



DEPARTMENT OF
ECOLOGY
State of Washington

Grays Harbor Vessel Traffic Risk Assessment (GHVTRA)

*Hazard Identification Workshop 1
Handbook*

January 2018

Publication and Contact Information

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December 29, 2017

Thank you for participating in the Grays Harbor Vessel Traffic Risk Assessment workshops! We are privileged to have this opportunity to bring tribes and stakeholders together to identify ways we can improve oil spill prevention and response preparedness in this significant waterway and ecosystem. Your participation is vital to ensure we consider all relevant information, and produce the best possible information and regionally specific recommendations from this work.

To ensure you are able to fully participate, please take time to review this handbook before the workshop. You'll find the workshop agenda, background information, instructions on what we would like participants to do ahead of time, and templates to help you capture your thoughts. The templates will be used during the workshop to structure our conversations and record everyone's contributions.

We are fortunate to live in an area with unparalleled social, cultural, economic, and environmental resources and opportunities. Our region is also unique in the robust and effective forums that exist to improve maritime safety and prevent oil from entering the water. Participants in these forums include tribes, government agencies, industry, nongovernmental organizations, and citizens, each with an important role to play and interests to safeguard. The state legislature recognizes the damage that an oil spill on our waters could cause to our resources, and they have consistently invested in a comprehensive Spills Prevention, Preparedness, and Response program to mitigate these risks. The Grays Harbor Vessel Traffic Risk Assessment is an important step in our work to protect our states sensitive resources. As a result of all of these factors, Washington has one of the lowest spill rates in the nation.

However, we all realize that a major spill could be catastrophic. In keeping with the collaborative nature of our maritime forums, we look forward to forthright and detailed conversations about how we can continue to improve spill prevention and preparedness. Thank you again for dedicating your time and energy to this important shared work.

I look forward to seeing you at the workshop.

Sincerely,

Dale Jensen
Program Manager
Spill Prevention, Preparedness, and Response

Grays Harbor Vessel Traffic Risk Assessment (GHVTRA)

Hazard Identification Workshop 1 Handbook

SPPR Program
Washington State Department of Ecology
Olympia, Washington

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Workshop Agenda

Hazard Identification Scope

Conduct a series of workshops to:

- Identify local factors associated with hazards to commercial vessel operations in Grays Harbor that could result in an oil spill
- Develop regionally specific recommendations to improve oil spill prevention and preparedness

Expected Outcomes

The workshop will produce a list of local factors related to oil spill hazards for commercial cargo, passenger, towing and tank vessels greater than 300 gross tons.

Agenda

8:30 WELCOME AND INTRODUCTIONS – Dale Jensen, Program Manager, WA State Dept. of Ecology Spill Prevention, Preparedness, and Response Program

8:40 SAFETY BRIEFING AND WORKSHOP OVERVIEW – Scott Ferguson and Brian Kirk; WA State Dept. of Ecology Spill Prevention, Preparedness, and Response Program; Workshop Facilitators

- Safety procedures
- Grays Harbor Vessel Traffic Risk Assessment process
- Hazard Identification Workshop 1 scope and objectives
- Agenda Review
- Meeting ground rules and decision making approach

9:00 HAZARD IDENTIFICATION PROCESS

- Waterway Areas
- Template Review

9:15 HAZARD IDENTIFICATION

- Structured brainstorming using templates

10:30 BREAK

10:45 HAZARD IDENTIFICATION, CONTINUED

- Structured brainstorming using templates

12:00 WORKING LUNCH

- Discuss Response Capability Workshop;
- Discuss Commercial Fishing, Tribal Fishing, and Recreational Vessel Oil Spill Prevention and Response Workshop; or
- Continue hazard identification, if required based on progress

12:45 HAZARD IDENTIFICATION, CONTINUED

- Structured brainstorming using templates

3:45 BREAK/PREPARE WORKSHOP OUTPUT**4:00 REVIEW OUTPUT FROM WORKSHOP**

- List of local factors
- Other ideas/considerations identified by participants

4:15 OVERVIEW OF HAZARD IDENTIFICATION WORKSHOP 2**4:30 ADJOURN**

About this Handbook

This handbook is intended to provide you with all the material you will need to successfully prepare for, and participate in, the Grays Harbor Vessel Traffic Risk Assessment Hazard Identification Workshop 1.

Before the workshop, please review this handbook, and complete the “Local Factors” section of the Hazard Identification templates. Detailed instructions are on page 12.

Additional handbooks will be provided for the other workshops in this assessment, including Hazard Identification Workshop 2, the Response Capability Workshop, and the Commercial Fishing, Tribal Fishing, and Recreational Vessel Oil Spill Prevention and Preparedness Workshop.

The following two sections of the handbook give background information on the Grays Harbor Vessel Traffic Risk Assessment, and describe our approach to Hazard Identification.

The Workshop Material section has a figure showing the waterway, and the hazard identification templates that we will complete during the workshop.

A glossary and references are provided at the end of the handbook to help you prepare for the workshop, and for your use during the workshop.

Grays Harbor Vessel Traffic Risk Assessment

Background

Ecology received funding in the 2017-2019 budget to continue our oil spill prevention risk assessment work. Our current funding supports a risk assessment for oil spills from commercial vessels in Grays Harbor, and a rail traffic risk assessment. This builds on previous work, including:

- 2014 Marine and Rail Oil Transportation Study (Ecology, 2015)
- 2015 update to a vessel traffic risk assessment for Strait of Juan de Fuca, Puget Sound, San Juan Islands and connecting waterways (Van Dorp, 2017)
- 2016 Salish Sea Oil Spill Risk Reduction Workshop (Ecology, 2016)
- 2017 Columbia River Vessel Traffic Evaluation and Safety Risk Assessment (Ecology, 2017)

Goals

The goals of the Grays Harbor Vessel Traffic Risk Assessment are to:

- Assess baseline and changing oil spill risks from commercial vessels operating in Grays Harbor
- Identify measures that could help reduce the risks of oil spills
- Assess oil spill response preparedness
- Identify baseline response capability

Process

Ecology is following the International Maritime Organization (IMO) Formal Safety Assessment (FSA) process to conduct the Grays Harbor Vessel Traffic Risk Assessment (IMO, 2002). Adopted by the IMO in 2002, Formal Safety Assessments use a structured and systematic methodology to assess the risks relating to maritime safety and the protection of the marine environment, and for evaluating the costs and benefits of options for reducing these risks (IMO, 2002). The FSA process includes the following steps:

- Preparatory Step
 - Definition of Goals, Systems, Operations
- Step 1: Hazard Identification
- Step 2: Risk Analysis
- Step 3: Risk Control Options
- Step 4: Cost Benefit Assessment
- Step 5: Recommendations for Decision Making

Initial Focus

Ecology's focus during fiscal year 2018 (July 1, 2017 – June 30, 2018), is completing the preparatory step and Step 1, Hazard Identification. We are facilitating two workshops to conduct the Hazard Identification. Two additional workshops will extend the Hazard Identification process. The first will discuss oil spill response preparedness and the second will focus on commercial fishing, tribal fishing, and recreational vessel oil spill prevention and preparedness. A schedule of all workshops is shown below.

During the first Hazard Identification workshop, participants will review potential incidents that could result in oil spills from commercial vessels, with a goal of identifying any local factors that could contribute to these incidents. Examples of local factors may include a submerged jetty that could contribute to vessel grounding risks, or a sharp turn in a channel that could contribute to collision and allision risks. The list of local factors will be the primary outcome of the first workshop.

In the second Hazard Identification workshop, participants will discuss each local factor listed in the first workshop, and identify any safeguards currently in place to prevent the incident, and any high-level recommendations that could improve oil spill prevention.

The Hazard Identification is centered on the discussion of local factors, rather than other risk components, such as the relative frequency of vessel incidents, or the consequence of oil spills, for two reasons.

First, commercial vessel incidents, like collisions or groundings resulting in an oil spill, are relatively rare events both globally and in the historical data available for Grays Harbor. Ecology data for 2007-2017 show only one oil spill from a large commercial vessel: a 1-gallon hydraulic oil spill from a cargo ship in 2011 (Ecology, 2017a). The last major oil spill in the vicinity of Grays Harbor was the oil barge *Nestucca* in December, 1988 (NOAA, 2017). Rather than ask participants to provide qualitative judgments about the likelihood of these relatively rare events, the workshop seeks to benefit from local knowledge and expertise about the commercially navigable waterway.

Additionally, the overall Grays Harbor Vessel Traffic Risk Assessment and the Hazard Identification workshops are intended to improve oil spill prevention and preparedness. It is beyond the scope of this assessment to model potential spill consequences in terms of the fate, transport, and effect of spilled oil.

The risk assessment process may end, or pause, after the Hazard Identification is complete. Ecology anticipates making a decision on whether to continue with Steps 2-5 of the FSA process in the spring of 2018 based on the results of the Hazard Identification, and possible changes in Agency and fiscal direction. In addition to this risk assessment, Ecology has a role in the State Environmental Policy Act (SEPA) process for any permitting decisions related to vessel traffic and oil movement.

Workshop Schedule

Date	Event
January 25, 2018	Hazard Identification Workshop 1 Port of Grays Harbor
February 28, 2018	Hazard Identification Workshop 2 Port of Grays Harbor
March 28, 2018	Response Capability Workshop McCausland Hall, Westport Maritime Museum
TBD	Commercial Fishing, Tribal Fishing, and Recreational Vessel Oil Spill Prevention and Preparedness Workshop
June, 2018	Hazard Identification and Response Capability Preliminary Report

Hazard Identification

Background

Hazard Identification is first step in the Formal Safety Assessment process. The purpose of this step is to identify a list of hazards and associated scenarios, prioritized through the use of screening criteria, which are specific to the problem under review (IMO, 2002). Hazard Identification can be accomplished through a variety of techniques, such as structured group brainstorming or Fault Tree Analysis (ABS, 2000).

Approach

Ecology will facilitate structured brainstorming discussions to accomplish the Hazard Identification process. The scope, expected outcomes, and process are described below.

Hazard Identification Scope

Conduct a series of workshops to:

- Identify local factors associated with hazards to commercial vessel operations in Grays Harbor that could result in an oil spill
- Develop regionally specific recommendations to improve oil spill prevention and preparedness.

Details:

- Hazards include hazards to navigation and vessel incidents that could result in an oil spill (e.g., collision, allision, grounding, flooding; fire/explosion; structural failure)
 - Includes consideration of meteorological/hydrographic condition, e.g., high winds, heavy seas, fog, and tides and currents including cyclical changes and tidal extremes
 - Does not include region wide hazards, e.g., Cascadia Subduction Zone earthquake/tsunami

- The fate and effect of spilled oil will be considered during the Response Capability Assessment workshop. In-depth consideration of the environmental, cultural, or economic impacts of the spilled oil is beyond the scope of the Hazard Identification and Response Capability Assessment.

- Geographic boundaries
 - Offshore from buoy “GH” (approximately 5nm offshore) to Weyerhaeuser Company Bay City Log Export, Berths 1 and 2
 - Workshop may include discussion of offshore vessel traffic management practices westward of buoy “GH”, as noted on templates 1 and 2

- Types of vessels:
 - Commercial cargo, passenger, towing, fishing, and tank vessels > 300 gross tons
 - Includes specific hazards for different vessel types (e.g., considerations for grain ships, car carriers, etc.)
 - Commercial and tribal fishing vessels and recreational vessels < 300 gross tons
 - Will be considered during the Hazard Identification workshops as operations that could impact a commercial cargo, passenger, towing, fishing, or tank vessel > 300 gross tons
 - Ecology is planning a workshop to discuss commercial and tribal fishing vessel and recreational vessel oil spill prevention and preparedness for vessels < 300 gross tons

- Oil spills
 - Oil as defined by the state of Washington RCW 90.56.010: "Oil" or "oils" means oil of any kind that is liquid at twenty-five degrees Celsius and one atmosphere of pressure and any fractionation thereof, including, but not limited to, crude oil, bitumen, synthetic crude oil, natural gas well condensate, petroleum, gasoline, fuel oil, diesel oil, biological oils and blends, oil sludge, oil refuse, and oil mixed with wastes other than dredged spoil. Oil does not include any substance listed in Table 302.4 of 40 C.F.R. Part 302 adopted August 14, 1989, under section 102(a) of the federal comprehensive environmental response, compensation, and liability act of 1980, as amended by P.L. 99-499

GHVTRA Hazard Identification Workshop 1 Participant Handbook

- Vessel activities and incidents
 - Definitions for vessel activities, incident types, immediate causes, and contributing factors are provided in the Glossary, and are adapted from 46 CFR, RCW 88.46, WAC 317-31, and the Pacific States/British Columbia Oil Spill Task Force Data Dictionary
- Timeframe
 - Focus on current hazards
 - Hazard Identification workshops will include qualitative discussions of potential changes in hazards or offshore vessel traffic management practices as a result of any projects that are proposed at the time of the workshops

Expected outcomes

- Workshop 1:
 - A list of local factors related to oil spill hazards for commercial cargo, passenger, and tank vessels
- Workshop 2:
 - For each local factor identified in Workshop 1 – A description of the causes of the hazard, safeguards intended to prevent the hazard, and any high-level recommendations to reduce the likelihood or consequence of the hazard
 - Description of any identified potential changes to hazards due to changes in vessel traffic related to proposed projects
- Following Workshop 2:
 - A report documenting the Hazard Identification process, workshops, and results
 - This report will be combined with the report of the Response Capability Preparedness workshop, and the planned workshop discussing commercial fishing, tribal fishing, and recreational vessel oil spill prevention and preparedness

Process

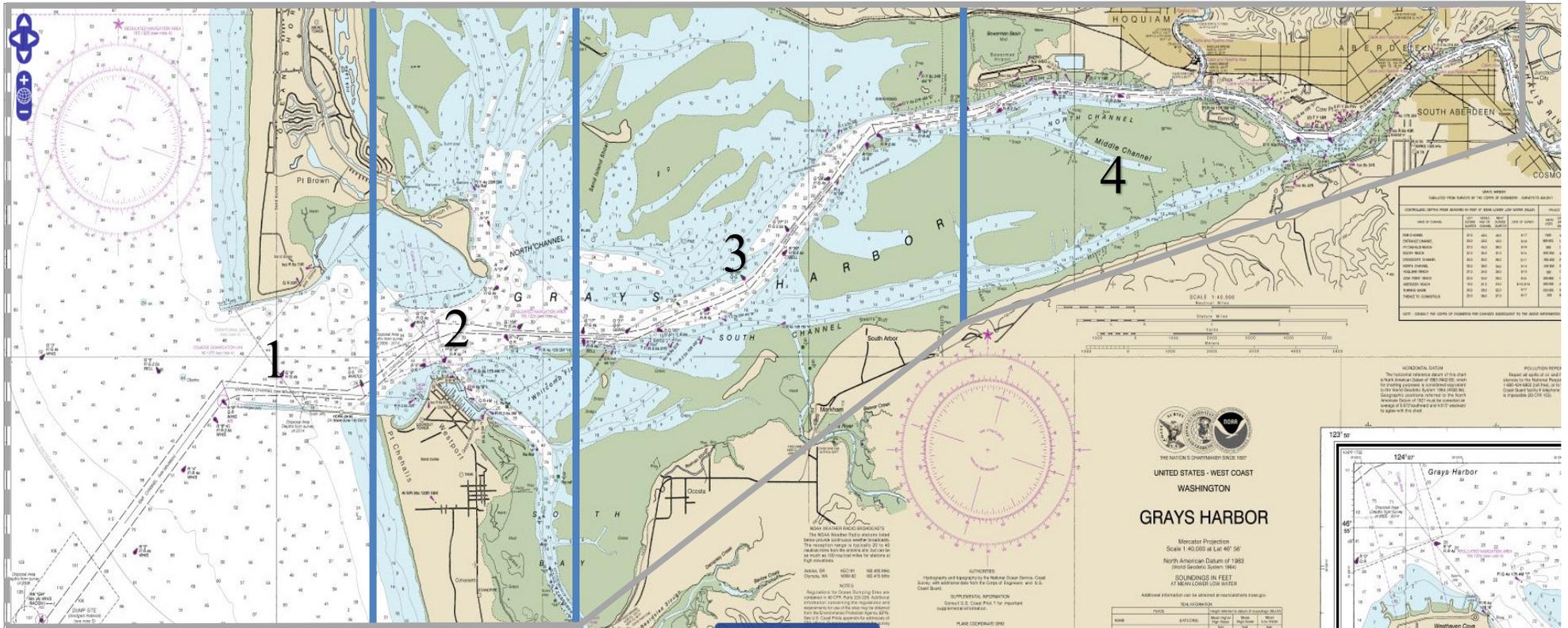
Ecology will facilitate structured brainstorming discussions to review vessel incidents that could result in an oil spill (e.g., collisions, allisions, groundings, fires/explosions, structural failure). As described above, the goal of these discussions is to identify any local factors that could contribute to vessel incidents. Examples of local factors may include a submerged jetty that could contribute to vessel grounding risks, or a sharp turn in a channel that could contribute to collision and allision risks.

Hazard identification templates, provided in the Workshop Material section, will be used to promote a systematic consideration of potential local factors. The templates are organized by areas of the waterway, vessel activity, and incident type. Ecology will review each template with workshop participants, and encourage participants to contribute to the discussion of local factors.

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Workshop Materials

Waterway Areas



Discussion of offshore vessel traffic management may extend westward of buoy “GH”

- Study boundary
- Waterway Area division line

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Hazard Identification Templates

Instructions

The templates in this handbook will be used to identify and record local factors associated with hazards to commercial vessel operations in Grays Harbor that could result in an oil spill.

To aid your participation in the workshop, please follow these steps:

Before the workshop

- Review each template
- Refer to the Waterway Areas figure for a visual depiction of each area
 - The text description of each area is intended to be general
 - If there are differences between the text description and the figure, use the area as shown in the figure
- Consider how the incident described on the template could occur
- Examples of possible causes and contributing factors are provided on each template; feel free to add to these as needed
- Think about specific features or characteristics of conducting vessel operations in Grays Harbor that could contribute to the incident
 - General examples of these local factors could include
 - Water depth
 - Navigational channel configuration
 - Tide/current variations
 - Seasonal changes in weather
 - Local operating practices and procedures
 - This is not a complete list – we are counting on your knowledge and expertise to help identify as many local factors as possible
 - Write your list of local factors in the space provided on the template
 - Please include specific details. This will improve the process, and will add to the accuracy and usefulness of the outcomes from the workshop

During the workshop

- Use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Template 1: Area 1, Underway, Collision

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12.
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 1: Bar Channel and Entrance Channel to Point Chehalis Reach (inside buoy 11)

Vessel Activity: Underway

Incident Category: Collision

How could an incident occur?

- Contact with a fishing net or crab pot
- Difficulty crossing the bar
- Failure to maintain position in channel
- Failure to negotiate turn to entrance channel
- Failure to take action to avoid another vessel
- Incident related to vessels offshore, including areas westward of buoy “GH”

Possible immediate causes/contributing factors (examples)

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 2: Area 1, Underway, Allision/Grounding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 1: Bar Channel and Entrance Channel to Point Chehalis Reach (inside buoy 11)

Vessel Activity: Underway

Incident Category: Allision/Grounding

How could an incident occur?

- Contact with a buoy, fishing net or crab pot
- Contact with jetty
- Difficulty crossing the bar
- Failure to maintain position in channel
- Failure to negotiate turn to entrance channel
- Ground outside harbor
- Ground outside of entrance channel
- Ground on submerged jetty
- Incident related to vessels offshore, including areas westward of buoy “GH”

Possible immediate causes/contributing factors (examples)

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 3: Area 1, Underway, Structural Failure/Flooding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 1: Bar Channel and Entrance Channel to Point Chehalis Reach (inside buoy 11)

Vessel Activity: Underway

Incident Category: Structural Failure/Flooding

How could an incident occur?

- Severe weather conditions while crossing bar

Possible immediate causes/contributing factors (examples)

- Environmental
- Equipment failure
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 4: Area 2, Underway, Collision/Allision/Grounding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 2: Point Chehalis Reach and South Reach to buoys 17/18; North Channel; Westport Marina

Vessel Activity: Underway

Incident Category: Collision/Allision/Grounding

How could an incident occur?

- Contact with a buoy
- Failure to maintain position in channel
- Failure to negotiate turn to South Reach
- Failure to take action to avoid another vessel
- Ground outside of channel

Possible immediate causes/contributing factors (examples)

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 5: Area 2, Anchored, Allision/Grounding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 2: Point Chehalis Reach and South Reach to buoys 17/18; North Channel; Westport Marina

Vessel Activity: Anchored

Incident Category: Allision/Grounding

How could an incident occur?

- Allision caused by a vessel underway
- Drag anchor/Failure to maintain position in anchorage
- Swing into another vessel while at anchor

Possible immediate causes/contributing factors (examples)

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 6: Area 3, Underway, Collision/Allision/Grounding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 3: South Reach from buoys 17/18, Crossover Channel, and North Channel to buoy 35; South Channel

Vessel Activity: Underway

Incident Category: Collision/Allision/Grounding

How could an incident occur?

- Contact with a buoy or fishing net
- Failure to maintain position in channel
- Failure to negotiate turns in channel
- Failure to take action to avoid another vessel
- Ground outside of channel

Possible immediate causes/contributing factors

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 7: Area 4, Underway, Collision/Allision/Grounding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 4: North Channel from buoy 35, Hoquiam Reach, Cow Point Reach and Aberdeen Reach to Weyerhaeuser Company Bay City Log Export, Berths 1 and 2

Vessel Activity: Underway

Incident Category: Collision/Allision/Grounding

How could an incident occur?

- Contact with a buoy
- Contact with bridge, pier, dolphin, log boom, fishing net or crab pot
- Failure to maintain position in channel
- Failure to negotiate turns in channel
- Failure to take action to avoid another vessel
- Ground outside of channel

Possible immediate causes/contributing factors

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 8: Area 4, Mooring/Unmooring, Collision/Allision/Grounding

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 4: North Channel from buoy 35, Hoquiam Reach, Cow Point Reach and Aberdeen Reach to Weyerhaeuser Company Bay City Log Export, Berths 1 and 2

Vessel Activity: Mooring/Unmooring

Incident Category: Collision/Allision/Grounding

How could an incident occur?

- Contact with a buoy
- Contact with bridge, pier, dolphin, log boom, fishing net or crab pot
- Failure to maintain position in channel
- Failure to negotiate turns in channel
- Failure to take action to avoid another vessel
- Ground outside of channel
- Hard hit by tug
- Tug miscommunication

Possible immediate causes/contributing factors

- Environmental
- Equipment failure
 - Resulting in full or partial loss of electrical power
 - Resulting in full or partial loss of propulsion
 - Resulting in loss of navigational equipment
 - Resulting in loss of steering
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 9: Area 4, Moored, Oil Spill

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 4: North Channel from buoy 35, Hoquiam Reach, Cow Point Reach and Aberdeen Reach to Weyerhaeuser Company Bay City Log Export, Berths 1 and 2

Vessel Activity: Moored

Incident Category: Oil spill during cargo/terminal operations

How could an incident occur?

- Hose/equipment failure during transfer operation
- Transfer system alignment error

Possible immediate causes/contributing factors

- Environmental
- Equipment failure
- Human error
- Organization/maintenance failure
- Other

Local factors

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Template 10: Area 4, Moored, Fire/Explosion

Using this template

- See complete instructions in the Grays Harbor Vessel Traffic Risk Assessment (GHVTRA) Hazard Identification Workshop 1 Participant Handbook, page 12
- Before the workshop, review each template and consider the described incident
 - Examples of how the incident could occur and possible causes are provided. Add to these as needed
 - Think about local factors (specific features or characteristics of operating a commercial vessel in Grays Harbor) that could contribute to the incident
 - Write your list of local factors on this template
- During the workshop, use your list of local factors, and any causes and contributing factors you identified, to contribute to the discussion of each template

Area 4: North Channel from buoy 35, Hoquiam Reach, Cow Point Reach and Aberdeen Reach to Weyerhaeuser Company Bay City Log Export, Berths 1 and 2

Vessel Activity: Moored

Incident Category: Fire/Explosion

How could an incident occur?

- Secondary to another accident
- Electrical fire
- Cargo fire/explosion

Possible immediate causes/contributing factors

- Environmental
- Equipment failure
- Human error
- Organization/maintenance failure
- Other

Local factors

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Glossary and References

Glossary

Allision – vessel striking a fixed or semi-fixed object such as a pier, bridge, an anchored vessel, or buoy. (adapted from OSTF, 2014)

Anchor – to use the anchor to secure a ship to the sea floor. (National Geospatial-Intelligence Agency, 2017)

Anchorage – an area where vessels may anchor, either because of suitability or designation. (National Geospatial-Intelligence Agency, 2017)

Bulk – a material that is stored or transported in a loose, unpackaged liquid, powder, or granular form capable of being conveyed by a pipe, bucket, chute, or belt system.¹

Cargo Vessel – a self-propelled ship in commerce, other than a tank vessel or a passenger vessel, three hundred gross tons or more, including but not limited to, fishing vessels and freighters.²

Collision – vessels striking each other. (adapted from OSTF, 2014)

Covered vessel – a tank vessel, cargo vessel, or passenger vessel.³

Disabled Vessel – a vessel that needs assistance, whether docked, moored, anchored, aground, adrift, or underway. This does not mean a barge or any other vessel not regularly operated under its own power.⁴

Discharge – any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.⁵

Facility - any structure, group of structures, equipment, pipeline, or device, other than a vessel, located on or near the navigable waters of the state that transfers oil in bulk to or from a tank vessel or pipeline that is used for producing, storing, handling, transferring, processing, or transporting oil in bulk.⁶

Fire/Explosion – uncontrolled ignition of gas or liquid. (adapted from OSTF, 2014)

Fishing Vessel – a vessel engaged in the commercial catching, harvesting or processing of fish, or in tendering to or from vessels that catch, harvest or process fish.⁷

Grounding – vessel striking the waterway bottom with enough force to damage the vessel. (adapted from OSTF 2014)

Flooding – water intrusion into areas on a vessel not intended to hold water. (adapted from OSTF, 2014)

¹ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

² Chapter 317-31 WAC, Cargo and Passenger Vessels--Substantial Risk

³ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

⁴ 46 CFR 10.107, Definitions in Subchapter B

⁵ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

⁶ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

⁷ Chapter 317-31 WAC, Cargo and Passenger Vessels--Substantial Risk

Hazardous Substances – both dry and liquid substances, listed Table 302.4 of 40 C.F.R. Part 302 adopted August 14, 1989, under section 102(a) of the federal comprehensive environmental response, compensation, and liability act of 1980, as amended by P.L. 99-499, including: methanol, ethanol styrene, xylene.⁸

Loss of Electrical Power – failure of the main electrical system to provide power meeting the needs for vessel operation; stopping a vessel while underway to complete repairs of the electrical system is considered a loss of electrical power. (adapted from OSTF, 2014)

Loss of Navigational Equipment – a partial loss of propulsion, steering, electricity, or navigational equipment that results in a vessel being unable to maintain its intended track clear of navigational hazards or other vessels without assistance.⁹

Loss of Propulsion – failure of the propulsion system to propel the vessel as designed; the shutdown of a vessel’s propulsion system while underway to complete repairs is considered a loss of propulsion. (adapted from OSTF, 2014)

Loss of Steering – failure of the steering system to control the vessel’s heading as designed; stopping a vessel while underway to complete repairs of the steering system is considered a loss of steering. (adapted from OSTF, 2014)

Marine Facility – any facility used for tank vessel wharfage or anchorage, including any equipment used for the purpose of handling or transferring oil in bulk to or from a tank vessel.¹⁰

Mooring – the act of securing a craft to the ground, a wharf, pier, quay, etc. (adapted from National Geospatial-Intelligence Agency, 2017)

Navigable Waters of the State – those waters of the state, and their adjoining shorelines, that are subject to the ebb and flow of the tide and/or are presently used, have been used in the past, or may be susceptible for use to transport intrastate, interstate, or foreign commerce.¹¹

Nonpersistent Oil – a petroleum based oil such as gasoline, diesel or jet fuel, which evaporates relatively quickly.¹²

Nonpetroleum Oil – oil of any kind that is not petroleum-based, including but not limited to: Biological oils such as fats and greases of animals and vegetable oils, including oils from seeds, nuts, fruits, and kernels.¹³

Oil – “Oil” as defined in RCW 88.40. (RCW 88.40.011, 1990)

Passenger Vessel – a ship of three hundred or more gross tons with a fuel capacity of at least six thousand gallons carrying passengers for compensation.¹⁴

⁸ 40 CFR 302

⁹ Vessel Incident Checklist. Washington SPPR Program Evaluation of Vessel Incidents and Emergencies

¹⁰ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

¹¹ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

¹² Adapted from Chapter 173-182 WAC, Oil Spill Contingency Plan

¹³ Adapted Chapter 173-182 WAC, Oil Spill Contingency Plan

¹⁴ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

Persistent Oil – a petroleum based oil that does not meet the requirements of a nonpersistent oil.¹⁵

Severe Weather Conditions – observed nautical conditions with sustained winds measured at forty knots and wave heights measured between twelve and eighteen feet.¹⁶

Ship – any boat, ship, vessel, barge, or other floating craft of any kind.¹⁷

Spill – an unauthorized discharge of oil into the waters of the state.¹⁸

Structural Failure – failure of a structure or structural component, including tank plating or shell. (OSTF, 2014)

Tank vessel – a ship that is constructed or adapted to carry, or that carries, oil in bulk as cargo or cargo residue, and that: operates on the waters of the state, or transfers oil in a port or place subject to the jurisdiction of this state.¹⁹

Underway – vessel underway conducting normal operations. (adapted from OSTF, 2014)

Vessel Emergency – a substantial threat of pollution originating from a covered vessel, including loss or serious degradation of propulsion, steering, means of navigation, primary electrical generating capability, and seakeeping capability.²⁰

¹⁵ Adapted from Chapter 173-182 WAC, Oil Spill Contingency Plan

¹⁶ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

¹⁷ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

¹⁸ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

¹⁹ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

²⁰ Chapter 88.46 RCW, Vessel Oil Spill Prevention and Response

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