, and the estimated number and kind of animals observed. Early on in the response, before a Unified Command is established, oiled wildlife sightings should be reported to Washington Emergency Management Division. For more information see the Northwest Wildlife Response Plan (NWACP Section 9310).

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APPENDIX 6A

List of Economic Resources

Category	Name	Location	Lat	Long	Contact	Phone	Email
A. Critical Infrastructure							
A1 – Drinking Water Intakes	City of Lynden Intake	Nooksack River at Hannegan Rd	48.9366	-122.4416	City of Lynden Public Works	360-354-0633	n/a
A1 – Drinking Water Intakes	Whatcom PUD #1 Downstream Intake	Ferndale below Main St bridge (RM 5.4)	48.8391	-122.5923	Whatcom PUD #1	360-384-4288	n/a
A1 – Drinking Water Intakes	Whatcom PUD #1 Upstream Intake	Ferndale at Trigg Rd (RM 9)	48.8798	-122.5648	Whatcom PUD #1	360-384-4288	n/a
B. Water Dependent Commercial Areas							
B3 – Aquaculture	Rusatz Slough Rearing Pond	North Fork Nooksack River east of Highway 9	48.8124	-122.1878	Nooksack Tribe	360-592-5176	n/a
B6 – Fish Hatcheries	WDFW Kendall Creek	North Fork Nooksack (RM 45.5)	48.8980	-122.1406	Kendall Creek Hatchery	360-599-2841	n/a
B6 – Fish Hatcheries	Skookum Creek Hatchery	South Fork Nooksack (RM 14.1)	48.6722	-122.1433	Lummi Nation Natural Resources	360-410-1706	n/a
C. Water Dependent Recreational Areas							
C2 – Public Recreation Areas	Nugents Corner River Access	3671 Mount Baker Highway, Ferndale	48.8414	-122.2921	Whatcom County Parks & Rec	360-599-2776	n/a
C2 – Public Recreation Areas	Phillips66 Sports Complex	2nd Ave, Ferndale	48.8402	-122.5971	City of Ferndale Parks & Rec	360-685-2376 Ext 1215	n/a
C2 – Public Recreation Areas	Whatcom Wildlife Area - Nooksack Unit	Marine Drive to Tennant Lake Wildlife Area	48.8141	-122.5851	WDFW Whatcom Wildlife Area Manager	360-384-4723	n/a

Category	Name	Location	Lat	Long	Contact	Phone	Email
C2 – Public Recreation Areas	Whatcom Wildlife Area - Tennant Lake Unit	5299 Nielsen Road, Ferndale	48.8228	-122.5723	WDFW Whatcom Wildlife Area Manager	360-384-4723	n/a
C4 – Parks and Beaches	Centennial Riverwalk	5667 Front Ave, Ferndale, WA	48.8444	-122.5891	City of Ferndale Parks & Rec	360-685-2376 Ext 1215	n/a
C4 – Parks and Beaches	Deming Homestead Eagle Park	8160 Truck Road, Deming	48.8237	-122.1830	Whatcom County Parks & Rec	360-599-2776	n/a
C4 – Parks and Beaches	Hovander Homestead Park	5299 Nielsen Road, Ferndale	48.8356	-122.5888	Whatcom County Parks & Rec	360-384-3444	n/a
C4 – Parks and Beaches	Pioneer Park	2000 Cherry St, Ferndale	48.8426	-122.5929	City of Ferndale Parks & Rec	360-384-6461	n/a
C4 – Parks and Beaches	Riverside Park	Park Dr, Everson	48.9204	-122.3513	City of Everson Public Works Director	360-966-3411	n/a
C4 – Parks and Beaches	South Fork Park (under development)	Mosquito Lake Road, Acme	48.7161	-122.1901	Whatcom County Parks & Rec	360-778-5850	n/a
C4 – Parks and Beaches	Tennant Lake Park and Fragrance Garden	5299 Nielsen Road, Ferndale	48.8306	-122.5802	Whatcom County Parks & Rec	360-599-2776	n/a
C4 – Parks and Beaches	VanderYacht Park	Bass Dr, Ferndale	48.8402	-122.5971	City of Ferndale Parks & Rec	360-685-2376 Ext 1215	n/a