UPPER GREEN RIVER

Geographic Response Plan

(UGR-GRP)

CHAPTER 4

Response Strategies and Priorities

June 2017

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 51–74) 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 they should be implemented, based on Potential Oil Spill Origin Points (POSOPs) and the proximity and relative priority of sensitive resources near those point locations. 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. Control and containment of an oil spill is always a higher priority than the implementation of GRP response strategies. 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, Unified Command, or the Environmental Unit.

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? Control and containment of the spill at or near the source 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, lake, or marine 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.
    - King County Sheriff (206) 296-4155
    - Washington State Patrol District #2 (425) 401-7788

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. For information about non-floating oil spill response, refer to the Non-Floating Oil Spill Response Tool in the Northwest Area Contingency Plan (NWACP), Section 9412.

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.

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 riverbank 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

Streamflow data from U.S. Geological Survey (USGS) was used to determine the mean monthly discharge for rivers and streams in the planning area. Stream discharge is recorded in cubic feet per second (cfs); velocities in miles per hour (mph) or nautical miles per hour (knots) are not available. Table 4.1 provides information that can be used to calculate local river velocities on-site, 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 for USGS gage stations in the planning area are provided below, and may include real-time or near real-time streamflow data. The USGS National Water System Mapper is useful for locating gage stations of interest, and is available online at http://maps.waterdata.usgs.gov/mapper/index.html.

Table 4.2: Historical River Streamflow Ranges

Monthly average flow in Cubic Feet per Second (cfs)	
	Green River Below Howard Hanson Dam **USGS 12105900** (data from 1961 to 2016)
Jan	1,630
Feb	1,440
Mar	1,150
Apr	1,330
May	1,290
Jun	794
Jul	414
Aug	269
Sep	340
Oct	568
Nov	1,320
Dec	1,460

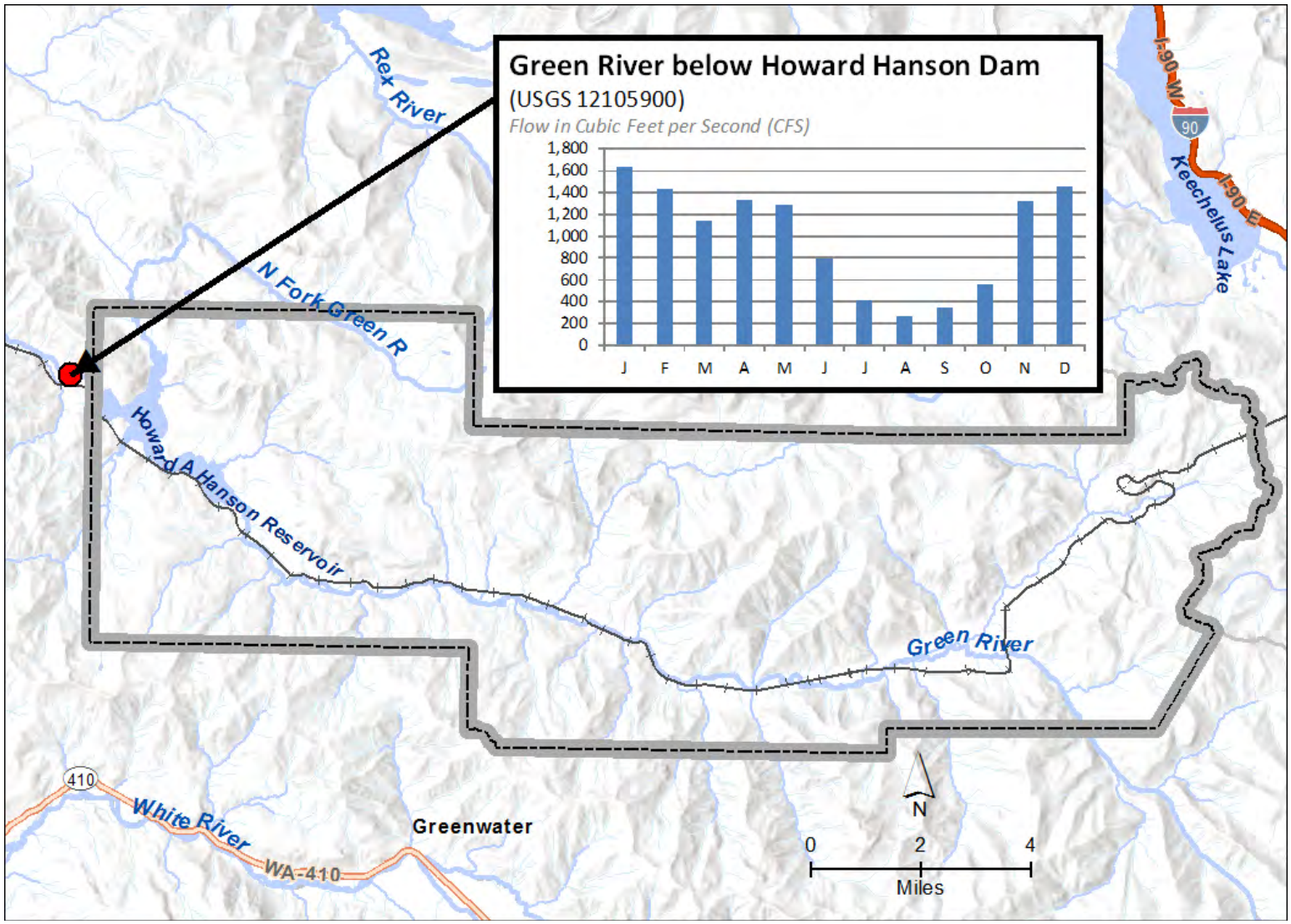


Figure 4-1: Mean Monthly Discharge Measurement for the Upper Green River

4.2 AREA OVERVIEW MAPS

The following maps provide a geographic overview of the Upper Green River area. 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

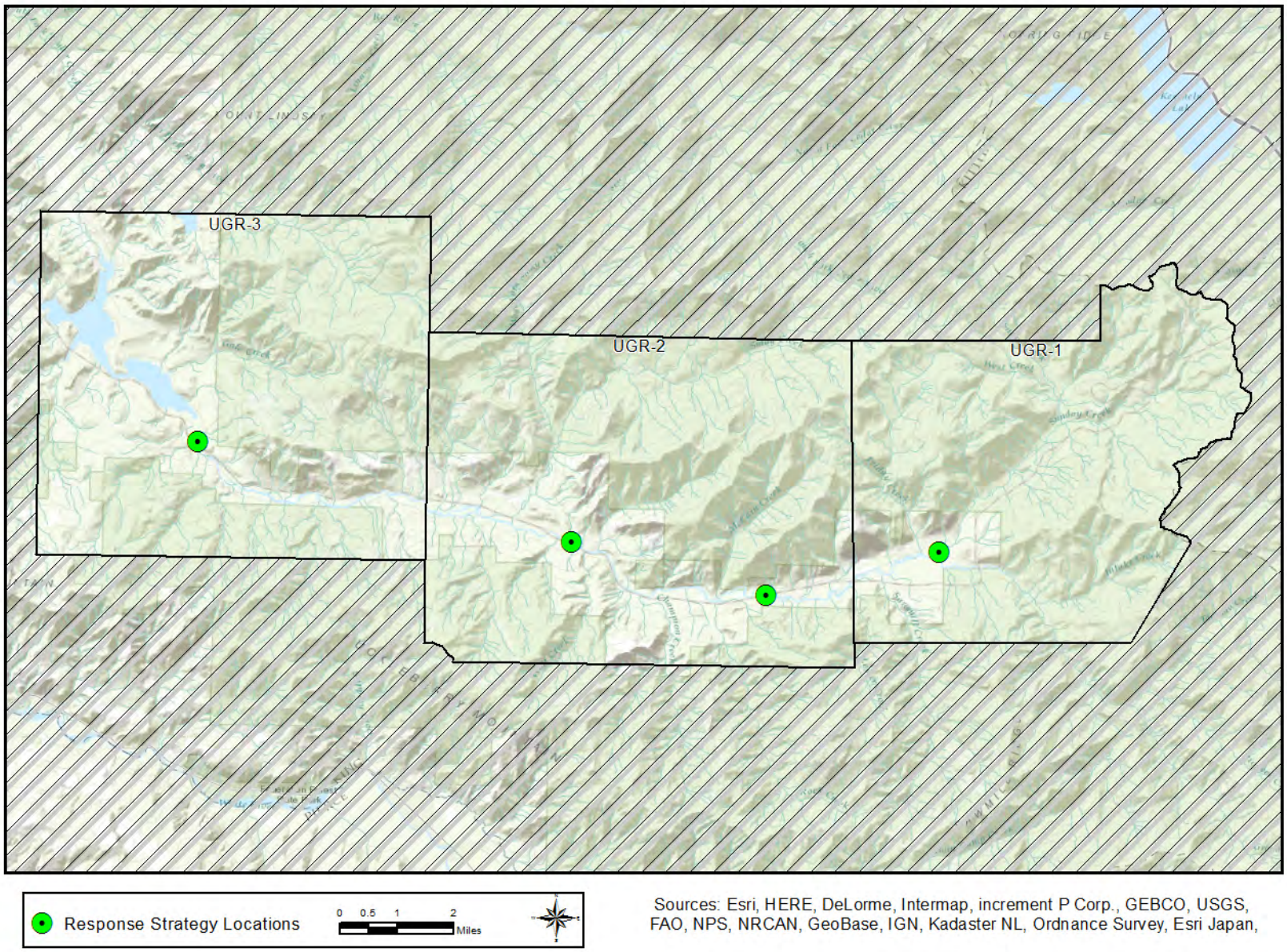


Figure 4-2: Response Strategy Locations

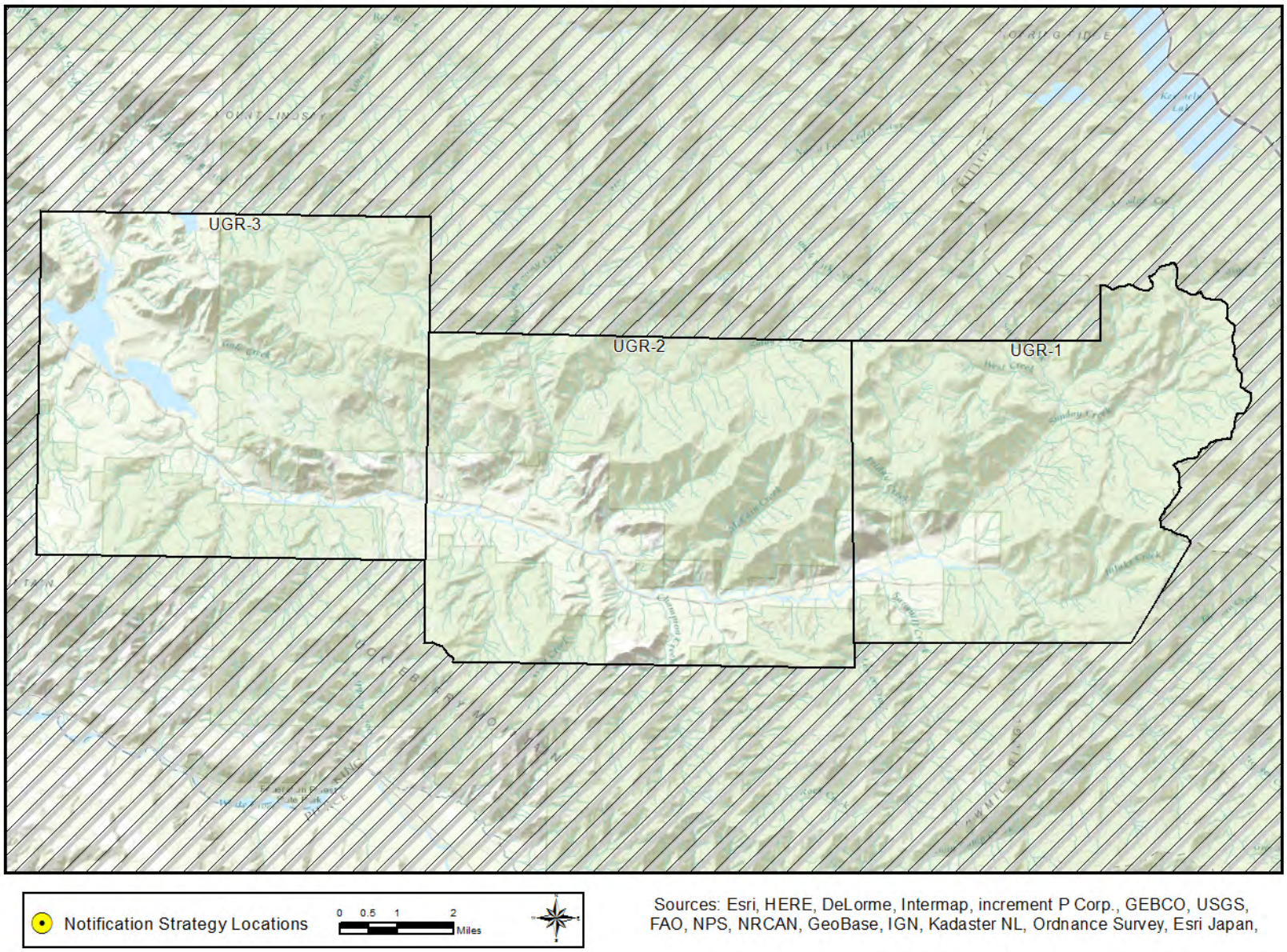


Figure 4-3: Notification Strategy Locations

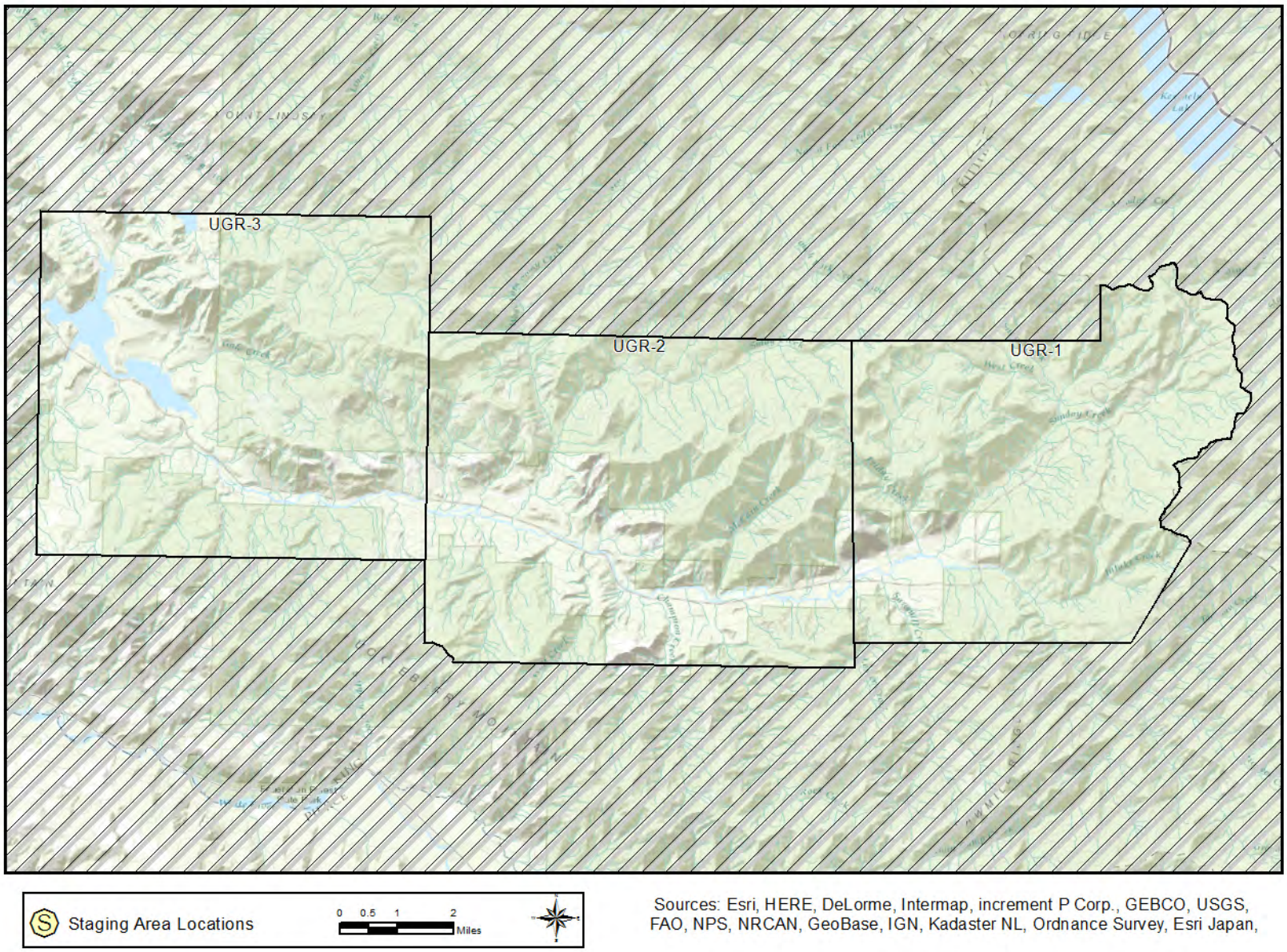


Figure 4-4: Staging Area Locations

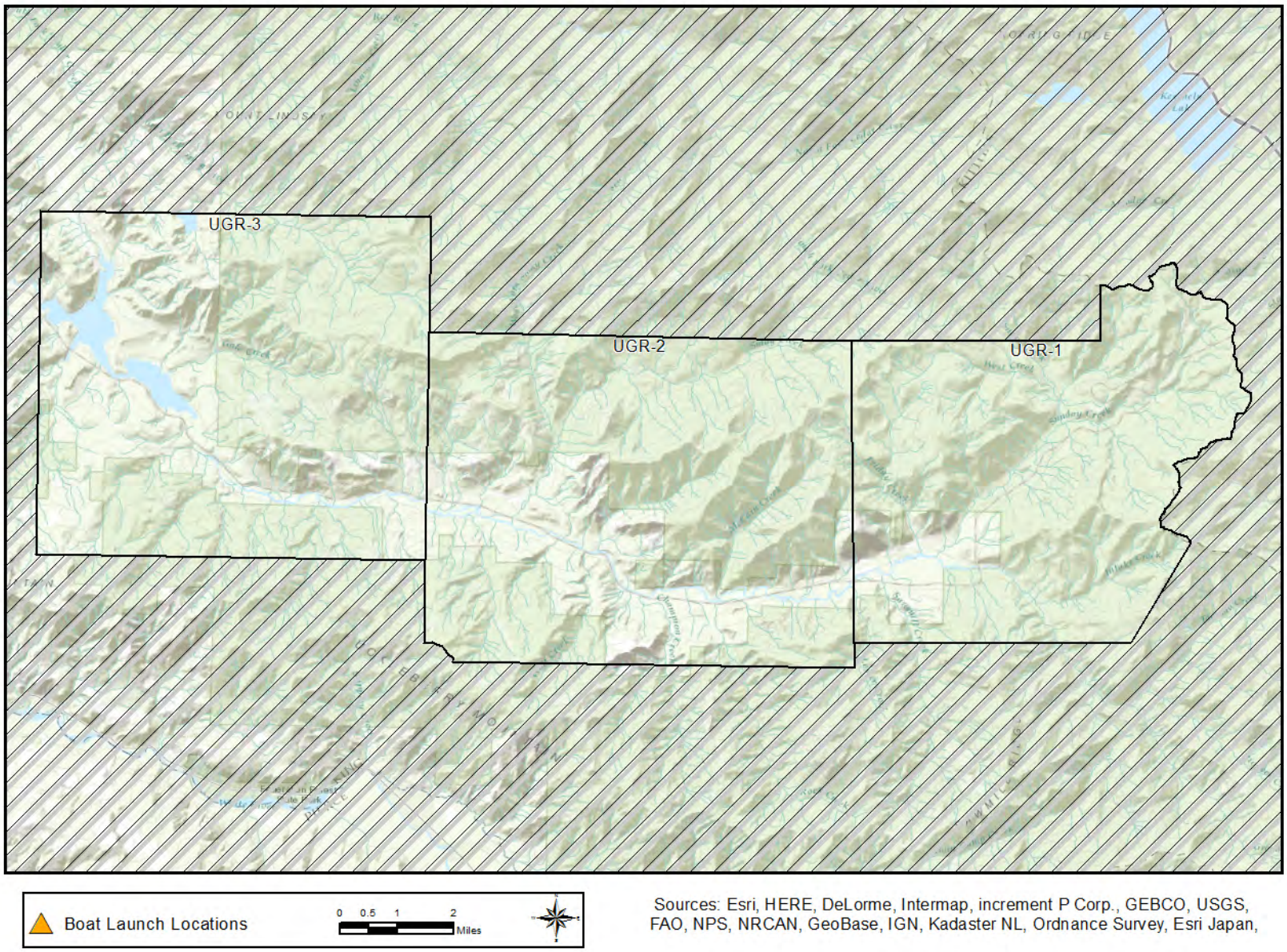


Figure 4-5: Boat Launch Locations

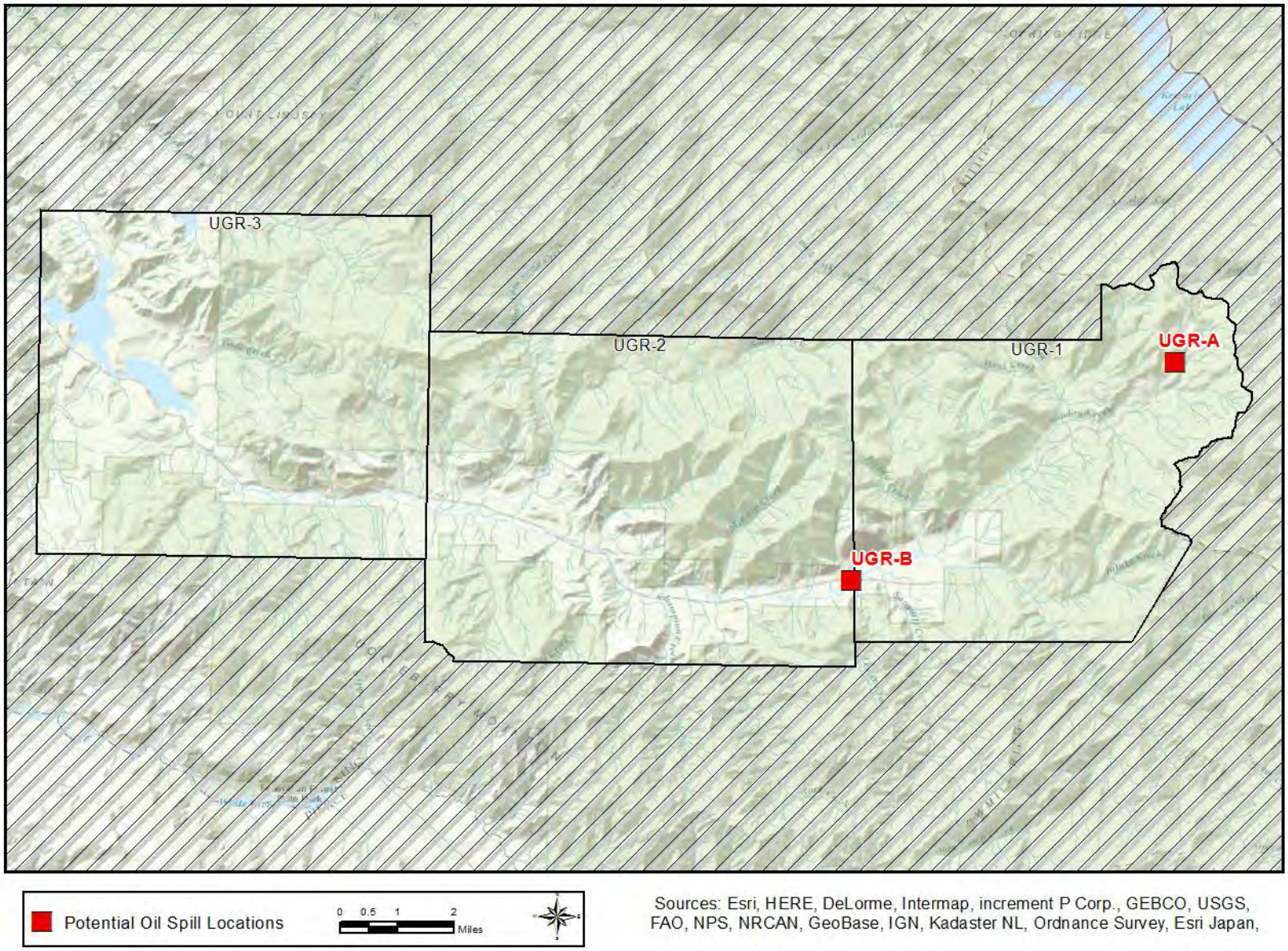


Figure 4-6: Potential Oil Spill Origin Points in Area

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 or as necessary based on the scenario, trajectory, or conditions of the day.
- Permits may be required. Consult the Northwest Area Contingency Plan Permit Summary Table (NWACP Section 9401) for information.

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. 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, on streams, creeks, and rivers, 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 Upper Green River GRP: points UGR-A and UGR-B. 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, deployment time, proximity to the spill source, trustee input, the relative priority of the resources at risk, and other considerations.

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

Table 4.3: UGR-A (Sunday Creek at Stampede Pass Tunnel ~UGR-85/SUNC-6.2)

UGR-A (Sunday Creek at Stampede Pass Tunnel ~UGR-85/SUNC-6.2)				
Implementation Priority	**Strategy Number**	**Sector Map**	**Strategy Matrix**	**Strategy Details**
1	**UGR-68.4**	44	46	55
2	**UGR-76.5**	43	46	57
3	**UGR-80.9**	43	46	59
4	**SUNC-0.1**	42	46	53

Table 4.4: UGR-B (East Lester Rail Bridge ~UGR-82.0)

UGR-B (East Lester Rail Bridge ~UGR-82.0)				
Implementation Priority	Strategy Number	Sector Map	Strategy Matrix	Strategy Details
1	**UGR-68.4**	44	46	55
2	**UGR-76.5**	43	46	57
3	**UGR-80.9**	43	46	59

4.4 SECTOR MAPS (STRATEGY LOCATIONS)

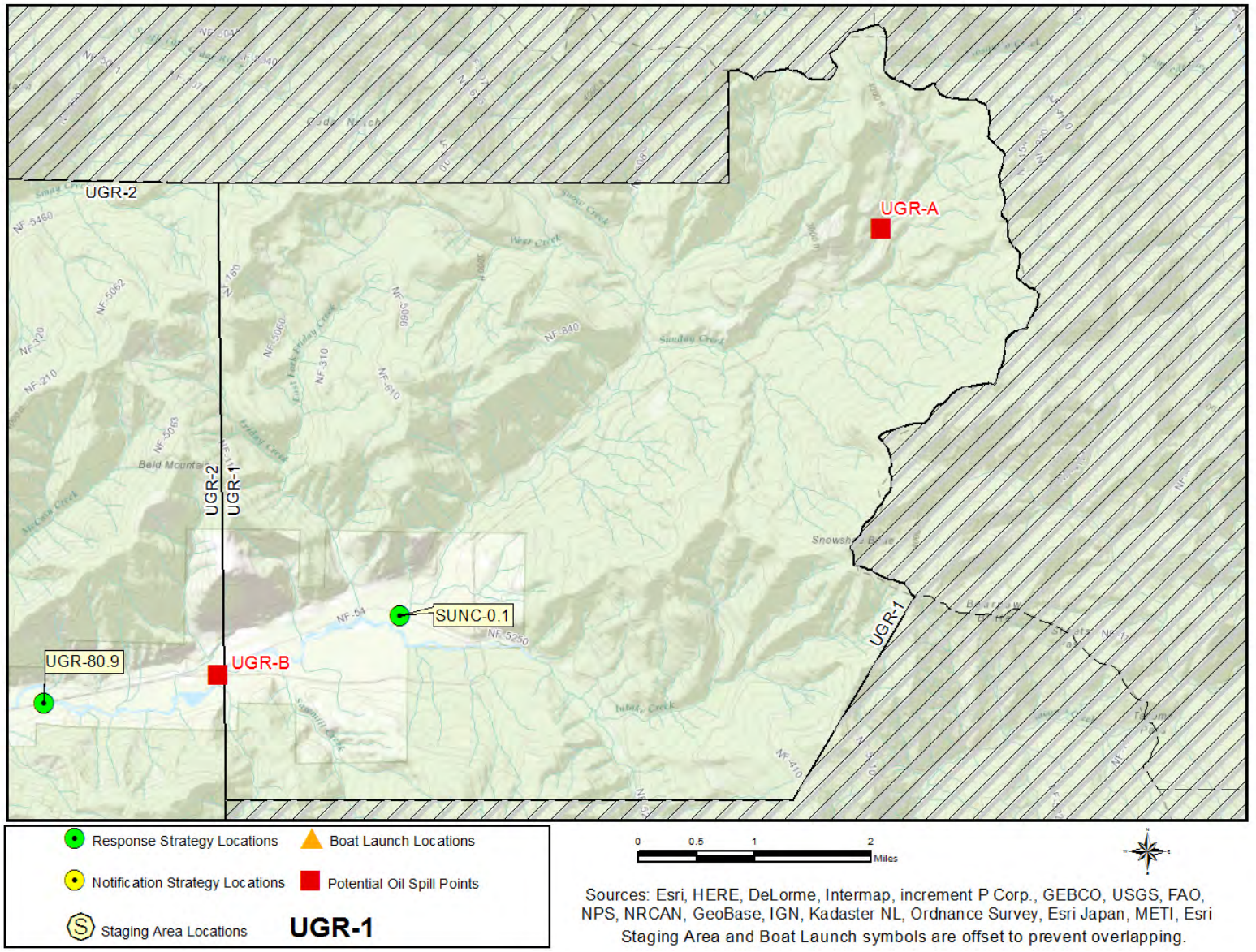


Figure 4-7: Sector Map UGR-1

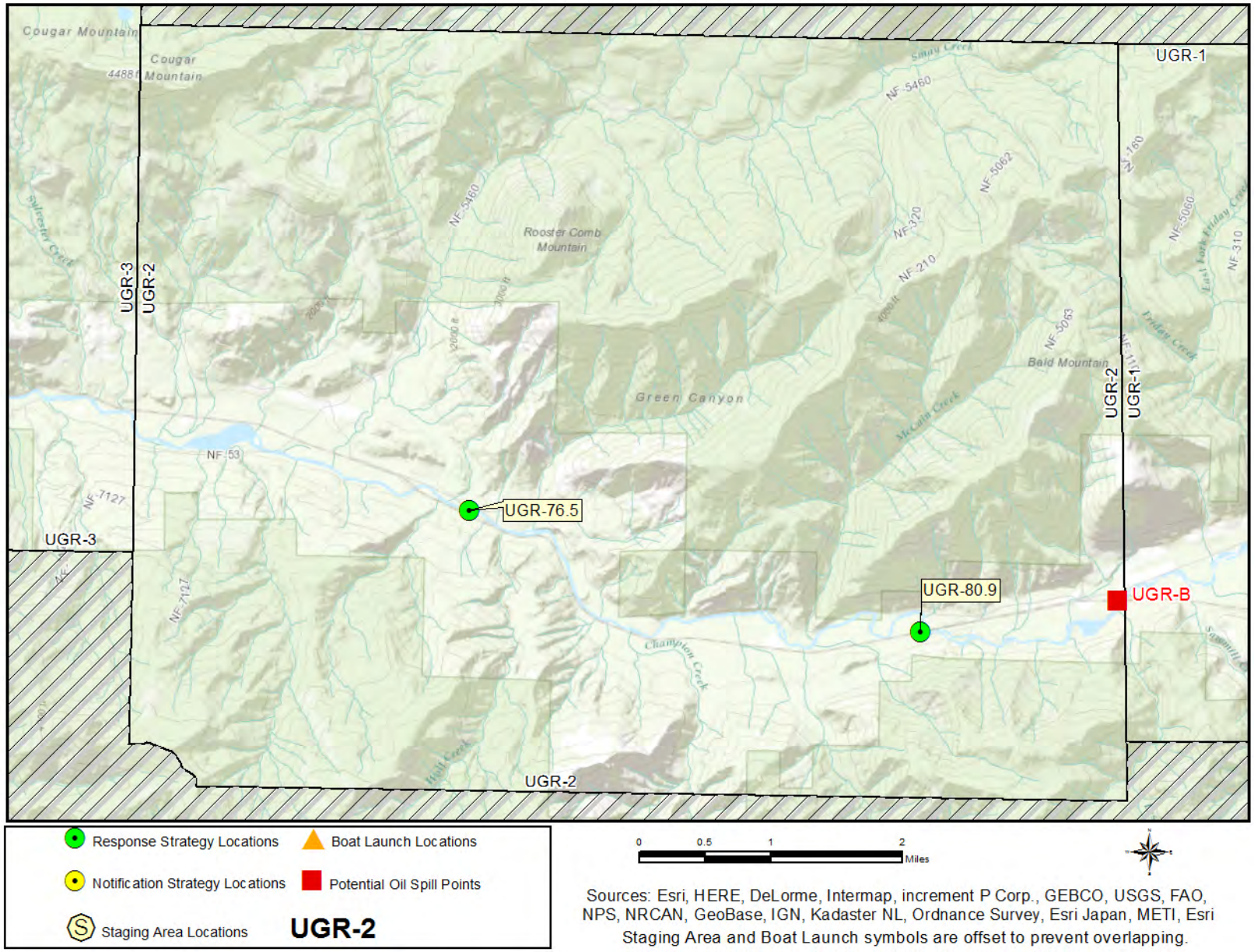


Figure 4-8: Sector Map UGR-2

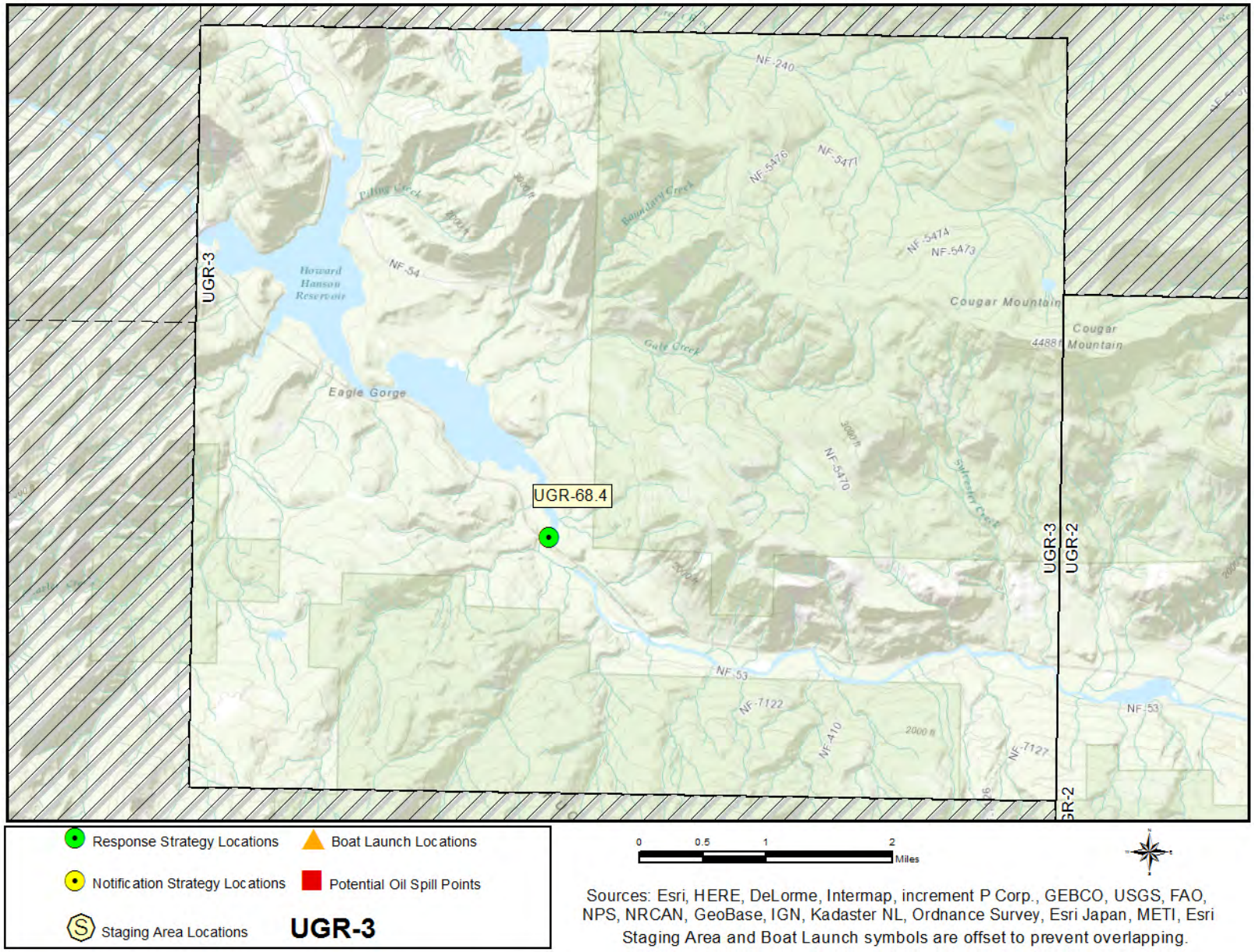
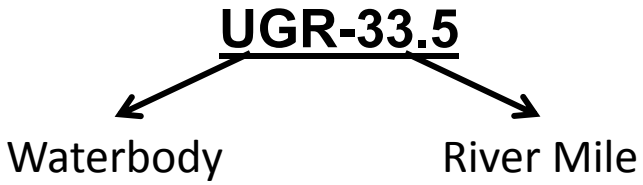


Figure 4-9: Sector Map UGR-3

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".



CRSP = Crisp Creek

GRD = Green River/Duwamish

SUNC = Sunday Creek

UGR = Upper Green River

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#)
SUNC-0.1	Sunday Creek at Road Bridge 47.21748 -121.44841	Collection	Boom 400ft	No	Remote Stage onsite, using roadway.	Raptors, Salmonids, T/E Species, Waterfowl (Breeding), Wetlands	Road to bridge may be blocked by snow. If banks are not accessible deploy both boom segments from bridge.	42	53
UGR-68.4	Green River at Reservoir Inlet (BNSF 71.6) 47.24308 -121.72754	Collection	Boom 300ft	No	Remote Stage onsite using forest road and shoulder.	Freshwater Wetlands, Public Health and Safety, Raptors, Salmonids, Water Intakes, Waterfowl (Breeding)	Call BNSF before deployment; coordinate with On-Call Hazmat Manager at 817-352-2832. Road on river left can washout or be unstable. 300ft distance from road to Point B on river right, bring extension hose for vac truck.	44	55
UGR-76.5	Green River at Nagrom (BNSF 64.5) 47.21874 -121.58680	Collection	Boom 200ft	No	Remote Stage onsite using gravel area on river right.	Raptors, Salmonids, T/E Species, Waterfowl (Breeding), Wetlands	Call BNSF before deployment; coordinate with On-Call Hazmat Manager at 817-352-2832. One mile walk on tracks or high-rail to get personnel to Point A to catch/shoot line. If needed, loop rope and use winch to deploy boom.	43	57
UGR-80.9	Green River at W Lester Bridge (BNSF 60.5) 47.20592 -121.51341	Collection	Boom 200ft	No	Remote Stage onsite, using access road on river right.	Raptors, Salmonids, T/E Species, Waterfowl (Breeding), Wetlands	Call BNSF before deployment; coordinate with On-Call Hazmat Manager at 817-352-2832. In low water channel narrows, hand-launch and collect via sandbar that appears.	43	59

4.5.3 Notification Strategy Matrices

No GRP Notification Strategies Currently Exist for this Planning Area

4.5.4 Staging Area Matrices

No GRP Staging Areas Currently Exist for this Planning Area

4.5.5 Boat Launch Matrices

No GRP Boat Launch Locations Currently Exist for this Planning Area

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APPENDIX 4A

Response Strategy 2-Pagers

<< Go Back

RESPONSE STRATEGIES LIST

SUNC-0.1 UGR-68.4 UGR-76.5 UGR-80.9

Sunday Creek at Road Bridge — SUNC-0.1

Position - Location:	47° 13.049', -121° 26.905'	47° 13' 2.9", -121° 26' 54.3"	47.21748, -121.44841	Ravensdale

Strategy Objective: Collection : Collect oil moving downstream on Sunday Creek

Implementation: All watercraft must be decontaminated, witnessed by Tacoma Water, prior to entering water. Tacoma Water has access to boom/vessel. Secure 100ft section of boom to shore across upstream side of bridge. Secure additional 100ft section of boom to shore on river right, downstream of bridge, near Point C. Use line to extend boom downstream and secure remaining end to shore on river left, near Point D. Collection at Point D using skimmer/storage or vac truck. Use existing features or shoreside anchoring systems to secure boom to banks. Adjust boom angle as needed for conditions.

Staging Area: Remote: Stage onsite, using roadway.

Site Safety: Steep Banks; Slips, Trips, Falls; Water Hazard; Seasonal Snow Accumulations

Field Notes: Road to bridge may be blocked by snow. If banks are not accessible deploy both boom segments from bridge.

Watercourse: Creek - Sunday Creek

Resources at Risk: Raptors, Salmonids, Waterfowl, Wetlands

Recommended Equipment

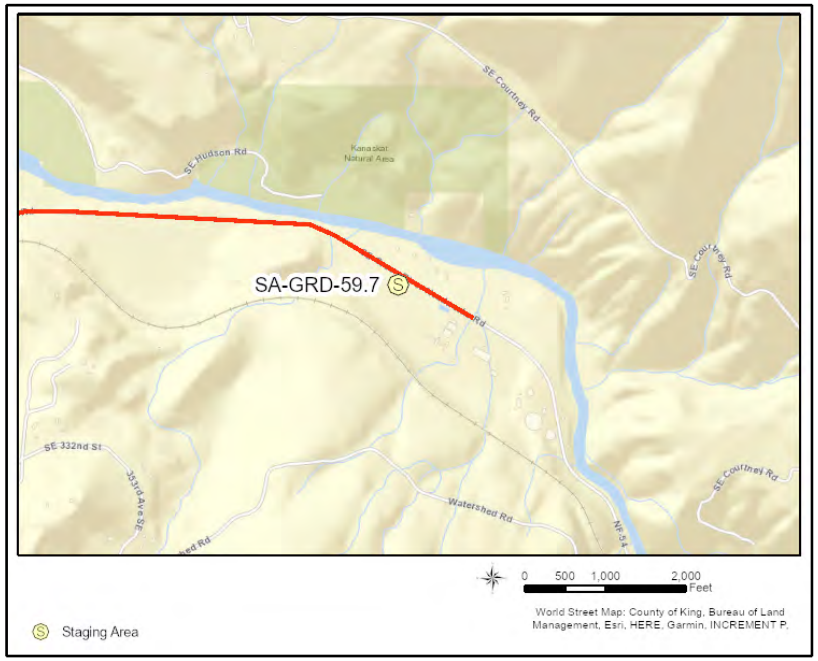
4	Each	Anchoring System(s)- Shoreside
400	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Heaving Line(s)
1	Each	Vac Truck or Skimmer and Storage
1	Each	Winch - Come-A-Long

Recommended Personnel

2	Laborer
1	Supervisor

Sunday Creek at Road Bridge SUNC-0.1

SUNC-0.1 Photo: From bridge over Sunday Creek, looking S at strategy location and Anchor Point D. Taken 3/30/17.



Site Contact

Tacoma Water
Land/Property Owner : Green River Water Treatment Facility
253-502-8346

BNSF Railroad
Emergency Contact : Service Interruption Desk
817-352-2832

Nearest Address

36261 SE Green River Headworks Rd
Ravensdale, WA 98051

Driving Directions

1. From Seattle, take I-5 South to exit 142A.
2. At exit 142A bear right onto ramp and go on WA-18 E toward Auburn (11.34 miles)
3. Take ramp on the right to WA-516 / SE 272nd St toward Covington (0.42 miles)
4. Turn right on SE 272nd St (WA-516 E) toward Covington (4.12 miles)
5. Continue on SE Kent Kangley Rd (WA-516) (4.01 miles)
6. Turn right on Retreat-Kanaskat Rd SE (3.11 miles)
7. Turn right on Cumberland Kanaskat Rd SE (1.5 miles)
8. Make sharp left on SE Green River Headworks Rd (1.92 miles)
9. Check in at guard shack at gate and get escort to site. Area past gate is Tacoma Water Property, cars use radio for traffic control on one-way roads.
10. Site is on northern side of river, north of railroad track. Drive time from gate ~2 hours.

Green River at Reservoir Inlet (BNSF 71.6) UGR-68.4

Position - Location:	47° 14.585', -121° 43.652'	47° 14' 35.1", -121° 43' 39.1"	47.24308, -121.72754	Ravensdale

Strategy Objective: Collection : Collect oil moving downstream on Green River

Implementation: Watercraft must be decontaminated, witnessed by Tacoma Water, Secure 300ft section of boom to shore on river left, near Point A (47.243, -121.7281). Using line-throwing device or other method, extend line to river right. Use line to extend boom E across river and secure to shore on river right, near Point B (47.2431, -121.7269). Collection at Point B using skimmer/storage or vac truck from road. Use existing features/shoreside anchoring to secure boom. Adjust boom angle as needed for conditions. If conditions allow, deploy using handlaunch boat from Point B, use anchoring systems as needed.

Staging Area: Remote: Stage onsite using forest road and shoulder.

Site Safety: Active Rail Line; Slips, Trips, Falls; Water Hazard; Slippery/Steep Banks; Road Washouts; Seasonal Deep Snow; Log Jam Area

Field Notes: Call BNSF before deployment; coordinate with On-Call Hazmat Manager at 817-352-2832. Road on river left can washout or be unstable 300ft distance from road to Point B on river right, bring extension hose for vac truck.

Watercourse: River - Green River

Resources at Risk: Public Health and Safety, Raptors, Salmonids, Water Intakes, Waterfowl, Wetlands

Recommended Equipment

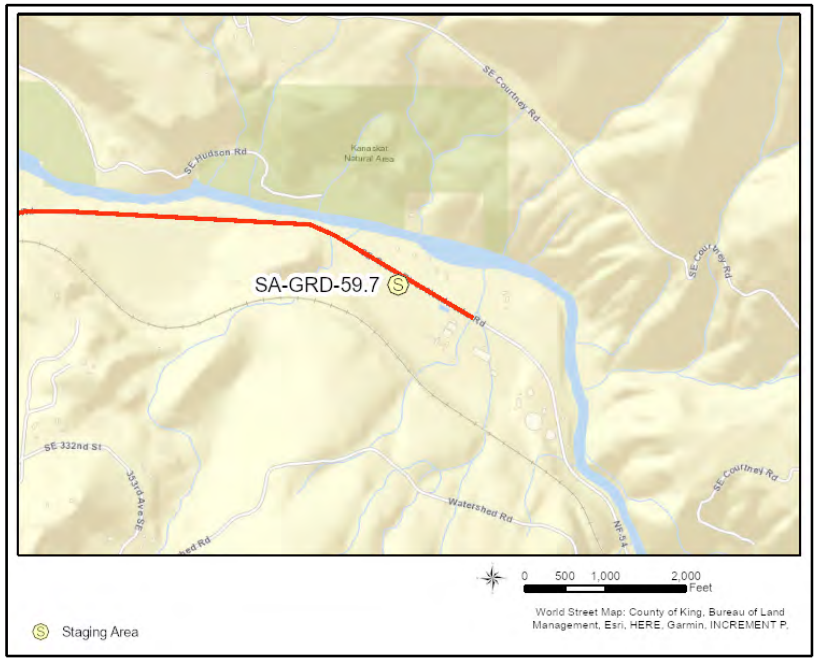
3	Each	Anchoring System(s) - (anchor, lines, floats)
2	Each	Anchoring System(s)- Shoreside
300	Feet	Boom - B3 (River Boom) or equivalent
400	Feet	Line - 1/2" poly line
1	Each	Line throwing gun(s) or device(s)
1	Each	Vac Truck or Skimmer and Storage
1	Each	Winch - Come-A-Long
1	Each	Workboat(s) - (hand-launch)

Recommended Personnel

2	Laborer
1	Supervisor

Green River at Reservoir Inlet (BNSF 71.6) UGR-68.4

UGR-68.4 Photo: From shore on river right, looking W upstream at strategy location. Taken 3/30/17.



Site Contact

BNSF Railroad
Pre-Notification Required : Service Interruption Desk
817-352-2832

Tacoma Water
Land/Property Owner : Green River Water Treatment Facility
253-502-8346

Nearest Address

36261 SE Green River Headworks Rd
Ravensdale, WA 98051

Driving Directions

1. From Seattle, take I-5 South to exit 142A.
2. At exit 142A bear right onto ramp and go on WA-18 E toward Auburn (11.34 miles)
3. Take ramp on the right to WA-516 / SE 272nd St toward Covington (0.42 miles)
4. Turn right on SE 272nd St (WA-516 E) toward Covington (4.12 miles)
5. Continue on SE Kent Kangley Rd (WA-516) (4.01 miles)
6. Turn right on Retreat-Kanaskat Rd SE (3.11 miles)
7. Turn right on Cumberland Kanaskat Rd SE (1.5 miles)
8. Make sharp left on SE Green River Headworks Rd (1.92 miles)
9. Check in at guard shack at gate and get escort to site. Area past gate is Tacoma Water Property, cars use radio for traffic control on one-way roads. (Travel time to site from gate: ~40 minutes)
10. Site is on northeastern side of river, north of railroad track.

Green River at Nagrom (BNSF 64.5) UGR-76.5

Position - Location:	47° 13.124', -121° 35.208'	47° 13' 7.5", -121° 35' 12.5"	47.21874, -121.58680	Ravensdale

Strategy Objective: Collection : Collect oil moving downstream on Green River

Implementation: All watercraft must be decontaminated, witnessed by Tacoma Water, prior to entering water. Tacoma Water has access to boom/vessel.Secure 200ft section of boom to shore on river left, near Point A (47.2186, -121.5865). Using line-throwing device, extend line to river right. Use line to extend boom E across river and secure to shore on river right, near Point B (47.2189, -121.5871). Collection at Point B using skimmer/storage or vac truck from road. Use existing features or shoreside anchoring systems to secure boom to banks. Adjust boom angle as needed for conditions.

Staging Area: Remote: Stage onsite using gravel area on river right.

Site Safety: Active Rail Line; Slips, Trips, Falls; Water Hazard; Slippery/Eroding Banks;

Field Notes: Call BNSF before deployment; coordinate with On-Call Hazmat Manager at 817-352-2832. One mile walk on tracks or high-rail to get personnel to Point A to catch/shoot line. If needed, loop rope and use winch to deploy boom.

Watercourse: River - Above a Dam - Green River

Resources at Risk: Raptors, Salmonids, Waterfowl, Wetlands

Recommended Equipment

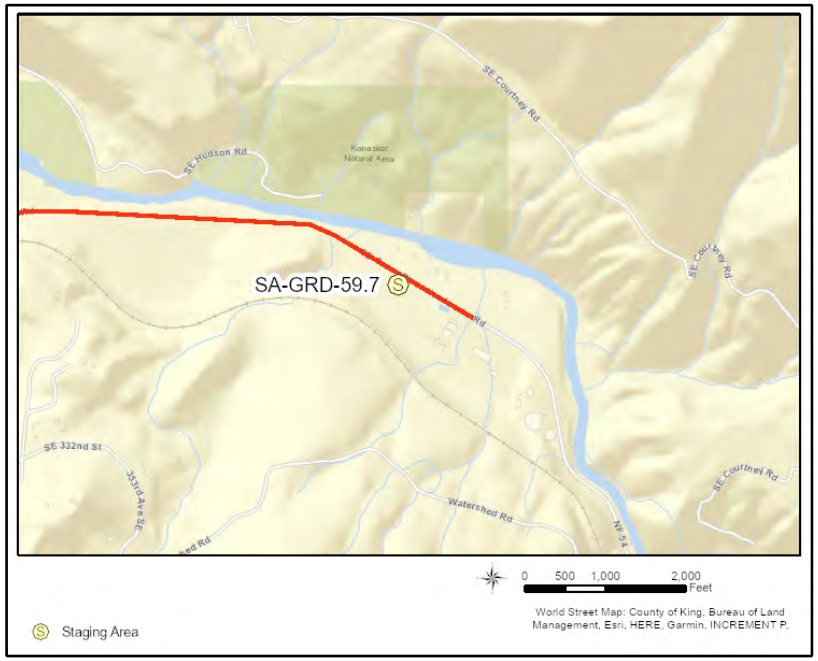
2	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Bridle(s) - Hand (appropriately sized for boom)
300	Feet	Line - 1/2" poly line
1	Each	Line throwing gun(s) or device(s)
1	Each	Vac Truck or Skimmer and Storage
1	Each	Winch - Power Winch

Recommended Personnel

3	Laborer
1	Supervisor

Green River at Nagrom (BNSF 64.5) UGR-76.5

UGR-76.5 Photo: From shore on river right, looking SE upstream at strategy location.



Site Contact

BNSF Railroad
Pre-Notification Required : Service Interruption Desk
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Land/Property Owner : Green River Water Treatment Facility
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Driving Directions

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3. Take ramp on the right to WA-516 / SE 272nd St toward Covington (0.42 miles)
4. Turn right on SE 272nd St (WA-516 E) toward Covington (4.12 miles)
5. Continue on SE Kent Kangley Rd (WA-516) (4.01 miles)
6. Turn right on Retreat-Kanaskat Rd SE (3.11 miles)
7. Turn right on Cumberland Kanaskat Rd SE (1.5 miles)
8. Make sharp left on SE Green River Headworks Rd (1.92 miles)
9. Check in at guard shack at gate and get escort to site. Area past gate is Tacoma Water Property, cars use radio for traffic control on one-way roads.
10. Site is on northern side of the river, past Nagrom, north of rail tracks (drive time from gate:1 hr). Access to southern side of river requires extra 1 mile walk or high-rail drive along tracks. Must coordinate with BNSF before deployment.

Green River at W Lester Bridge (BNSF 60.5) UGR-80.9

Position - Location:	47° 12.355', -121° 30.805'	47° 12' 21.3", -121° 30' 48.3"	47.20592, -121.51341	Ravensdale

Strategy Objective: Collection : Collect oil moving downstream on Green River

Implementation: All watercraft must be decontaminated, witnessed by Tacoma Water, prior to entering water. Tacoma Water has access to boom/vessel. Secure 300ft section of boom to shore on river left, near Point A (47.2056, -121.5136). Using bridge or handlaunch boat, extend line to river right. Use line to extend boom NE across river and secure to shore on river right, near Point B (47.2063, -121.5132). Collection at Point B using skimmer/storage or vac truck from road. Use existing features or shoreside anchoring systems to secure boom to banks. Adjust boom angle and anchor points as needed for conditions.

Staging Area: Remote: Stage onsite, using access road on river right.

Site Safety: Active Rail Line; Slips, Trips, Falls; Water Hazard

Field Notes: Call BNSF before deployment; coordinate with On-Call Hazmat Manager at 817-352-2832. In low water channel narrows, hand-launch and collect via sandbar that appears.

Watercourse: River - Green River

Resources at Risk: Raptors, Salmonids, Waterfowl, Wetlands

Recommended Equipment

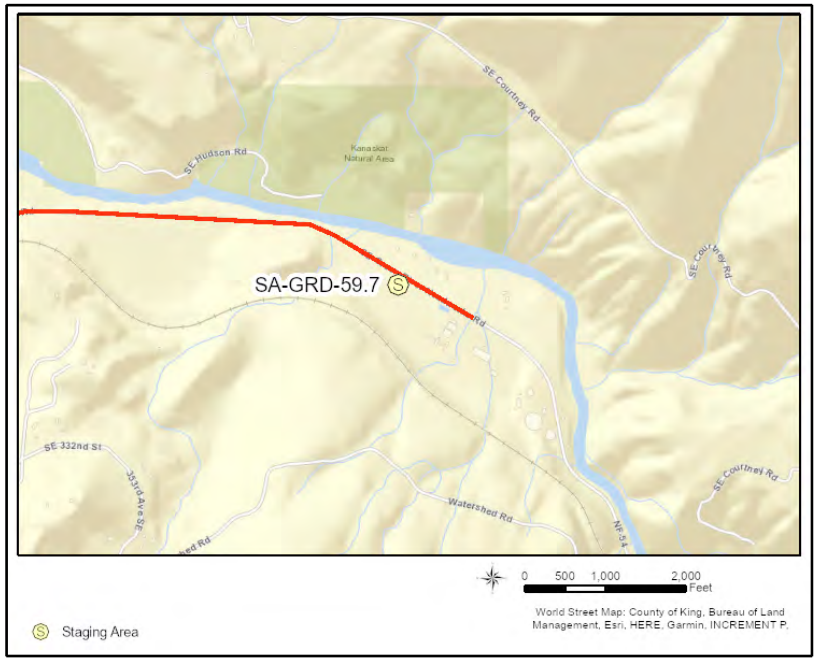
2	Each	Anchoring System(s)- Shoreside
200	Feet	Boom - B3 (River Boom) or equivalent
1	Each	Heaving Line(s)
1	Each	Vac Truck or Skimmer and Storage
1	Each	Winch - Come-A-Long
1	Each	Workboat(s) - (hand-launch)

Recommended Personnel

2	Laborer
1	Supervisor

Green River at W Lester Bridge (BNSF 60.5) UGR-80.9

UGR-80.9 Photo: From river right, looking SW upstream at strategy location.



Site Contact

BNSF Railroad
Pre-Notification Required : Service Interruption Desk
817-352-2832

Tacoma Water
Land/Property Owner : Green River Water Treatment Facility
253-502-8346

Nearest Address

36261 SE Green River Headworks Rd
Ravensdale, WA 98051

Driving Directions

1. From Seattle, take I-5 South to exit 142A.
2. At exit 142A bear right onto ramp and go on WA-18 E toward Auburn (11.34 miles)
3. Take ramp on the right to WA-516 / SE 272nd St toward Covington (0.42 miles)
4. Turn right on SE 272nd St (WA-516 E) toward Covington (4.12 miles)
5. Continue on SE Kent Kangley Rd (WA-516) (4.01 miles)
6. Turn right on Retreat-Kanaskat Rd SE (3.11 miles)
7. Turn right on Cumberland Kanaskat Rd SE (1.5 miles)
8. Make sharp left on SE Green River Headworks Rd (1.92 miles)
9. Check in at guard shack at gate and get escort to site. Area past gate is Tacoma Water Property, cars use radio for traffic control on one-way roads.
10. Site is at railroad bridge, road on northern side of river. Drive time from gate: 1 hr 20 minutes.

<< Go Back

APPENDIX 4B

Notification Strategy 2-Pagers

<< Go Back

NOTIFICATION STRATEGIES – LIST

CRSP-1.2-N** **GRD-59.8-N**** **GRD-64.6-N****

**Strategies from the Green River/Duwamish GRP that are included in this Appendix

Keta Creek Hatchery CRSP-1.2-N

Position - Location:	47° 17.436', -122° 3.653'	47° 17' 26.2", -122° 3' 39.2"	47.29061, -122.06089	Auburn

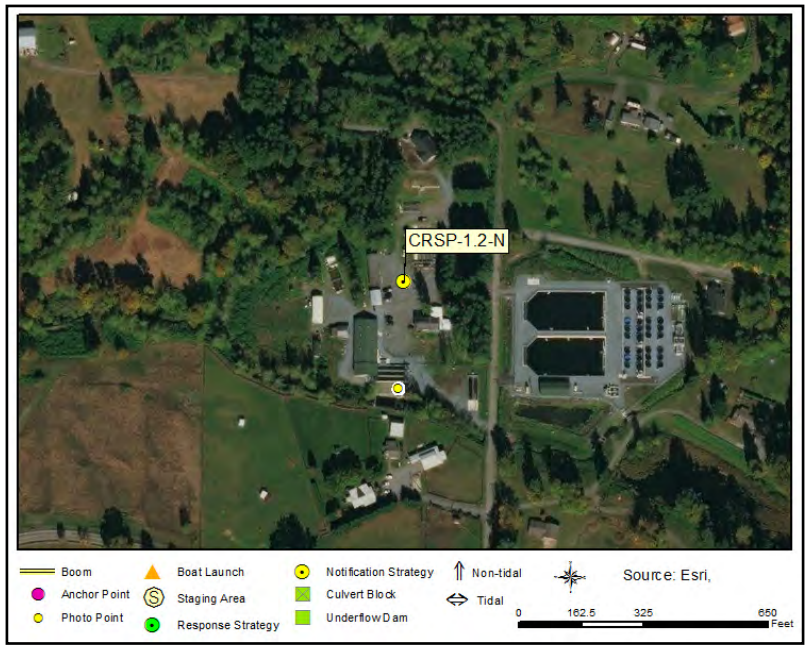
Strategy Objective: Notification : Notify Palmer Ponds to shut intakes. Delay salmon release from Palmer and Keta Creek.

Implementation: Call the Fisheries department at (206) 931-0652 and inform them of the situation. Ask them to notify Keta Creek and Palmer Ponds.

Field Notes: Keta Creek is fed by Crisp Creek and has no intakes on the green. Palmer Ponds has a water intake on the Green near RM 57

Watercourse: Creek - Spring fed, flows to Green River

Resources at Risk: Fish Hatchery, Salmon (Coho, Chinook and Chum), Tribal Lands/Resources, Water Intakes



Communication Process and Action:

Call the Fisheries department at (206) 931-0652 and inform them of the situation. Ask them to notify Keta Creek and Palmer Ponds.

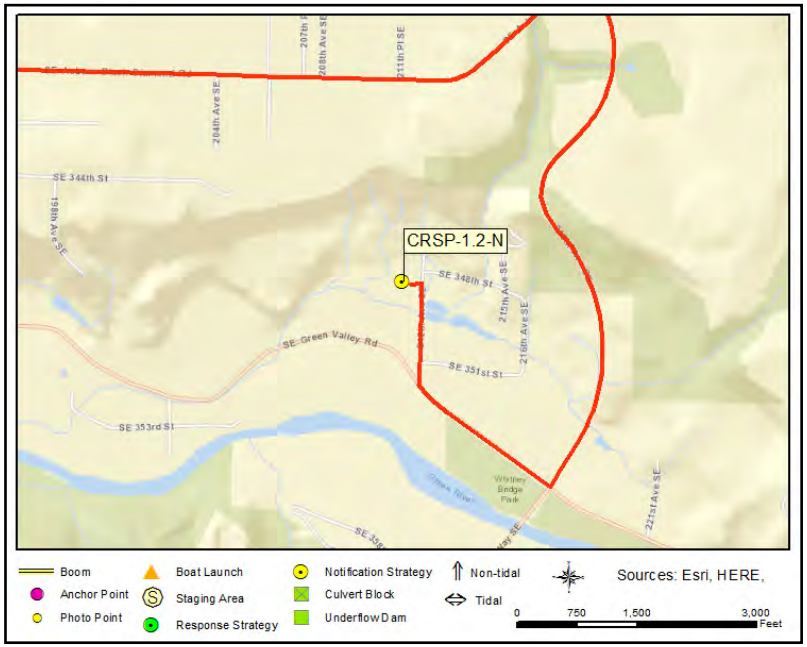
Try the following numbers in order until someone at the hatchery is reached:
Keta Creek Hatchery:
(253) 939-7738
Keta Creek Manager:
253-709-1813 (cell)
253-876-3341 (office)
Muckleshoot Indian Tribe:
(253) 939-3311
Water Quality Manager:
(253) 876-3360
Palmer Ponds:
253-350-4411

Note: The Muckleshoot Indian Tribe will determine whether or not they adjust their fish release schedules.

<< Go Back

Keta Creek Hatchery CRSP-1.2-N

CRSP-1.2-N Photo: Fish gates on Crisp Creek to block fish coming/going to Green River.



Site Contact

Muckleshoot Indian Tribe Fisheries Department
Primary Contact :
39015 172nd Ave SE
Auburn, WA 98092
253-931-0652

Nearest Address

34809 212th Ave SE
Auburn, WA 98092

Driving Directions

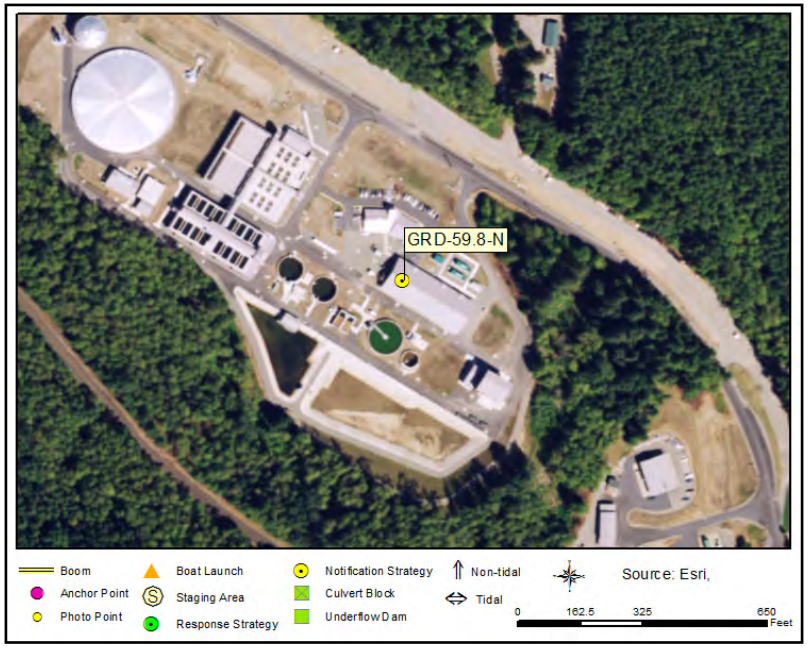
1. From I-5 in Seattle head south towards exit 149.
2. At exit 149 bear right onto ramp to WA-516 toward Kent/Des Moines (0.26 miles)
3. Turn left on WA-516 (S Kent Des Moines Rd) (8.94 miles)
4. Turn right on 152nd Ave SE (0.76 miles)
5. Continue on Kent Black Diamond Rd SE (3.18 miles)
6. Continue on SE Auburn Black Diamond Rd (2.75 miles)
7. Turn right on 218th Ave SE (1.37 miles)
8. Turn right on SE Green Valley Rd (0.4 miles)
9. Turn right onto 212th Ave SE (0.2 miles)
10. Take the second left into the Keta Creek Hatchery parking lot.

<< Go Back

Green River Filtration Plant GRD-59.8-N

Position - Location:	47° 18.489', -121° 51.331'	47° 18' 29.3", -121° 51' 19.9"	47.30815, -121.85552	Ravensdale

Strategy Objective:	Notification : Protect City of Tacoma water supply
Implementation:	Call 253-502-8346 for Tacoma Water 24hr Emergency Line. Explain situation regarding the spill and advise they protect their intakes.
Field Notes:	Major intake is at RM 61 with additional intake near RM 59/filtration plant. Also have pipeline from upper watershed on North Fork Green River.
Watercourse:	River - Below a Dam - Low flow July - Oct <500 cfs; max flow 12000 cfs
Resources at Risk:	Fish Ladder(s), Public Health and Safety, Water Intakes



Communication Process and Action:

Call 253-502-8346 for Tacoma Water 24hr Emergency Line. Explain situation regarding the spill.

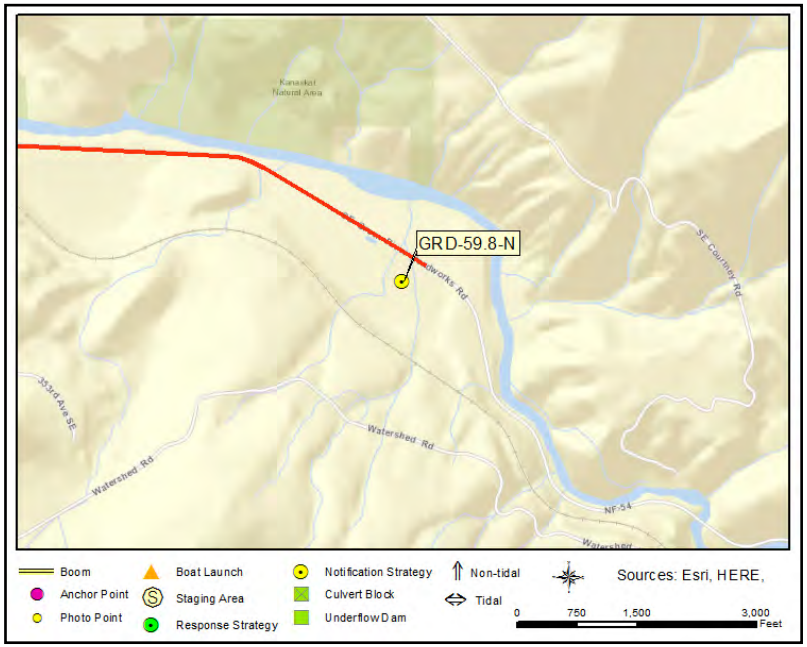
Call the following numbers in order until someone at Tacoma Water is reached:

Treatment Facility Manager
253-396-3172 (desk)
253-377-9117 (cell)
Water Quality Manager
253-502-8808 (desk)
253-381-2434 (cell)

Tacoma Water may choose to deploy response equipment or shut off their intakes at the filtration plant. PUD staff may also self-deploy a protection/collection strategy above the diversion dam at RM 61 if equipment is available.

Green River Filtration Plant GRD-59.8-N

GRD-59.8-N Photo: Adult salmon ladder and water diversion dam for City of Tacoma water supply. Looking W downstream from water intake on river right.



Site Contact

Tacoma Water
Emergency Contact : Green River Water Treatment Facility
36932 SE Green River Headworks Rd
Ravensdale, WA 98051
253-502-8346

Nearest Address

36932 SE Green River Headworks Rd
Ravensdale, WA 98051

Driving Directions

1. From I-5 S in Seattle, take exit 147 for S 272nd St.
2. Turn left onto S 272nd St.
3. In 6 mi, turn right onto Kent-Kangley Rd/WA-518 E.
4. In 11.4 mi, slight right onto Retreat-Kanaskat Rd.
5. In 3.1 mi, turn right onto Cumberland Kanaskat Rd/ Cumberland Kanasket Rd SE.
6. In 1.5 mi, turn left onto Green River Headworks Rd.
7. Drive to the security checkpoint and register with the guard.

<< Go Back

Howard Hanson Dam GRD-64.6-N

Position - Location:	47° 16.648', -121° 47.277'	47° 16' 38.9", -121° 47' 16.6"	47.27747, -121.78795	Ravensdale

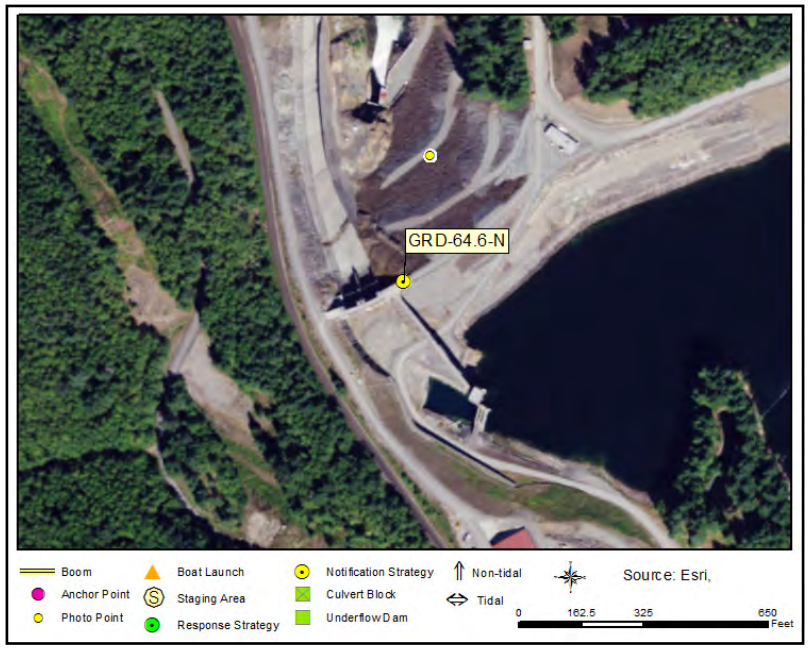
Strategy Objective: Notification : Notify dam of spill and potentially reduce flow

Implementation: Call the Reservoir Control Center at 206-764-6702 and inform them of the spill and response taking place.

Field Notes:

Watercourse: River - Below a Dam - Low flow July to October

Resources at Risk: USACE Management Area



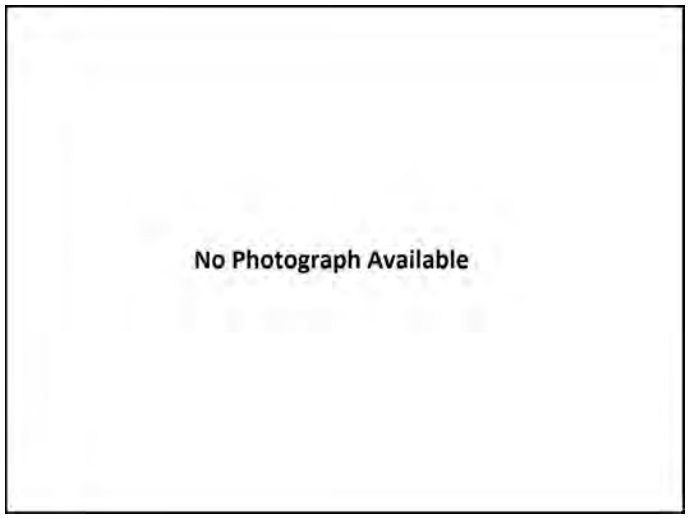
Communication Process and Action:

Call the U.S. Army Corps of Engineers Reservoir Control Center at 206-764-6702 or 206-764-3584 (M-F 7:30-4:30) and explain the situation regarding the spill. Request they reduce flow if possible, for responder safety and better oil recovery rates.

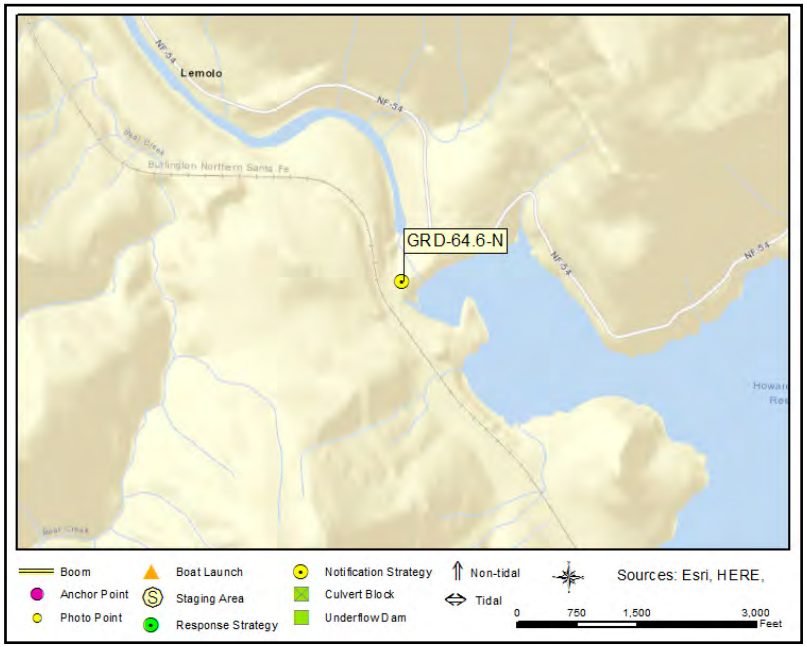
If the Control Center cannot be reached, call these numbers in order until someone at the Army Corps has been notified:
District ECC: 206-764-6831 or 206-764-6910
Operations Supervisor: 206-764-6975
Environment Compliance Coordinator: 206-764-6717 or 360-825-3211
Project Lead: 206-764-6975
Project Safety Officer: 206-764-6975
Project Manager: 206-764-3717

Note: The Army Corps will make the decision whether or not they will adjust the flow through the dam.

Howard Hanson Dam GRD-64.6-N



GRD-64.6-N Photo: No photograph available for this location.



Site Contact

USACE Seattle District Reservoir Control Center
Emergency Contact :

WA
206-764-6702

Nearest Address

31714 Cumberland Kanaskat Rd SE
Ravensdale, WA 98051

Driving Directions

1. Start at I 5 Federal Way
2. At exit 142A bear right onto ramp and go on WA-18 E toward Auburn (11.22 miles)
3. Take ramp on the right to WA-516/Se 272nd St toward Covington (0.42 miles)
4. Turn right on WA-516 (SE 272nd St) toward Covington (4.7 miles)
5. Continue on SE Kent Kangley Rd (3.42 miles)
6. Turn right on Retreat-Kanaskat Rd SE (Retreat Kanasket Rd SE) β.11 miles)
7. Bear right (0.03 miles)
8. Bear right on Cumberland Kanaskat Rd SE (Cumberland Kanasket Rd SE) (1.41 miles)
9. Follow Cumberland Kanaskat Rd SE to security checkpoint at Tacoma Water Green River Filtration Plant. The road to the dam is one lane radio-controlled and security must escort visitors.

APPENDIX 4C

Staging Area 2-Pagers

<< Go Back

STAGING AREAS - LIST

SA-GRD-59.7**

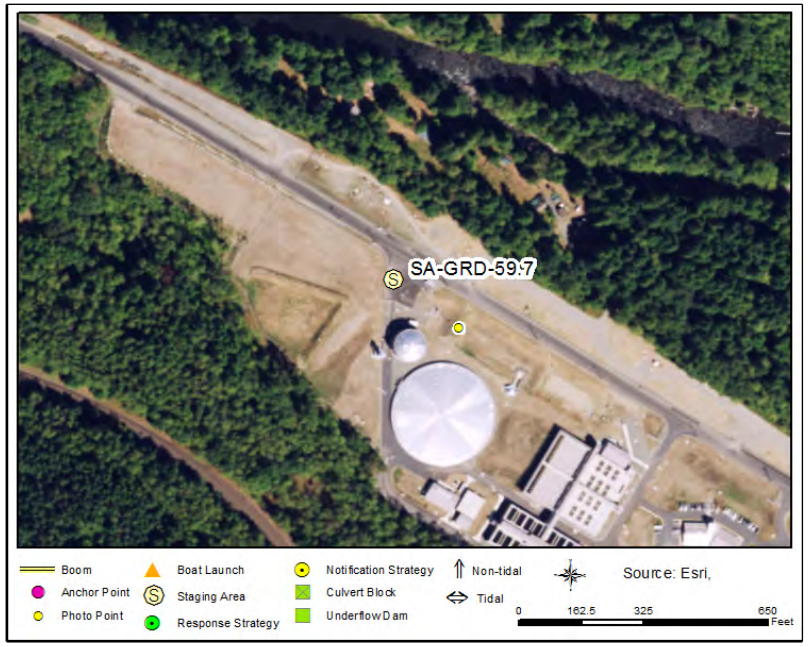
**Staging Area from Green River/Duwamish GRP that is included in this Appendix for reference

Tacoma Water Guard Shack and Gate SA-GRD-59.7

Staging Area

Position - Location:	47° 18.622', -121° 51.536'	47° 18' 37.3", -121° 51' 32.2"	47.31036, -121.85894	Ravensdale

Comments: Coordinate before arrival with Tacoma Water Emergency Line (253-502-8346). Guard shack onsite controls access to upper Green River watershed and coordinates escort cars and all traffic into area. You must park at the gate and check in with the guard before entering Tacoma Water property. During a response Tacoma Water may, or may not, choose to offer access to their facilities at their offices (restrooms, water, etc).



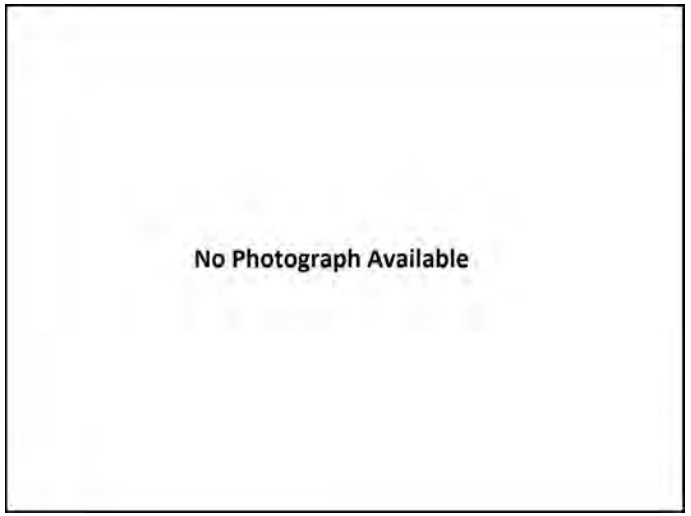
GRP Response Strategies Served:

UGR-76.5, UGR-68.4, UGR-80.9, SUNC-0.1

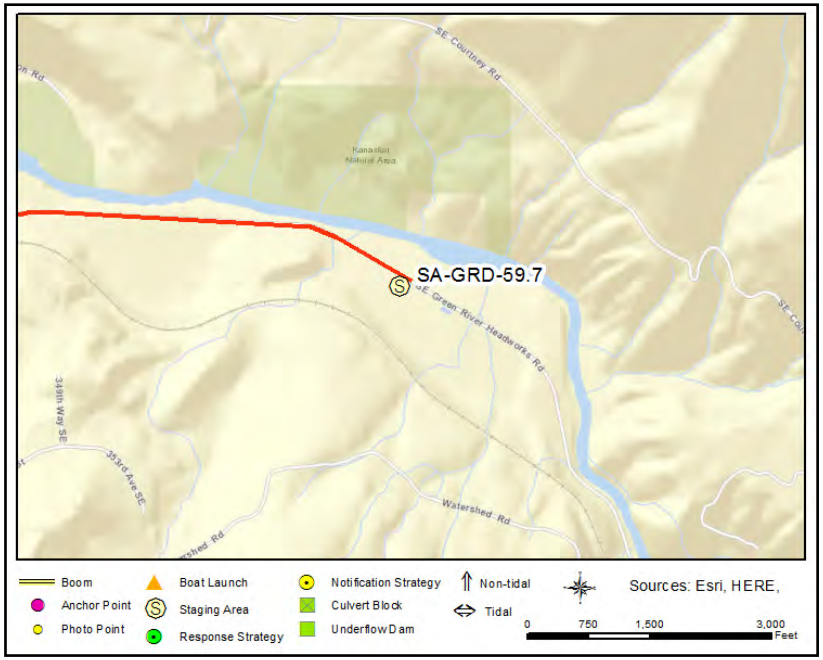
Location Information

Asset	Type/Status	Amount/Number
Boat Dock(s)	No	
Boat Ramp(s)	None	
Cell Phone Coverage	Not Determined	
Covered Spaces	Yes	Tacoma Water Offices
Estimated Lot Size		5000 Sq Ft
Lot Cover (Primary)	Asphalt	
Parking - Car	Gravel	100
Parking - Trailer	Gravel	30
Power	Yes	w/Tacoma Water Permission
Restroom	Not Determined	w/Tacoma Water Permission
User Fee	No	
Waste Disposal	Not Determined	w/Tacoma Water Permission
Water (potable)	Not Determined	w/Tacoma Water Permission

Tacoma Water Guard Shack and Gate SA-GRD-59.7



SA-GRD-59.7 Photo: No photo available.



Site Contact

Tacoma Water
Land/Property Owner : Green River Water Treatment Facility
36932 SE Green River Headworks Rd
Ravensdale, WA 98051
253-502-8346

Nearest Address

36261 SE Green River Headworks Rd
Ravensdale, WA 98051

Driving Directions

1. From Seattle, take I-5 South to exit 142A.
2. At exit 142A bear right onto ramp and go on WA-18 E toward Auburn (11.34 miles)
3. Take ramp on the right to WA-516 / SE 272nd St toward Covington (0.42 miles)
4. Turn right on SE 272nd St (WA-516 E) toward Covington (4.12 miles)
5. Continue on SE Kent Kangley Rd (WA-516) (4.01 miles)
6. Turn right on Retreat-Kanaskat Rd SE (3.11 miles)
7. Turn right on Cumberland Kanaskat Rd SE (1.5 miles)
8. Make sharp left on SE Green River Headworks Rd (1.92 miles)
9. Check in at guard shack at gate. Area past gate is Tacoma Water Property. All vehicles are managed via radio for traffic control on one-way roads.
10. Stage vehicles and equipment in public parking area outside of gate.

APPENDIX 4D

Boat Launch 2-Pagers

No GRP Boat Launch Locations Currently Exist for this Planning Area