FINAL REPORT APPENDIX 1

Regional Spill Hotline Feasibility Study Interview Summary Report

- Survey Results
- Case Studies (Technical Interviews)
- In-Depth Municipal Interview Summary Report
- In-Depth State Agency Interview Summary Report

INTERVIEW SUMMARY REPORT

REGIONAL SPILL HOTLINE FEASIBILITY STUDY

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Stormwater Services Section

Note:
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INTERVIEW SUMMARY REPORT

REGIONAL SPILL HOTLINE FEASIBILITY STUDY

Prepared for

King County

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EXECUTIVE SUMMARY

This report summarizes the findings from a survey and series of interviews conducted to evaluate the feasibility of a regional spill reporting hotline. This executive summary provides a brief overview of the project background, existing spill response programs, and recommendations related to feedback from the survey and interviews (municipal, state agency, and technical).

BACKGROUND

Project Funding and Stakeholders

The regional spill hotline feasibility study is a Source Identification Information Repository (SIDIR) project that is being implemented through the Stormwater Action Monitoring (SAM) program with oversight from the Stormwater Group (SWG). A Technical Advisory Committee (TAC) has also been formed to provide guidance and review deliverables for this feasibility study.

Project Goals

Due to the variety of municipal reporting options across the region, and the varied levels of internal training, spill reporting and response can be challenging and can face a lack of coordination between jurisdictions. Confusion between jurisdictional boundaries and inconsistent reporting methods across neighboring jurisdictions has resulted in delays in spill response, inefficiencies, and lost opportunities to prevent environmental damages. The goal of this feasibility study is to:

> *Gather information and conduct an assessment on the feasibility and desire for a regional or statewide common "hotline" for citizens and municipal staff in Washington State to report spills and environmental incidents.*

Report Goals

The goal of this report is to summarize information gathered from a survey and series of interviews regarding the feasibility of implementing a regional spill hotline. This report also summarizes available technology, programs to investigate, support (or lack thereof) from local municipalities and state agencies, and other special considerations. This report uses the term "reporting systems" as an inclusive term that may incorporate multiple program elements including phone numbers, hotlines, mobile applications, web forms, and other spill response program elements.

Information Gathering Overview

Information gathering conducted for this feasibility study included a survey, phone interviews with staff from municipalities and state agencies, and technical phone interviews:

- **Survey**
    - The purpose of the survey was to collect feedback from a variety of jurisdictions regarding their current practices, suggestions, and concerns related to the implementation of a regional spill reporting hotline.
    - Eighty-nine respondents representing municipalities, state agencies, tribes, and secondary permittees throughout Washington State submitted responses to the SurveyMonkey survey distributed via email in April 2019.
- **Municipal Interviews**
    - The purpose of the municipal interviews was to gain a better understanding of municipal processes with regard to spill reporting and response, and the barriers to and benefits of a potential new regional spill hotline.
    - Ten phone interviews were conducted by Nancy Hardwick (Hardwick Research) in June 2019.
- **State Agency Interviews**
    - The purpose of the state agency interviews was to gain a better understanding of state agencies with regard to spill response, their likes and dislikes of the current system, and the barriers to and benefits of a potential new regional spill hotline.
    - Three phone interviews were conducted by Nancy Hardwick (Hardwick Research) in October 2019.
- **Technical Interviews**
    - The purpose of the technical interviews was to collect additional technical information on some of the reporting systems already in place that may be useful to evaluate as an option for a potential new regional spill hotline.
    - Three phone interviews were conducted by Herrera in November and December 2019. The Washington State Department of Ecology (Ecology) also provided written responses to the technical interview questions in January 2020.

Existing Spill Response Programs

To meet the NPDES permit requirements, municipalities across the state have implemented spill response programs related to receiving, responding, and tracking spill reports. Some municipalities have posted their main phone number and receive few spill and illicit discharge reports. Other municipalities have implemented robust hotlines or mobile applications that are integrated with their asset management software.

Municipal interviewees representing 10 jurisdictions were generally pleased with the functionality and success of their current programs. They indicated that the main barrier to effective spill response is public awareness and education, which is an ongoing challenge and identified area for improvement.

The interviewees from state agencies also felt their process worked well overall. From the perspective of state agencies, perceived barriers for spill reporting include concerns the public is often unsure of what they are reporting, 911 operators don't always know how to dispatch for a spill, uneven awareness of what needs to be reported, and how to report among emergency responders such as fire departments.

Case Studies

Section 3 of this report summarizes feedback from the survey, municipal interviews, state agency interviews, and technical interviews. Technical interviewees for five different reporting systems (not restricted to spill response) shared detailed information on the logistics of their systems. Recommendations from the survey and interviews are summarized in Table ES-1. These recommendations are relevant to improving existing spill response programs, regardless of whether a regional spill hotline is implemented.

Table ES-1. Operational and Technical Recommendations.

Topic	Recommendations
Receiving reports	• Implement a multi-modal program (phone hotline, mobile application, and website) • Develop a mobile-compatible web page
Routing and responding to reports	• Partner with existing emergency management systems to redirect after-hours reports • Incorporate dropdown menus to ensure consistent data entry • Automate notifications based on the geographic area or geotagged images • Include fire department and police department staff in training activities
Staffing	• Partner with existing emergency management systems to redirect after-hours reports • Incorporate dropdown menus to ensure consistent data entry
Data storage and analytics	• Encourage jurisdictions to integrate reporting systems with asset management systems • Use tracking and reevaluation to assess the data that is being collected • Conduct additional research on data storage during the next phase of this project

Table ES-1 (continued). Operational and Technical Recommendations.	
Topic	**Recommendations**
Cost and effort of implementation and maintenance	• Partner with other agencies and work closely across departments and jurisdictions to share available resources in overlapping areas • Consider using a pre-built mobile application • Collect additional information regarding the operational cost of existing programs
Public perception and involvement	• Avoid industry-specific lingo and jargon when communicating with the public • Consider reduced fines for reporting an accidental spill caused by the caller's own organization • Make sure the spill reporting number is easy to find • Raise public awareness to improve understanding of where and how to report spills • Provide two-way communication with the public about the status of their response
Spreading the word	• Instruct call center attendants to tell people about the mobile application when they call to make a report • Include language regarding special behaviors (such as calling 911 after hours) in the reporting form and lock this functionality, if possible • Use routine business inspections as an opportunity to spread the word • Optimize for search engines so that attempts to search for "spill" or related topics will result in the correct webpages and phone numbers • Focus on online ads and materials distributed by local jurisdictions rather than cable television and billboard advertising • Collect and respond to user information • Push communication and public relations initially when something is new • Include fire department and police department staff in training activities • Provide instruction to educate the public audience

IMPLEMENTING A NEW HOTLINE

Section 4 of this report summarizes feedback from the survey, municipal interviews, state agency interviews, and technical interviews specifically related to feedback regarding a new regional spill response hotline.

Results from the survey and interviews (municipal, state agency, and technical) indicate a general lack of support for a new regional spill hotline. Participants expressed concern that adding another reporting method would further confuse the public, negate efforts and investments made in local systems, and undermine the efficiency of local processes by adding layers of communication or removing dedicated personnel. Participants stated that some of the issues that could be addressed by a regional hotline (for example, receiving calls from neighboring jurisdictions) are not primary concerns.

There was no collective consensus on preferred scale for a regional spill hotline from the survey, municipal interviews, and state agency interviews. Opinions generally aligned with a preference to keep existing local hotlines in place, using Ecology's Environmental Report Tracking System (ERTS) for statewide coverage, and implementing countywide or multi-countywide programs at a regional scale.

Ecology has a different perception of the functionality that could be provided by ERTS in the role of a regional reporting system. While Ecology does provide statewide coverage for incident referrals, ERTS is not intended to serve as a reporting system and lacks important functionality such as querying, analytics, and in-system follow up with the original reporter that would be needed for a regional spill hotline.

Recommendations from the survey and interviews are summarized in Table ES-2.

Table ES-2. Recommendations for Implementing a New Hotline.

Topic	Recommendations
Local preferences and support	• Re-evaluate the concept of a regional spill hotline • Consider converting ERTS to a regional spill hotline that includes improved functionality and increased staffing (see additional discussion on the limitations of ERTS in Section 4.3 of this report) • Conduct research on costs during the next phase of this project
Funding	• Vet potential funding methods prior to developing a specific recommendation for implementation • Consider using monies allocated for a regional spill hotline to increase educational and awareness-building efforts for individual jurisdictional response programs • Share information between agencies to reduce costs without reducing service • Collaborate between stakeholders to ensure everyone's needs are being met • Share funding for education and outreach
System scale and leadership	• Conduct additional research into the available products that could be used to supplement existing reporting systems
Key features	• Use everyday language when developing intake forms that will be used with the public • Evaluate options for including images of a spill, including geotags • Ensure that the mobile application or web form can attach more than one image file to a specific spill report • Evaluate key software features for a regional spill hotline in more detail during the next phase of this project
Integration with existing systems or hotlines	• Connect the regional spill hotline to existing individual hotline systems • Add the new regional spill hotline number to local jurisdiction websites, but retain the local spill hotline number and other reporting methods

CONCLUSIONS

The results from the survey, municipal interviews, and state agency interviews indicated that the creation of a new regional spill hotline is generally not supported at this time. The responses from the survey and interviews, however, did help to identify several areas where improvements could be made to existing local spill hotlines and coordination between neighboring jurisdictions related to spill response. Success stories share several key themes:

- **Partnership.** Spills and other environmental incidents may happen at any location at any time and must be addressed quickly. Interdepartmental partnerships combined with training and resource-sharing with fire, police, and transportation departments can

facilitate faster notification and rapid spill containment. Partnership with other emergency management entities can supplement after-hours call management.

- **Utilization (and Customization) of Mobile Applications.** While phone hotlines are a popular method for receiving information from the public, pre-built mobile application features are increasing the efficiency of spill response. These features include geolocation for improved location accuracy, photo attachments, dropdown menus for consistent terminology, integration with asset management software, and two-way communication with the incident reporter. In some cases, mobile application functionality is used most heavily behind the scenes to coordinate spill response team efforts, communication, tracking, and analytics.

- **Accessibility to the Public.** Outreach and education are ongoing needs for any spill response program. Specific behaviors, such as "Call 911 after hours," must be built into the reporting system, which should be easy to understand and available in multiple languages. Two-way communication with the public helps to spread knowledge about reporting procedures and let people know that action has been taken.

The initial phase of this feasibility study also identified that there is a great deal of confusion between jurisdictions and state agencies on the purpose and functionality of ERTS. Some jurisdictions consider ERTS to currently fill the "regional spill hotline" role because ERTS reports are received by Ecology regional offices, and the system provides both internal (Ecology) and external statewide referrals to notify relevant programs, agencies, and other entities of an incident. Ecology, however, has stated that ERTS is not intended to function as a regional spill hotline. Ecology noted key deficiencies in the ERTS database functionality such as lack of analytics, querying, and follow-up capabilities that limit the use of ERTS as a reporting tool. As stated by survey participants and interviewees, the most obvious course of action would be to adapt ERTS to achieve functionality desired for a regional reporting system. However, based on Ecology's response, adapting ERTS to create an Ecology-run program is not a suitable path forward.

The next phase of this project will evaluate several configuration options for a regional spill hotline, including software packages/mobile applications and further review of ERTS. A features matrix will be developed to support local jurisdictions, regional groups, and state agencies in objectively comparing optional and required functionality for each of the software packages evaluated. Given the lack of support for a regional hotline to replace or supplement existing hotlines, the focus of this research will be on systems and features that could provide benefits in combination with existing local spill hotlines.

1. INTRODUCTION

This report summarizes the findings from a survey and series of interviews conducted to evaluate the feasibility of a regional spill reporting hotline. This section provides an overview of the associated funding and stakeholders, National Pollutant Discharge Elimination System (NPDES) permit requirements, project goals, report goals, and information gathering. Subsequent sections present the following information:

- Summary of existing spill response programs in Washington
- Spill response program case studies
- Conclusions and recommendations from the survey and interviews conducted with municipal and state agency staff
- Summary and recommendations for a new regional spill hotline

1.1. PROJECT FUNDING AND STAKEHOLDERS

The regional spill hotline feasibility study is being implemented with funding from the Stormwater Action Monitoring (SAM) program. The SAM program receives funds from municipal stormwater permittees as identified in the Phase I and Phase II NPDES permits.

The feasibility study is a Source Identification Information Repository (SIDIR) project that is being implemented through the SAM program with oversight from the Stormwater Group (SWG). The SWG is a collaborative regional coalition of municipal, county, and state agencies. A Technical Advisory Committee (TAC) has also been formed to provide guidance and review deliverables for this feasibility study.

1.2. CURRENT PERMIT REQUIREMENTS

The NPDES municipal stormwater permits issued by the Washington State Department of Ecology (Ecology) in Western Washington and Eastern Washington require each permittee to "implement an ongoing program designed to detect and identify illicit discharges and illicit connections into the Permittee's MS4." The programs are required to have:

> "A publicly listed and publicized hotline or other telephone number for public reporting of spills and other illicit discharges."
>
> (Western Washington Phase I permit [S5.C.9.c.ii], Western Washington Phase II permit [S5.C.5.d.ii], and Eastern Washington Phase II permit ([S5.B.3.c.v])

Compliance also requires immediate response to all illicit discharges, including spills that are determined to constitute a threat to human health, welfare, or the environment (Western Washington Phase I permit [S5.C.9.d.iv.(a)], Western Washington Phase II permit [S5.C.5.e.iv.(a)], Eastern Washington Phase II permit [S5.B.3.d.iv.(a)]). The Annual Report also includes a recordkeeping requirement for submitting data that provides additional detail on spill reporting and response.

1.3. PROJECT GOALS

Due to the variety of municipal reporting options across the region, and the varied levels of internal training, spill reporting and response can be challenging and can face a lack of coordination between jurisdictions. Confusion between jurisdictional boundaries and inconsistent reporting methods across neighboring jurisdictions has resulted in delays in spill response, inefficiencies, and lost opportunities to prevent environmental damages. The goal of this feasibility study is to:

> *Gather information and conduct an assessment on the feasibility and desire for a regional or statewide common "hotline" for citizens and municipal staff in Washington State to report spills and environmental incidents.*

A regional spill hotline is one way for citizens to report spills and other environmental concerns, without worrying about where the incident was witnessed. It is intended to remove barriers that the public might have around reporting spills by providing easy-to-use tools to report a spill regardless of the location.

A regional spill hotline could make it easier for the public to report any incidents without having to determine which number to call. A regional spill hotline could also help:

- Improve response times
- Reduce calls that were intended for other jurisdictions
- Promote mutual aid assistance on large cross-jurisdictional spills
- Direct reports to the correct agency while recording regional spills in a searchable database to track trends and identify patterns

1.4. REPORT GOALS

The goal of this report is to summarize information gathered from a survey and series of interviews regarding the feasibility of implementing a regional spill hotline. This report also summarizes available technology, programs to investigate, support (or lack thereof) from local municipalities and state agencies, and other special considerations. This report uses the term "reporting systems" as an inclusive term that may incorporate multiple program elements

including phone numbers, hotlines, mobile applications, web forms, and other spill response program elements.

1.5. INFORMATION GATHERING OVERVIEW

The information gathering conducted for this feasibility study involved several elements. First, a broad survey was distributed via email, then detailed phone interviews were conducted with staff from municipalities and state agencies, and finally a series of technical interviews were completed. This interview summary report compiles feedback from the following sources:

- **Survey**
    - The purpose of the survey was to collect feedback from a variety of jurisdictions regarding their current practices, suggestions, and concerns related to the implementation of a regional spill reporting hotline. This survey was also intended to identify individuals who would be interested in participating in follow-up interviews on this topic.
    - The survey request was distributed through a variety of email distribution lists including:
        - Stormwater Action Monitoring (SAM)
        - Stormwater Work Group (SWG)
        - Ecology's WWA and EWA Stormwater listservs
        - Ecology's regional municipal stormwater permit coordinator lists
        - NPDES Permit Coordinators Group
    - Eighty-nine respondents representing municipalities, state agencies, tribes, and secondary permittees throughout Washington state submitted responses to the SurveyMonkey survey distributed via email in April 2019.
    - Detailed results from the survey are included in Appendix A.
- **Municipal Interviews**
    - The purpose of the municipal interviews was to gain a better understanding of municipal processes with regard to spill reporting and response, and the barriers to and benefits of a potential new regional spill hotline.
    - Ten phone interviews with Washington municipal staff representing King, Kitsap, Pierce, and Skagit Counties, and the Cities of Battle Ground, Bellevue, Kennewick,

Kirkland, Redmond, and Seattle were conducted by Nancy Hardwick (Hardwick Research) in June 2019.

- Jurisdictions were selected for the phone interviews to represent a variety of city and county sizes and locations including Phase I counties, Phase I cities, Phase II counties, Phase II cities in the Puget Sound region, a Phase II city in Southwest Washington, and a Phase II city in Eastern Washington. In each interview, at least one of the participants was involved in spill response for their jurisdiction.

- A detailed interview summary report is included in Appendix B.

- **State Agency Interviews**

  - The purpose of the state agency interviews was to gain a better understanding of state agencies with regard to spill response, their likes and dislikes of the current system, and the barriers to and benefits of a potential new regional spill hotline.

  - Three phone interviews with agency staff from the Washington Department of Health (DOH), the Washington Department of Transportation (WSDOT), and Ecology were conducted by Nancy Hardwick (Hardwick Research) in October 2019.

  - Agency contacts were selected for the phone interviews based on their connection to spill reporting and response programs. All of the agency staff interviewed worked at department headquarters.

  - A detailed interview summary report is included in Appendix C.

- **Technical Interviews**

  - The purpose of the technical interviews was to collect additional technical information on some of the reporting systems already in place that may be useful to evaluate as an option for a potential new regional spill hotline.

  - Three phone interviews with staff from Kitsap County, Seattle Public Utilities (SPU), and Washington Recreation and Conservation Office (RCO) were conducted by Herrera Environmental Consultants, Inc. (Herrera) in November and December 2019.

  - Ecology also provided written responses to the technical interview questions regarding the statewide Environmental Report Tracking System (ERTS) in January 2020.

Additional supplemental information was also collected from two independent webinars and via email correspondence with other program contacts including:

- Enlisting Citizens webinar hosted on January 12, 2017 (New Castle County Department of Special Services). This program was explored as a candidate for the technical interview list; however, it was not selected for a phone interview.

- SeeClickFix – Model for Regional Stormwater Management webinar hosted on September 19, 2019 (Kitsap County). A follow-up phone interview was conducted to gather more detailed information about this program.

- Personal communication with David Kravik on November 6, 2019 (Minnesota Department of Public Safety, Bureau of Criminal Apprehension). This program was explored as a candidate for the technical interview list; however, it was not selected for a phone interview.

2. EXISTING SPILL RESPONSE PROGRAMS

To meet the NPDES permit requirements, municipalities across the state have implemented spill response programs related to receiving, responding, and tracking spill reports. Some municipalities have posted their main phone number and receive few spill and illicit discharge reports. Other municipalities have implemented robust hotlines or mobile applications that are integrated with their asset management software. Information on the varied spill response programs that are used to meet NPDES permit requirements is summarized in the following subsections.

2.1. OVERVIEW

When asked how their municipality currently tracks illicit discharge reports, 88 respondents to the survey indicated that the most commonly used method for tracking illicit discharge reports is a spreadsheet (43 percent), followed by a database (40 percent). Results are summarized in Table 1.

Table 1. Illicit Discharge Report Tracking Methods.

How does your jurisdiction currently track illicit discharge reports?	Percent of Respondents	Number of Respondents[a]
Spreadsheet	43%	38
Database	40%	35
Other	32%	28
Proprietary software	31%	27
Hard copy notes	26%	23

[a] Respondents could select more than one applicable tracking method.

Survey participants that selected specific proprietary software or other, included the following responses:

- SeeClickFix
- Maximo
- Lucity
- ESRI ArcGIS Online
- Cityworks
- iWorq
- Cartegraph
- Requested reports from Ecology's ERTS
- Mobile311 from Facility Dude
- Forms prepared by Ecology
- In-house custom systems
- Other third-party mobile applications

There is a large list of options for systems designed to receive reports, distribute them to staff, and track actions taken to address the spill.

2.2. Spill Response Workflows

Each municipality has implemented a unique workflow related to their local needs. Some municipalities are seeking to improve, while others are happy with their existing programs. Generally, 50 to 90 percent of spill reports received by municipalities through their spill/illicit discharge hotlines came from the general public. Other sources included Ecology's ERTS, government staff or agencies, emergency responders, public transportation agencies, waste haulers and towing companies. Of the 10 municipalities interviewed, most felt they rarely received calls that were not in their jurisdiction (see Appendix B).

> *"99 percent of calls are in our city limits; and if they're on the border, we'll go anyway." [City]*

State agencies said that spill reports were made by wastewater operators, other NPDES permit holders, local agencies, ERTS and sometimes by the general public.

During the day, most jurisdictions interviewed have a live person to answer calls (either direct or routed to them through a department switchboard); however, calls were directed to voicemail in some cases when busy on other calls. A few jurisdictions take advantage of mobile applications that make reporting of complete information, including images, easier and faster. Only a few jurisdictions integrate their spill response into other software systems. Most jurisdictions integrate their spill response into utility or maintenance groups where the spill response activities are tracked like any other work order.

After hours, spill reporting varies more significantly between jurisdictions. Many jurisdictions integrate their spill response with other emergency systems for off-hours calls. The dispatchers are highly trained to gather information and forward it appropriately. Some jurisdictions have on-call staff take an office phone home to answer calls directly; others have calls routed to them via an answering service or 911 dispatch, sometimes with customized forms to be filled out. At the other end of the spectrum are jurisdictions where calls were left on voicemail or sent via ERTS and not responded to until the next business day.

Ecology integrates ERTS with their internal Spills Program Integrated Information System (SPIIS). SPIIS was created to collect additional information not included in ERTS to facilitate spill response and to provide a better crosswalk with the information necessary for participation in the Pacific States British Columbia Oil Spill Task Force.

2.2.1. What's Working Well?

According to the municipal interviews, nearly all jurisdictions interviewed felt their processes worked well (see Appendix B). Many had spent years developing their response programs and educating emergency responders, and the public call levels were high with good information provided. Typically, if any improvements were desired, they were around the areas of outreach and education.

> *"Getting people to associate what they see [a spill] with calling that number seems to be a hurdle." [City]*

The interviewees from state agencies also felt their process worked well overall (see Appendix C). Reasons included many avenues to report spills to a live person, ability to report anonymously, generally fast response times to spills, and the belief that ERTS worked well and sent them what they needed to know.

2.2.2. Barriers to Effective Spill Response

Of the 10 municipal interviewees, most jurisdictions felt public awareness was the biggest barrier to reporting of spills (see Appendix B). Other barriers were limited understanding of what a reportable spill is, difficulty finding the number on poorly designed websites, language barriers for immigrant residents, or poor cell coverage.

> *Of the 10 municipal interviewees, most jurisdictions felt public awareness was the biggest barrier to reporting of spills.*

From the perspective of state agencies, perceived barriers for spill reporting include concerns the public is often unsure of what they are reporting, 911 operators don't always know how to dispatch for a spill, uneven awareness of what needs to be reported, and how to report among emergency responders such as fire departments (see Appendix C).

2.2.3. Room for Improvement

Despite feeling that their current programs worked well, interview participants had some goals and suggestions to improve functionality and efficiency of their programs. Municipal interviewees generally felt that their software solutions, spill response and mobilization efforts, responder training, and interagency communication processes were working well (see

Appendix B). They identified room for improvement primarily in public outreach, stating the following areas for improvement:

- Teaching the general public the correct number to call (how to report a spill)
- Training specific industries such as carpet cleaners
- Clarifying the differences between storm and sanitary sewers
- Clarifying how to determine what constitutes a spill
- The importance of reporting spills promptly

One county felt their website was not user friendly and not mobile friendly, which hampered citizens' reporting, and another would like to switch to an answering service so that callers could always speak to a live person.

The improvements suggested by state agencies were related to broader functionality of reporting systems (see Appendix C), including:

- Fewer delays in initial reporting
- Better methods (email or text) to disseminate information to their department's "customers"
- Outreach to make it easier for reporters to understand the legal requirements for reporting
- Better alignment between state and federal reporting requirements
- Modifications to ERTS to allow notifications to be received continuously rather than in a batch on Monday morning

To explore these topics in more detail, four spill response programs were selected as case studies for in-depth interviews about the technical aspects of program operations. Information gathered from these technical interviews is presented in Section 3 of this report.

3. CASE STUDIES

Herrera conducted follow-up technical interviews with staff involved with four reporting systems to discuss operational components of their reporting systems. Topics covered during these interviews and summarized in this section include:

- Receiving reports
- Routing and responding to reports
- Staffing
- Data storage and analytics
- Cost and effort of implementation and maintenance
- Public perception and involvement
- Spreading the word

Three phone interviews were conducted, and a set of written comments to the technical interview questions was provided covering four different reporting systems. Highlights of these four reporting systems (or case studies) are summarized in Table 2. This section also integrates feedback from the survey, municipal interviews, and state agency interviews. Recommendations included in this section are relevant to improving existing spill response programs, regardless of whether a regional spill hotline is implemented.

Table 2. Reporting System Highlights.					
	Kitsap1 and SeeClickFix	**SPU Spill Response Program**	**Squeal on Pigs! Feral Swine Campaign**	**Washington Invasives App**	**Environmental Report Tracking System (ERTS)**
Logo					
Operated by	Kitsap County	Seattle Public Utilities (SPU)	Washington State Recreation and Conservation Office	Washington State Recreation and Conservation Office	Washington State Department of Ecology
Main Purpose	Receive and respond to complaints from the public related to spills, stormwater system, etc.	Receive and respond to spill incidents reported by the public	Detect and respond to the presence of feral pigs	Report presence of invasive species and distribute information to landowners	Accountability tool to receive and refer environmental complaints to different programs at Ecology
Coverage	Countywide (Kitsap County and participating Phase II cities)	Citywide (City of Seattle)	Multistate (Washington, Oregon, and Idaho)	Statewide (also, part of a North American database)	Statewide
Receiving Reports	Kitsap1 Call Center, SeeClickFix mobile application, or webpage	Hotline calls are directed to SPU call center	800 hotline number (answered by an external answering service)	Mobile application	Call, email, web form, or hard copy letter from public and permittees
Unique Aspects	SeeClickFix mobile application is integrated with the Cartegraph asset management system	Third-party Active911 application (designed for fire response) is used internally to coordinate spill response; staff receive directions to the spill and can alert spill response team if new information becomes available	Contracted with Public Relations firm to advertise the program	Data is validated and posted for public download; hosted "first detection" training for Master Gardeners and Stewardship training programs to kickstart use of the tool	Customized database maintained in-house; not intended to serve as a regional reporting system

3.1. RECEIVING REPORTS

3.1.1. Summary of Feedback

The programs evaluated utilize a variety of methods to receive spill reports, but predominantly focus on three methods: 1) calls, 2) mobile applications, and 3) web forms. Feedback from the survey and technical interviews is summarized below.

3.1.1.1. Survey

During the survey for this project, nearly 80 percent of respondents indicated that they would prefer a phone hotline with an actual person answering the phone. Many respondents selected several options; both web forms and mobile application interfaces were also selected by approximately 60 percent of respondents (Table 3). Detailed survey responses can be found in Appendix A.

Table 3. Preferred Regional Spill Hotline Interface.

If a regional spill hotline were implemented, what interface(s) would you prefer?	Percent of Respondents	Number of Respondents[a]
Phone hotline with an actual person answering the phone (caller would convey the location and spill details to the person answering the hotline)	79%	68
Website (user would enter location and spill details)	60%	52
Mobile application (auto locate and/or user would enter location and spill details)	58%	50
Other[b]	15%	13

[a] Respondents could select more than one preferred interface.

[b] "Other" was an open text field for survey respondents who did not feel that any answer choices applied to them. Respondents were asked to provide a written response if they selected "Other." See Appendix A for specific survey responses.

3.1.1.2. Technical Interviews

Kitsap County uses three methods (calls, mobile applications, and web forms) via the Kitsap1 Call Center, SeeClickFix mobile application, and their website. Despite the differing external user experiences for the three methods, all reports are still being entered into the SeeClickFix system for consistency (call center attendants enter data directly into the SeeClickFix interface). Based on Kitsap County's experience and surveys, people are more likely to submit a report if they do not have to interact with another person. Mobile application use is continually increasing, but the call-in option is still widely used and beneficial for citizens that are less comfortable with technology. Even with a robust mobile application, the Kitsap County program is still reliant on their call center to receive and distribute

urgent after-hours reports; the mobile application has a built-in feature to direct users to call 911 if they're reporting a spill after hours.

The **City of Seattle** uses a mobile application internally to manage incoming reports and track spill response activities, but they use a hotline to receive reports from the public. Calls are managed by the dispatch center for SPU; calls are then entered into a third-party mobile application (Active911) interface and distributed to spill response staff. The Active911 mobile application is integrated with SPU's Maximo asset management system. The City of Seattle also has a water quality hotline for non-spill-related complaints.

The **Squeal on Pigs! Hotline** relies entirely on calls rather than a mobile application. The 800 number, which was contracted with an external answering service, can be called by anyone. A form will pop up on the call center employee's screen with fill-in-the-blank questions rather than dropdown menus. Information can be organized and sent to leads at different organizations based on geographic location automatically (but distribution issues have occurred due to typos). This is a newer program that has not yet been heavily used by the public, although this may be due to the small population of wild pigs in Washington.

The **WA Invasives** mobile application was initially set up primarily as a web-based data entry form, but this method proved difficult to act upon due to low data credibility (issues with accurate transcribing and problems with spelling/typing errors that led to misdirection of reports). To rectify this, the Washington Recreation and Conservation Office (RCO) partnered with the University of Georgia to develop a custom mobile application that feeds into a larger North American database of invasive species data. Spatial data and photos are validated prior to releasing the data for public download. This migration has resulted in fewer reports overall, which is likely due to the collected data being verified for accuracy.

Ecology has staff who manually enter information received via call, email, web form, or hard copy letter into the in-house custom **ERTS database**. There is also a spill database called SPIIS for spill responders to enter their reports, which autogenerates an ERTS report that is linked back to the original SPIIS report. SPIIS is a primary method to receive after-hours reports, in addition to contracting with the Washington Emergency Management Division to receive after-hours calls.

Some permittees use ERTS as their primary mode for reporting compliance to Ecology and ensuring that incidents are referred to relevant entities statewide. Despite this practice, Ecology requires local jurisdictions to maintain their own notification systems and does not view ERTS as a regional reporting tool.

3.1.2. Conclusions and Recommendations

Ideally, a unified underlying system should be in place to ensure consistent reporting practices across all modes for improved data management and analytics. For example, call centers might enter caller information directly into a standardized mobile application interface.

Ideally, a unified underlying system should be in place to ensure consistent reporting practices across all modes for improved data management and analytics.

Opinions on mobile applications are mixed. There is concern that the effort to download a mobile application may dissuade users from submitting a report, especially if the user considers the spill to be a minor issue. This concern was stated both in the survey and expressed during the Enlisting Citizens webinar (New Castle County). The New Castle County Department of Public Services opted to use a Google Voice number for call, email, and web form routing, rather than a mobile application that people wouldn't download. In contrast, many participants expect younger residents to be more comfortable with mobile applications, and Kitsap County encountered many people who preferred not to interact with anyone via phone. They have observed increases in mobile application usage and expect further increases with future public outreach efforts.

Based on participant feedback, transition to a fully automated mobile application only or automated call system would not be feasible for regional spill response. Even with robust mobile application systems, considerations must be made for after-hours emergency response. For complex situations, many interviewees emphasized the need for a real person with training to properly direct incoming reports. Calling is still a popular method for making reports and most accessible to citizens who are less comfortable with technology.

Looking to the future as younger generations may be interacting with these programs, one survey respondent also suggested social media platforms as a consideration for future program management.

Recommendations for receiving reports include:

- Implement a multi-modal program (including a phone hotline with real person answering, mobile application, and website) for receiving reports
- Develop a mobile-compatible webpage, which can still be accessed via mobile phone but does not require downloading a separate mobile application

3.2. Routing and Responding to Reports

3.2.1. Summary of Feedback

A marker of success for a spill response program is whether incoming reports can be correctly routed to the appropriate staff for an expedient response. Municipalities have encountered many barriers to successful implementation, including:

- Poor location information provided by the caller
- Confusion over the responsible jurisdiction (especially at jurisdictional boundaries) due to poor location accuracy and other misinformation
- Inconsistent data entry or typos that lead to misdirection or improper categorization of spills
- Making sure that urgent calls reach the appropriate staff outside of working hours
- Maintaining updated contact information when there is staff turnover

Feedback from the survey and technical interviews is summarized below.

3.2.1.1. Survey

During the survey, when asked how they would like to receive reports from a regional hotline, approximately 87 percent of the 76 respondents indicated that email would be the preferred method to receive information, followed by a forwarded call to the existing discharge hotline (nearly 60 percent of respondents) (see Table 4). Detailed survey responses can be found in Appendix A.

Table 4. Conveying Information from the Regional Spill Hotline to Local Jurisdictions.

If a regional spill hotline were implemented, how would you like to receive information?	Percent of Respondents	Number of Respondents[a]
Email	87%	76
Forwarded call to your existing illicit discharge hotline	59%	51
Text message	24%	21
Web map	20%	17
Other[b]	13%	11

[a] Respondents could select more than one method.

[b] "Other" was an open text field for survey respondents who did not feel that any answer choices applied to them. Respondents were asked to provide a written response if they selected "Other." See Appendix A for specific survey responses.

Multiple written responses questioned the value of a regional hotline if it forwarded to local numbers. Specific written suggestions included a time-based notification (hotline during

working hours, text message after working hours) or an urgency-based notification (email only for lower priority reports). Other comments requested to bypass the existing hotline and directly contact staff or provide a mobile application notification.

3.2.1.2. Technical Interviews

Some systems have multiple modes of alerting staff based on personal preferences, which are configured into the routing system. In one example, the Google Voice number used by New Castle County (Enlisting Citizens Webinar) allows for easy routing of calls, texts, emails, and web forms to any destination or person. Other systems use less automation and rely on staff knowledge and interagency contacts to funnel reports. When the Minnesota Department of Public Safety (DPS) receives a call, staff fill out a report and send the report to the agency of interest; after-hours contact numbers have been provided by each agency that receives calls through DPS.

Kitsap County receives all reports through the SeeClickFix system (even calls made to the call center, which are then entered into the mobile application interface). Call routing varies depending on location and spill category, which is an automatic function configured in the mobile application. Different people might be assigned for different report types (e.g., maintenance vs. spill response). Reports are automatically routed to the asset management system for certain types of reports, and there is backup routing to the call center for high-urgency reports. The mobile application enables two-way communication with the person who initiated the report.

After hours, there are designated on-call employees who take home an iPad that will notify them of any reports. The mobile application instructs users to call 911 after hours, so the on-call staff will also receive a call to wake them up if needed. According to Kitsap County, the SeeClickFix mobile application has improved their response time from 24 hours to 15 minutes.

The **City of Seattle's** goal is to be on site within an hour. They stated that a call center is necessary; email or voicemail is not sufficient to meet their goal. Once the call comes in, dispatchers use the Active911 mobile application interface to distribute information to the spill response team via email, text, mobile application notifications, and some pagers, which are customized by personal preference.

For the **Squeal on Pigs!** program, the data entry form generates an email list of responders to notify based on the geographic area selected via a dropdown menu. Reports are often routed to all three states to ensure timely responsiveness.

Reports for the **WA Invasives** mobile application are validated by a team of expert biologists, entomologists, epidemiologists, and invasive species managers before being made available for public download. The RCO's goal is to respond on the same day that reports are received, although it may take up to 2 weeks for the observation to be validated. When appropriate, the landowner who made the report is provided with information on invasive species management to implement actions on their own land. The specific action taken depends on the spatial distribution and type of invasive species present.

ERTS is described by Ecology as a referral system. Incident reports are manually routed by the ERTS Coordinator to notify relevant internal programs (such as the Spills Program) or external parties (other state and local agencies) about the incident. The ERTS Coordinator selects the referrals based on the incident and associated jurisdiction or need for response. Once referral agencies are selected within the ERTS software, an email notification is autogenerated based on an assigned email for the respective agency. Regional Ecology staff maintain this external contact information.

For the internal Spills Program, the ERTS Coordinator may directly call or page the on-call responder (including after hours). The majority of referrals are for spills that do not meet the requirements for an Ecology spill response.

3.2.2. Conclusions and Recommendations

Effective spill response is heavily dependent on making sure that incoming reports are quickly and correctly redirected to the appropriate jurisdiction and associated spill response staff. Within the reporting systems discussed during this study, varying levels of automation have been implemented, ranging from manual call routing to built-in mobile application capabilities that route reports based on incident type and location. Challenges that may be faced by a regional system include:

- Maintaining updated contact information across multiple agencies when staff turnover occurs
- Inconsistent data entry by call centers, internal staff, or the public that could lead to misdirection of an incoming report
- Nuanced knowledge of the appropriate agencies or entities that should be notified based on the incident type and location, which requires trained staff to receive reports
- Coverage during off hours

Existing systems have offset some of these challenges by utilizing partnerships or incorporating automation features. Recommendations for programs include:

- Partner with existing emergency management systems to redirect reports received after hours.
- Incorporate dropdown menus to ensure consistent data entry and reduce the likelihood of routing errors due to typos.
- Automate notifications based on the geographic area or geotagged images where an event occurred; this was indicated as a desired feature by multiple respondents, and is already utilized by some programs.
- Include fire department and police department staff in training activities to facilitate faster notification of spill incidents.

3.3. STAFFING

3.3.1. Summary of Feedback

Most hotlines and mobile applications require staff support for both set up and ongoing maintenance either from internal IT departments or from a third-party vendor. Staffing needs (and level of expertise) vary based on the volume of reports typically received by an agency and the report routing methods employed by that agency. Feedback from the technical interviews is summarized below.

3.3.1.1. Technical Interviews

Kitsap County does not require technical IT support for administration of their SeeClickFix mobile application because the mobile application is managed by a third-party vendor and has an intuitive user interface that allows for customization by County staff. After an initial period of testing and adjustment, the County no longer spends much time managing the mobile application itself, except to onboard other participating departments. Mobile device management is accomplished by a system that automatically pushes updates to the devices.

The County uses iPads for their trained spill response team to take home when they are on call outside of work hours. The mobile application will send alerts to notify staff and is programmed to notify various contacts depending on the type and location of the spill report. The mobile application also directs residents to call 911 after hours. If the iPad alert does not wake up staff for response, 911 operators have a contact list for on-call staff and will call to wake them up.

The **City of Seattle** has dedicated staff to maintain their system (internal mobile application maintenance, confirm categorization of spill, check format and distribution of reports) after reports are entered by the call center dispatchers. Although dispatchers are not spill experts, they have a specific spill intake form with dropdown menus and have been trained on this topic. There is a list of pollutants to select, etc. The intake form can be customized by SPU staff to create different call types and make other updates to the system.

Squeal on Pigs! hotline calls are routed to appropriate agency staff in the three states. One issue stated during the interview is that the three-state partnership makes it difficult to ensure consistency in answering questions across organizations, and there is also a slow process to get the mobile application updated. Washington staff would need to contact Oregon staff (currently managing the hotline) if they would like to make any changes to the system.

The **WA Invasives** mobile application uses a database that is managed and maintained by the University of Georgia. There is minimal RCO involvement regarding technical aspects of mobile application operations and maintenance. The data validation process requires staff that are technically proficient in invasive species identification.

There is one dedicated **ERTS** coordinator in each of the four Ecology regional offices, plus additional backup ERTS coordinators when needed, based on volume of calls typical for each office. ERTS coordinators are hired as entry-level personnel and trained to refer initial reports to the appropriate internal and external agencies. Owners for each program are responsible for assigning the ERTS reports to staff for follow up. Designated follow-up staff are typically permit managers, technical experts, or spill responders.

Database administrators and IT staff are involved in managing the system and implementing updates when needed.

Partnerships are also in place with the internal Spill Program and Washington Emergency Management Division (EMD); phone system notifications after hours are managed by spill responders via the SPIIS system and referred by EMD. The referral process involves Ecology staff in other programs for follow-up action as needed, and procedures are in place to notify management staff for reports with significant environmental impacts and ongoing response requirements.

The responses from the technical interviews indicated that the most difficult staffing element of spill response is managing the response effort and making sure that urgent reports get to the correct person, specifically during evenings, weekends, and other times when specialized spill response staff may be scattered, asleep, or otherwise difficult to reach, as discussed in Section 3.2. Regardless of the scale of the system for receiving calls, local staff must be notified of urgent calls and be able to coordinate closely with internal team members to respond effectively to spills.

Systems that lack a constrained structure may struggle to ensure consistency when staff across multiple agencies interact with the system.

3.3.2. Conclusions and Recommendations

Specialized IT support related to implementation, operations, and maintenance of a hotline system and associated database may not be necessary if a third-party mobile application is used. This is a common practice; mobile applications can provide a user interface that is easy to configure and that allow dropdown menus to ensure consistency for dispatchers and non-specialized staff to input data into the system. It can be difficult to ensure consistent data entry for systems that lack a constrained structure, especially when staff across multiple departments, jurisdictions, or agencies are interacting with the system. These data inconsistencies can limit functionality of the system and make it difficult to classify and distribute reports.

Recommendations associated with staffing are primarily related to providing tools that improve data consistency for incoming reports, which reduces the burden on staff assigned to interpret, distribute, and/or respond to those reports. Recommendations for staffing include:

- Use dropdown menus and structured forms to improve consistency of data entry.
- Partner with existing emergency management systems to redirect reports received after hours.

3.4. Data Storage and Analytics

3.4.1. Summary of Feedback

Record retention is another important element for consideration when evaluating a hotline or mobile application. Records related to the NPDES permits are required to be retained for a minimum of 5 years; however, what is publicly visible can be available for less than that amount of time. Complexities associated with data storage include the need for follow up to incident

reports and the desire for querying and analytic functionality. This topic was discussed in detail during the case study interviews; systems covered range from those relying on external storage facilitated by a third-party mobile application to custom-built databases that are managed in house. Feedback from the technical interviews is summarized below.

3.4.1.1. Technical Interviews

The **Kitsap County** SeeClickFix mobile application is hosted on Amazon Web Services (AWS). The County's record management policies state that purging should occur after a certain timeline; data management meets the state standards for archiving. The County can access older records (all requests ever made) as needed, but content visible to public is removed after 72 hours when the request is closed.

Now that records are available for multiple years, the County can analyze data for more efficient response and is incorporating results into their Capital Improvement Project (CIP) planning. Analytics include report items (location, type of spill or issue, whether it went into a storm drain, geolocated photos, etc.). Because the system is integrated with the County's asset management software, additional analytics include the type of repair/fix, labor and cost of response, and response time to closeout.

The **City of Seattle** has a Dynamics database (Microsoft product application built by a consultant) that is used once responders arrive at the spill. Responders use this database for analytics, accessing permit compliance information, evidence to support enforcement, etc. Responders do not analyze information directly from the Active911 mobile application database or dispatch calls.

The **Squeal on Pigs!** hotline is a new hotline and has not received many calls, which may be due to the small number of wild pigs present in Washington. No information is currently kept on record; the assumption is that the receiving agency would be responsible for archiving and maintaining this data.

The **WA Invasives** mobile application feeds data into a North American database. A third party was paid to compile everything in one location. The updated mobile application includes a spatial and photo data validation process that has ultimately resulted in fewer, but more accurate, reports. Initially RCO encouraged people to report regardless of certainty of their observations. After analytics revealed that a high percentage of reports were not correctly identifying invasive species, the RCO put together look-alike guides for specific invasive species and news releases on correct plant identification to improve public understanding. There is a built-in process to review data, workflow analysis for actions taken, and internal analysis of response/team workflows.

During the process to merge with University of Georgia, a snapshot was taken of previous data and uploaded into new system. The Council would like it to be there "forever." If data is taken down, the Council would like to track it. Currently it is possible to go back through the data and make corrections. Long-term record keeping is currently not planned beyond 7 years, but data management prices currently are presumed inexpensive; thus, this item is under consideration.

The RCO is using Survey123 through ArcGIS to track outreach events, which allows them to upload photos and track different metrics for who is capturing data. This allowed the Council to improve reporting and packaging findings to send to other organizations. It also allowed the Council to analyze specific metrics such as whether they were reaching a statewide audience.

Initial reports are stored as attachments in **ERTS**. Some reports are stored both in ERTS and in their respective program databases (e.g., SPIIS). ERTS has limited functionality for data analytics. Functionality is not available in ERTS to export to Excel, create charts, or query data. Time stamps are created for reports received and entered, but cannot be used in an analysis query in ERTS. Response times may be skewed because they are based on when staff update the report in ERTS and are not based on actual response times.

ERTS does not facilitate tracking or communication regarding report follow up or status. Ecology staff typically manage their follow-up data outside of ERTS (e.g., Spills Program staff use SPIIS, and Water Quality Program staff primarily use the PARIS database). External referral follow up is handled manually via email.

The 2019 ERTS redevelopment effort added some functionality to reduce internal emails and replace with ERTS software routing.

3.4.2. Conclusions and Recommendations

Analysis can help jurisdictions with annual reporting and implementation of system improvements. Programs that make use of mobile applications or integrated asset management systems have broad capabilities to analyze response time, cost, and trends over time; these robust analytics can improve response time dramatically and contribute significantly to program success.

Analysis is often more difficult to run for in-house, custom-built systems. A lack of querying and analytic capabilities was noted as a key deficiency for ERTS, which prevents the database from functioning as a regional reporting system.

Recommendations related to data storage and analytics include:

- Encourage jurisdictions to integrate reporting systems with asset management systems (where applicable) to take advantage of additional tracking capabilities, such as cost of incident response
- Implement tracking and reevaluation to assess the data that is being collected
- Conduct additional research on data storage during the next phase of this project since this topic was not discussed in detail by interviewees and will require additional research to determine regional system needs

3.5. Cost and Effort of Implementation and Maintenance

3.5.1. Summary of Feedback

Cost and effort of implementation varies depending on the selected technology and partnerships with existing programs. Feedback from the municipal, state agency, and technical interviews is summarized below.

3.5.1.1. Municipal Interviews

During the municipal interviews, it was determined that most jurisdictions did not specifically track the costs of their spill hotlines or spill response. Rather, these costs are buried in department budgets and work order tracking. Only one county interviewed has an established budget for spill cleanup and was able to track costs.

3.5.1.2. State Agency Interviews

During the state agency interviews, the Washington State Department of Transportation (WSDOT) was the only state agency that indicated that they actively tracked costs associated with administering spill response.

3.5.1.3. Technical Interviews

Both Kitsap County and the City of Seattle utilize a call center that is shared with other emergency reporting programs. The call center expense is not attributed solely to the spill response program.

Kitsap County reported a low implementation cost. The SeeClickFix mobile application vendor offers a startup service, but Kitsap County opted to do their own configuration in house via the SeeClickFix user interface. Besides their own labor, the cost of implementation was minimal. After an initial adjustment period to refine the mobile application workflow hat was labor intensive, the County now spends little time on mobile application configuration or maintenance. Ongoing cost per year for the SeeClickFix mobile application is based on size of the jurisdiction. Kitsap County pays approximately $25,000 per year based on population, including the Phase II cities.

For the **City of Seattle**, the Active911 mobile application costs $10 per user per year (total number of users was not reported by Seattle). Seattle spends an estimated 4 to 6 hours per year updating or reconfiguring the mobile application component, which is not a significant burden. Technical aspects of the mobile application are all maintained externally by Active911. The most time spent was on the initial set up. Special features (such as templates for Geographic Response Plans [GRPs]) and add-ons can add time and complexity.

The **Squeal on Pigs!** hotline is a tri-state effort, and initial and ongoing costs are divided between the three participating states (Washington, Oregon, and Idaho). A public outreach campaign was an integral part of the initial hotline setup and messaging was coordinated with a public outreach firm at a cost of approximately $20,000. The exact cost of the hotline set up is unknown, but there are additional maintenance and answering service fees associated with this service.

The **WA Invasives** mobile application was initially custom built. Developing this mobile application initially cost less than $30,000; however, it cost roughly $100,000 to merge the information into a North American invasive species database maintained by the University of Georgia. Ongoing pricing for mobile application management is coordinated with the University of Georgia. An observation was made that mobile application updates do not go out to bid, indicating a relatively low maintenance cost, although the exact amount is unknown.

Ecology did not report the initial cost for **ERTS database** implementation. Ongoing costs for ERTS include staffing ERTS Coordinator positions, cost of internal operations, and monthly fees for the database. An ERTS update was launched in June 2019 after a 2-year redevelopment project and is currently in a roll-out phase. The total cost of the update was not provided, but database updates were extensive.

The amount of time spent on ERTS operations varies by regional office; the Northwest Regional Office receives the highest volume of reports, which requires a full-time ERTS Coordinator with several backups. Other regional offices receive a

lower volume of reports. The system is considered generally reliable but has gone down occasionally during an update or loss of internet connection. During outages, ERTS Coordinators take reports by hand until the system is running again.

3.5.2. Conclusions and Recommendations

Most jurisdictions interviewed use third-party vendors to develop and maintain their mobile applications. Setup costs can vary depending on the amount of customization needed. Ongoing maintenance costs also vary depending on whether this is handled internally or externally by a third-party vendor. Recommendations for lowering the setup and operational costs include:

- Partner with other agencies and work closely across departments and jurisdictions to share available resources in overlapping areas
- Consider using a pre-built mobile application
- Collect additional information regarding the cost of existing programs; limited information was provided by interviewees regarding operational costs

3.6. Public Perception and Involvement

3.6.1. Summary of Feedback

Public perception and education are ongoing challenges for spill response programs. Programs struggle not only to differentiate their spill response hotline from other emergency hotlines, but also to make sure that the public is informed and can provide accurate reports. See Section 3.7 for more information on advertising and education strategies.

It is important to have public support for a spill reporting system to make sure that citizens will continue to submit reports.

Feedback from the municipal and technical interviews is summarized below.

3.6.1.1. Municipal Interviews

Public outreach was listed as a desired improvement by many jurisdictions during the municipal interviews (see Appendix B). Some of the municipal staff interviewed recommended providing educational materials and reporting options in the primary non-English languages spoken in a particular jurisdiction. Quick translation methods should also be available to improve spill

response times if needed. Standardized online reporting forms with check boxes instead of open text fields may also help facilitate spill reporting in non-English languages since they can be translated to English more quickly.

> *To benefit public perception and involvement, consider providing educational materials and reporting options in the primary non-English languages spoken in a particular jurisdiction.*

3.6.1.2. Technical Interviews

Kitsap County stated that the public like the SeeClickFix mobile application and that mobile application usage is increasing, even prior to planned advertising efforts. The public can see data posted to the online map, and there is two-way communication to let the public know when reports have been addressed.

The **City of Seattle** hotline number has been the same for the past 8 years. The City has optimized an effective response program and their primary public concern regarding spill reporting is that adding a new regional hotline number would confuse citizens that are already familiar with their hotline.

The **Squeal on Pigs!** hotline is a new hotline, so no information is currently available on public perception and involvement.

The RCO stated that there is a difficult balance between providing the public with a quick response to their **WA Invasives** mobile application submission and taking the time to confirm the accuracy of the report.

The RCO conducted a survey over the past several years and found that the public was unlikely to use the **WA Invasives** mobile application to report again in the future. As a result, the RCO tried to improve responsiveness and personable interactions via thank you notes and communication at an individual level. Automatic notification was helpful as a solution to improve responsiveness. RCO responders also tried to improve response times (e.g., to fly or drive out that day to investigate). Landowners now receive information to address invasive species issues themselves, and improved reporting accuracy due to public education helps to better inform agencies of what action to take depending on spatial distribution. The RCO emphasizes communication with landowners and the public on the process and reasons for rapid or slower response times.

The public does not often comment on **ERTS**. Primary complaints are regarding expedient follow up and resolution of the reported incident, and feelings that calls are "lost" in the system bureaucracy.

External agencies have complained that the report format is not easy to read and cannot often be received (in .ZIP format) due to email security blocks. The agency receiving the referral cannot view the entire list of referred entities to determine which other agencies have been notified, which can hinder coordination efforts. ERTS also lacks built-in functionality to communicate incident close out. Updates to ERTS reports are sent manually via email to all notified agencies, outside of the ERTS database. The current system does not allow reports to be "re-sent" through the auto-notification system.

3.6.2. Conclusions and Recommendations

Based on the municipal and technical interviews, local hotline numbers are typically well advertised, and usage of the hotlines, mobile applications, and web reporting continues to grow without the need for new advertising campaigns.

Other recommendations related to public perception and involvement include:

- Avoid industry-specific lingo and jargon when communicating with the public.
- Consider reduced fines for reporting an accidental spill caused by the caller's own organization; charges may be a deterrent to reporting accidents.
- Make sure the spill reporting number is easy to find.
- Raise public awareness to improve understanding of where and how to report spills.
- Provide two-way communication with the public about the status of their response to encourage continued use of mobile applications.

3.7. Spreading the Word

3.7.1. Summary of Feedback

Feedback from the municipal and technical interviews is summarized below.

3.7.1.1. Municipal Interviews

Specific to implementation of a regional spill hotline, advertising was seen by most municipal interviewees as more of a problem than a benefit since it may reduce the effectiveness of their

individual educational campaigns for their local spill hotlines. Municipal interviewees pointed out that advertising is not as expensive as it used to be since so much of it can be done over social media. Some municipal interviewees that had minimal or no advertising budget were cautiously interested in the potential for increased awareness of spills and spill reporting for their residents.

3.7.1.2. Technical Interviews

In a targeted advertising campaign that was discussed in the Enlisting Citizens Webinar, awareness was measured at 12 percent prior to the campaign versus 45 percent after the campaign for 1 month of multi-media promotions.

In **Kitsap County**, a regional hotline (360-337-5777) for general help and reporting spills was implemented in 2009 and continues to be used. Additionally to report a water quality problem, such as a spill, an online form is available from the County website (https://spf.kitsapgov.com/pw/report/form). Kitsap County launched the SeeClickFix mobile application in 2018, which provides a convenient way for the public to report spills (via their phones) as well as other County related issues/concerns. The cities of Bremerton, Bainbridge Island, Poulsbo and Port Orchard are also using SeeClickFix.

The **City of Seattle** provides a publicly listed Water Quality Hotline and web form (www.seattle.gov/util/EnvironmentConservation/OurCity/ReportPollution/index.htm) for the public to report potential stormwater, illicit discharge and other water quality related violations.

Squeal on Pigs! contracted with a Public Relations firm to advertise the hotline. Additional efforts included occasional news releases, coordinating with other organizations for a joint release of information, holding stakeholder meetings (both call-in broadcast and in-person), and framing the issue (importance, roles, cooperation).

The RCO is using Survey123 to track outreach events and analyze **WA Invasives** mobile application usage statewide.

The RCO recommends a communication outreach plan for a long-term program, especially if it is tied to specific funding sources. There should be a priority and long-term perspective for outreach and education.

To encourage use of the **WA Invasives** mobile application, RCO hosted a training 3 years ago for "first detection" for Master Gardeners and Stewardship training programs along with the tool to provide instruction along with awareness, to ensure that the tool would be provided to a knowledgeable public audience.

Ecology uses their website and business cards to advertise **ERTS**. Phone calls routed through reception are another predominant form of raising awareness for the reporting system.

3.7.2. Conclusions and Recommendations

As stated in the Public Perception and Involvement section, public outreach has been listed as an area of improvement for many reporting systems. Various techniques such as Google banners, business cards, and training activities with a target audience have been used to educate the public and encourage incident reporting. Data was not available to link current or past advertising campaigns with the success of current programs, but interviewees stated that public education regarding spills is an ongoing need.

During the technical interviews, participants shared some of their methods for educating, encouraging, and improving public interaction with their programs. Recommendations from technical interviewees include:

- Instruct call center attendants to tell people about the mobile application when they call to make a report to encourage future use of a mobile application.
- Include language regarding special behaviors (such as calling 911 after hours) in the reporting form and lock this functionality, if possible, via dropdown menus, checkboxes, etc.
- Use routine business inspections as an opportunity to spread the word. The hotline number should be listed in each business's spill plan.
- Optimize for search engines so that attempts to search for "spill" or related topics will result in the correct webpages and phone numbers.
- Focus on online ads and materials distributed by local jurisdictions rather than cable television and billboard advertising. Data from advertising effectiveness study conducted by New Castle County ("Enlisting Citizens" webinar) indicated that cable television and billboard advertising is not very effective.
- Collect and respond to user information.
- Push communication and public relations initially when something is new to get the word out as soon as possible. Make sure to reach a broad audience.

- Include fire department and police department staff in training activities to facilitate faster notification of spill incidents by first responders.
- Provide educational materials to ensure that the tools will be provided to a knowledgeable public audience.

4. IMPLEMENTING A NEW HOTLINE

4.1. LOCAL PREFERENCES AND SUPPORT

4.1.1. Summary of Feedback

Based on the survey, the municipal interviews, and the state agency interviews, the idea of implementing a new regional spill hotline is not broadly supported by most jurisdictions or state agencies. Feedback from the survey, municipal interviews, and state agency interviews is summarized below.

The idea of implementing a new regional spill hotline is not broadly supported.

4.1.1.1. Survey

From the survey of nearly 90 participants, 60 percent reported that their primary concern regarding implementation of a new hotline would be additional confusion caused by another phone number. Other common concerns include unknown cost (44 percent), insufficient information provided for local response (30 percent), and creating extra work at the local jurisdiction level (30 percent). Results are summarized in Table 5. See Appendix A for detailed survey results.

Table 5. Concerns Related to Having a Regional Spill Hotline.

What are your primary concerns about implementation of a regional spill hotline?	Percent of Respondents	Number of Respondents[a]
Another phone number means more potential for confusion	60%	53
Unknown cost compared to current illicit discharge hotline	44%	39
Insufficient information provided for local illicit discharge response	30%	27
Creating extra work at the local jurisdiction level	30%	27
Other	29%	26
Local illicit discharge responders are still needed	27%	24
Documentation/reporting still required	25%	22
Receiving less relevant calls than current illicit discharge hotline (vehicle accidents, other environmental issues, etc.)	24%	21
Having to learn a new system/approach	13%	12
Receiving more calls than current illicit discharge hotline	10%	9

[a] Respondents selected up to three choices.

Several participants also expressed concern that they would forfeit investments already made in optimizing their current programs and educating the public about them. Other concerns include:

- Delayed response time and reduced effectiveness for local response
- Limited applications for local concerns and specialized procedures (e.g., shellfish areas)
- Confusion over jurisdictional boundaries at city-county lines (or any other jurisdiction that may be involved, such as WSDOT right-of-way)
- Difficulty in maintaining emergency contact information due to employee turnover
- Unclear distinction from 911
- Redundancy with numbers already in place: ERTS, (800)OILS-911, local programs
- Public confusion resulting from all the above concerns
- Regulatory requirements that vary between jurisdictions (direct reporting to the city or county is required for some jurisdictions)

For survey participants who supported the idea of a new regional hotline, potential benefits mentioned included the potential for easier messaging to the public and long-term cost savings, reduced errors in determining the responsible jurisdiction, and more timely information. The most widely recognized benefit in the survey (ranked number 1 by 40 percent of participants) was improved public reporting of spills, followed by standardized response, reporting, data collection, and staff training (ranked number 1 by 29 percent of participants). One survey participant stated that they did not agree with any assumed benefits that were listed in the survey. Results are summarized in Table 6. See Appendix A for detailed survey results.

Table 6. Ranked Benefits of a Regional Spill Hotline.

Benefit	1	2	3	4	5	6	n	Average Score
Improved public reporting of spills	38%	23%	16%	13%	10%	0%	82	4.66
Standardized response, reporting, data collection, and staff training	29%	18%	19%	13%	14%	6%	83	4.16
Improved response times to spills	23%	27%	21%	4%	17%	7%	81	4.14
Promoted assistance on large and cross-jurisdictional spills	5%	20%	18%	34%	18%	5%	79	3.46
Reduced number of incorrectly reported calls	5%	5%	19%	27%	27%	17%	81	2.81
Fewer notifications going through Ecology's Environmental Report Tracking System (ERTS)	2%	9%	7%	7%	12%	62%	82	1.95

It is important to note that many survey participants view Ecology's ERTS as a regional spill hotline.

4.1.1.2. Municipal Interviews

Based on 10 municipal interviews, all jurisdictions except one were not interested in a new regional spill hotline; and interviewees struggled to come up with benefits regarding a new regional spill hotline. It is important to note that many of the interviewees view Ecology's ERTS as a regional spill hotline.

During the municipal interviews, interviewees thought that a regional spill hotline could possibly benefit another jurisdiction, but not their own. Municipal interviewees thought that participation in a regional spill hotline should be optional, though they recognized that if it were to be implemented, it probably would be required.

4.1.1.3. State Agency Interviews

During the state agency interviews, the DOH and WSDOT felt that there was no need for a new regional spill hotline and that a new regional spill hotline would be redundant to ERTS and what Ecology already does. They felt that Ecology was managing ERTS well and already has regional numbers in place. A general opinion from the state agency interviews was that ERTS could be improved and optimized to meet any perceived needs or gaps, and jurisdictions would rather focus on improving the existing system instead of creating a new system that would be unnecessary, duplicative, and potentially confusing to the public.

Ecology maintains the position that ERTS is not intended to function as a regional spill hotline (see background information on ERTS in Section 3 of this report for more information). Ecology staff believe that a true regional spill hotline would make it easier to identify and keep track of who needs to be notified at lower levels of government and would streamline reporting. Ecology currently only notifies County emergency management but thought the notifications should be broadcast to individual jurisdictions for improved communication at a local level.

ERTS is not intended to function as a regional spill hotline.

4.1.2. Conclusions and Recommendations

Recommendations from the municipal interviews include:

- Re-evaluate the concept of a regional spill hotline.

  With the exception of one county, the municipal contacts interviewed were not interested in the implementation of a regional spill hotline. While some interviewees could identify potential benefits, these benefits were not enough to sway their opinion. Counties were more likely to receive calls that were outside of their jurisdiction, but for most, that was not enough to change their opinion about a regional spill hotline.

- If a regional spill hotline is mandated, consider converting ERTS to a regional spill hotline that includes improved functionality and increased staffing.

  Many jurisdictions view ERTS as another source to notify them of recent spills in their area. They respond to an ERTS notification the same as a report from a citizen or other entity. Many jurisdictions also had reservations about introducing an additional phone number and other contact information into an already crowded field. They did not want to confuse their residents. Because ERTS already exists and is associated with spill reporting, it seems a logical number to use.

Municipal interviewees felt that jurisdictions would need the following information in order to support a regional spill hotline:

- Detailed cost information
- Detailed information about how the regional spill hotline would work
- Proof of time savings and improved accuracy
- Publicity for successful cases

4.2. FUNDING

4.2.1. Summary of Feedback

Feedback from the survey, state agency interviews, and technical interviews is summarized below.

4.2.1.1. Survey

In the survey, "unknown cost compared to current illicit discharge hotline" was the second most common concern related to having a regional spill hotline (selected by 44 percent of

participants; see Table 5 or Appendix A). Especially for jurisdictions that have already invested a significant amount in optimizing and advertising their current programs, the cost for implementation of a regional spill hotline is a major concern.

4.2.1.2. State Agency Interviews

According to state agencies, funding for a new regional spill hotline should come from taxes/ public funding to increase the Ecology budget, or through fees charged to spillers. Municipal interviewees suggested a variety of other potentially viable sources of funding for a regional spill hotline including:

- Pay-in option from the jurisdictions that want to use it; this could be scaled based on population.
- Annual fee plus a per-use fee modeled after 911
- Part of the NPDES municipal stormwater permit fees
- Funded by the State/Ecology
- Oil transportation taxes
- Code enforcement penalties
- Stormwater/surface water utility fees
- Percent of fines from Pollution Control Hearing Board to cover operational costs

The listed ideas were part of a brainstorming discussion; these funding methods have not been vetted or proven effective.

4.2.1.3. Technical Interviews

In **Kitsap County**, funding for the spill reporting system is split between the stormwater fund, the road fund, and general fund for the Department of Community Development. Cities in Kitsap County are currently participating in the program for free.

The specific source of the **City of Seattle** program funding was not available based on the knowledge of the interviewee but is assumed to come from multi-department maintenance funding for utilities.

The specific source of the **Squeal on Pigs!** funding was not readily available based on the knowledge of the interviewee. The United State Department of Agriculture (USDA) may provide grants that could provide additional funding for this program in the future.

The **WA Invasives** mobile application is funded through the Environmental Protection Agency (EPA) via the Puget Sound Partnership (PSP) as a near term action (NTA). Updates and maintenance by are funded by the Council and legislature. The USDA may provide grants that could provide additional funding for this program in the future.

Ecology did not report the specific source of funding for **ERTS**.

4.2.2. Conclusions and Recommendations

Research yielded a variety of recommendations but no consensus to support any specific method of funding. Methods would need to be vetted prior to considering for implementation.

Recommendations from the municipal interviewees include:

- Consider using monies allocated for a regional spill hotline to increase educational and awareness-building efforts for the individual jurisdictional spill response programs.

Recommendations from the state agency interviews include:

- Share information between agencies to reduce costs without reducing service.
- Collaborate between stakeholders to ensure everyone's needs are being met.
- Share funding for education and outreach.

> *There was a strong sense that rather than a new regional spill hotline, this should be "a procedural fix rather than an infrastructure fix." [State Agency]*

4.3. System Scale and Leadership

4.3.1. Summary of Feedback

Feedback from the survey, municipal interviews, and state agency interviews is summarized below.

4.3.1.1. Survey

A regional spill hotline could be configured at multiple different scales (e.g., statewide, eastern Washington, western Washington, Puget Sound, multi-county, etc.). During the survey, 43 percent of the 87 respondents ranked individual County scale as the number 1 priority, followed by watershed scale (27 percent of responses ranked as number 1 priority). Multi-County scale received the second highest overall ranking and was also suggested during the state agency interviews. Results are summarized in Table 7. See Appendix A for detailed survey results.

Table 7. Ranked Scale of Coverage of a Regional Spill Hotline.

If a regional spill hotline were implemented, what scale of coverage would you like to have?	1	2	3	4	5	6	7	n	Average Score
County	43%	23%	16%	10%	4%	5%	0%	80	5.75
Multi-County	8%	33%	32%	15%	10%	1%	0%	78	5.09
Watershed	27%	18%	16%	7%	12%	12%	7%	67	4.75
Puget Sound	7%	15%	23%	33%	11%	8%	3%	73	4.38
Western Washington	11%	16%	6%	16%	43%	9%	0%	70	4.11
Statewide (Eastern and Western Washington)	16%	1%	1%	9%	13%	53%	7%	70	3.11
No preference	9%	0%	6%	4%	2%	6%	74%	53	2.00

4.3.1.2. Municipal Interviews

Most of the municipal interviewees felt that Ecology should lead and operate a regional spill hotline, providing coverage for the whole state since Ecology is a state agency, has the most dedicated staff, and already manages ERTS. A statewide spill hotline number was considered the least confusing option for callers.

> *Most of the municipal interviewees felt that Ecology should lead and operate a regional spill hotline, providing coverage for the whole state.*

4.3.1.3. State Agency Interviews

Because Ecology already has regional numbers, one state agency interviewee felt that a new regional spill hotline could follow that same approach (e.g., southwest, northwest, central, and eastern regions).

4.3.2. Conclusions and Recommendations

There was no collective consensus on preferred scale for a regional spill hotline from the survey, municipal interviews, and state agency interviews. Opinions generally aligned with a preference to keep existing local hotlines in place, using ERTS for statewide coverage, and implementing countywide or multi-countywide programs at a regional scale.

The recommendation preferred by the municipal interviewees was that a regional spill hotline should be statewide and managed by Ecology. It would be the least confusing option for residents since everyone knows that they are in the state vs. determining specific county or city limits. Interviewees felt that it would also be easier for non-residents to report spills. Interviewees also perceive that the state has the ability to manage a regional spill hotline since they already have ERTS, advertising efforts would be relevant regardless of jurisdictional boundaries (an issue because most advertising methods cross county and city borders), budgets would be easier to allocate in a centralized program, and Ecology already has the most staff dedicated to spills.

Ecology has a different perception of the functionality that could be provided by ERTS in the role of a regional reporting system. While Ecology does provide statewide coverage for incident referrals, ERTS is not intended to serve as a reporting system and lacks important functionality such as querying, analytics, and in-system follow up with the original reporter that would be needed for a regional spill hotline.

Recommendations regarding scale of coverage will require additional research into the available products that could be used to supplement existing reporting systems. Most agencies (including Ecology) expressed concern that the efficiency of current high-performing systems cannot be matched by a regional equivalent.

4.4. KEY FEATURES

Key features of a regional spill hotline include data collection considerations and other features listed by survey and interview participants integrated into their current programs or missing/ desired within the current programs. Benefits of various collection methods (e.g., hotline, mobile application, website) are discussed in Section 3.1 and are not included here.

4.4.1. Data Collection to Facilitate Response

4.4.1.1. Summary of Feedback

Feedback from the survey and municipal interviews is summarized below.

4.4.1.1.1. Survey

During the survey, nearly 100 percent of the 88 respondents indicated location as the minimum information needed to be collected from a report to the illicit discharge hotline. Other common responses to the minimum information needed included (see Appendix A for detailed survey results):

- Type of material (77 percent)
- Approximate spill size/quantity (66 percent)
- Source of spill (66 percent)
- Contact information (65 percent)

Many respondents emphasized in their text field responses that first reports are often incomplete (investigation will occur even if a call provides minimal information) and that location is of key importance. One jurisdiction indicated that they allow anonymous reports. Additional minimum information listed by respondents included:

- Date found/when
- Response lead
- Hazard information
- Whether or not the caller believes the spill presents a significant threat to storm, surface, or groundwater quality

Interview participants indicated that a regional spill hotline should gather the following information, if available:

- Name and contact information of the person reporting (Note: allowing anonymous reporting was considered beneficial to some hotlines; others emphasize optional contact information)
- Date and time of report
- Location of the spill, preferably with GIS coordinates

- What was spilled
- Source of the spill
- When it was spilled
- Size of the spill
- What direction it is draining and where (did it enter storm drain or ditch?)
- Any water contamination
- Photos of the spill and area around it (preferably geolocated)
- Party responsible for the spill
- Ability to notify neighboring jurisdictions if necessary
- Attach voicemails or emails if any
- Ability to track the request as it moves through their response process
- Direct the user to call 911 after hours (one method is to include a yes/no checkbox for calls made during business hours, which would automate a prompt to call 911)

4.4.1.1.2. Municipal Interviews

Municipal interviewees recommended making sure to take the lingo used into account when developing intake forms that will be used with the public. Make sure to ask questions and provide direction to the public using everyday language. This recommendation holds true for phone calls, mobile applications and web forms.

A concern of some municipal interviewees was the use of technical vocabulary in communicating with the public or other responders. They have witnessed incidents of confusion about location and observational details about spills due to language used. One example of this is describing where a spill is draining to.

4.4.1.2. Conclusions and Recommendations

Recommendations related to data collection include incorporating the following fields (at a minimum) into intake forms:

- Type of material
- Approximate spill size/quantity
- Source of spill (if known)
- Contact information

Recommendations from the municipal interviews related to data collection include:

- Use everyday language when developing intake forms (for phone calls, mobile applications and web forms) that will be used with the public.

4.4.2. Spatial Integration and Tools

One benefit of transitioning to mobile applications is the option to integrate spatial tools into the spill response program. At a basic level, this can be helpful for more accurate reporting of spill location and can support the team tracking down the spill. Spatial integration can also facilitate automatic reporting to different entities based on service areas (e.g., inside city versus unincorporated county). On a larger scale, this feature could help multiple jurisdictions partner to provide regional coverage. However, in multiple instances, many different groups might still be interested in receiving the information.

4.4.2.1. Summary of Feedback

Feedback from the technical interviews is summarized below.

4.4.2.1.1. Technical Interviews

Kitsap County's SeeClickFix mobile application uses spatial integration to auto-route reports for participating cities and partnering departments.

The **City of Seattle** Active911 mobile application maps the location of a spill and gives driving directions to responders. The mobile application is used (along with radios) to communicate team locations and update locations or other details to share with the entire team.

The **Squeal on Pigs!** hotline is a new hotline, so no information is currently available on spatial integration.

Spatial integration is an ongoing challenge for the **WA Invasives** mobile application since many different groups are interested in receiving the information.

ERTS is a referral database and does not have spatial integration or other analytical tools.

Geotagged images are a popular feature that can be helpful for locating spills and understanding the nature of a spill, which may not always be accurately described. Photos can also be challenging and add complexity to data storage considerations. Users of one mobile application evaluated for the case studies reported a one-photo limit and database issues with photo resizing, which led to difficulty using quickly or sending directly as a response. There was difficulty across agencies with different restrictions, so staff began saving images as PDFs instead of image files.

4.4.2.2. Conclusions and Recommendations

Recommendations from the municipal interviews related to spatial integration and tools include:

- Evaluate options for including images of a spill, including geotags, as part of the evaluation of a regional spill hotline.

Recommendations from the technical interviews related to spatial integration and tools include:

- Ensure that the mobile application or web form can attach more than one image file to a specific spill report. Including images in the spill reports would help to address some of the problems encountered with inaccurate reporting of spills.

Key software features for a regional spill hotline will also be evaluated in more detail during the next phase of this feasibility study.

4.5. INTEGRATION WITH EXISTING SYSTEMS OR HOTLINES

A primary concern for most interview participants was integration with existing systems. This includes other emergency management systems, existing programs, and related software packages for asset management. Combining asset management or work order tracking software with a spill hotline can help with coordinating response and determining time/cost of response. This information can then be used to evaluate programmatic needs.

4.5.1. Summary of Feedback

Feedback from the municipal, state agency, and technical interviews is summarized below.

4.5.1.1. Municipal Interviews

Most municipal interviewees felt that a regional spill hotline should be ancillary to their existing local spill hotline systems. They would handle notification coming from a regional spill hotline like any other call into their system. They would add the regional spill hotline number to their website.

Most municipal interviewees felt that a regional spill hotline should be ancillary to their existing local spill hotline systems.

A few municipal interviewees were concerned about potentially having to modify their individual spill hotline system and reporting to accommodate the regional spill hotline. Other noted concerns related to implementation of a regional spill hotline included:

- Staffing
- Training
- Upkeep and infrastructure
- Timeliness and accuracy/details of information for their jurisdiction
- Liability for delays or misinformation

4.5.1.2. State Agency Interviews

Feedback from the state agencies varied (see Appendix C for details):

- The DOH felt that the scope of their work would not change, therefore integration with a new regional spill hotline a non-issue. They would continue to receive wastewater/ sewage-related calls from the local jurisdictions and all other spill notifications from Ecology. The DOH would still be focused on those spills that would potentially impact shellfish areas.
- Ecology thought that integration of emergency management systems might help with data analysis and might help unify usage of ERTS. Ecology currently does some data analysis but has a limited budget. They focus on what the state legislature sets as priority areas. They felt that there is an opportunity for more analysis at the community level and implied that maybe with a regional spill hotline that might be possible. Ecology also felt that there might be some issues with modifying systems to collect data for a metric that was not already an option in the system. They added that it would be important for a regional spill hotline to incorporate flexible software so that all needed/desired data can be gathered.
- WSDOT thought that integration of a regional hotline would be similar to the current system, wherein the appropriate contacts are notified by call or email.

4.5.1.3. Technical Interviews

The SeeClickFix mobile application can function as a stand-alone mobile application or can be integrated with asset management software as demonstrated by Kitsap County. Questions were raised as to how this number would be distinguished from other emergency service numbers (such as 911).

4.5.2. Conclusions and Recommendations

Recommendations from the municipal interviews include:

- Connect the regional spill hotline to existing individual hotline systems, just like a resident would call/email/submit a report currently.
- Add the new regional spill hotline number to local jurisdiction websites, but retain local spill hotline numbers and other reporting methods (e.g., email, text, mobile application).

Any other method, other than what is described above, was perceived as being cumbersome and complex, requiring integration with each software system and process. If an entirely new system was created, jurisdictions would need to revamp their entire process and re-educate all staff on how to use it. If treated as an addition information source, costs can be kept down, and integration will be the easiest.

5. CONCLUSIONS

The results from the survey, municipal interviews, and state agency interviews indicated that the creation of a new regional spill hotline is generally not supported at this time. The responses from the survey and interviews, however, did help to identify several areas where improvements could be made to existing local spill hotlines and coordination between neighboring jurisdictions related to spill response. Success stories share several key themes:

- **Partnership.** Spills and other environmental incidents may happen at any location at any time and must be addressed quickly. Interdepartmental partnerships combined with training and resource sharing with fire, police, and transportation departments can facilitate faster notification and rapid spill containment. Partnership with other emergency management entities can supplement after-hours call management.

- **Utilization (and Customization) of Mobile Applications.** While phone hotlines are a popular method for receiving information from the public, pre-built mobile application features are increasing the efficiency of spill response. These features include geolocation for improved location accuracy, photo attachments, dropdown menus for consistent terminology, integration with asset management software, and two-way communication with the incident reporter. In some cases, mobile application functionality is used most heavily behind the scenes to coordinate spill response team efforts, communication, tracking, and analytics.

- **Accessibility to the Public.** Outreach and education are ongoing needs for any spill response program. Specific behaviors, such as "Call 911 after hours," must be built into the reporting system, which should be easy to understand and available in multiple languages. Two-way communication with the public helps to spread knowledge about reporting procedures and let people know that action has been taken.

Feedback from the survey and interviews revealed that perceived weaknesses in the current system may not reflect local concerns, especially for successful programs. For example, receiving calls from the wrong jurisdiction or confusion at jurisdictional borders, leading to misinformation from the caller or improper rerouting of the report, was stated as an area of concern at the outset of this project. However, municipal interviews revealed that few jurisdictions received calls outside of their jurisdiction and that this is a relatively minor concern.

The primary concern expressed by the municipalities interviewed was public education to ensure that citizens or visitors can find the correct phone number, know when to call it, and can provide accurate information. While a single public phone number (or mobile application with built-in geolocation) would appear to address some of these challenges, interviewees felt that a new hotline number would negate previous local education efforts and cause additional confusion. Jurisdictions have invested heavily in their local programs and would rather direct their efforts

(and funds) towards improving public education and accessibility for their current spill reporting systems.

The initial phase of this feasibility study also identified that there is a great deal of confusion between jurisdictions and state agencies on the purpose and functionality of ERTS. Some jurisdictions consider ERTS to currently fill the "regional spill hotline" role because ERTS reports are received by Ecology regional offices, and the system provides both internal (Ecology) and external statewide referrals to notify relevant programs, agencies, and other entities of an incident. In that way, ERTS is an efficient notification program for jurisdictions that are already required to notify Ecology of a spill.

Ecology has stated that ERTS is not intended to function as a regional spill hotline. Ecology noted key deficiencies in the ERTS database functionality such as lack of analytics, querying, and follow-up capabilities that limit the use of ERTS as a reporting tool. Within Ecology itself, opinions are varied regarding ERTS functionality and the future role of ERTS. ERTS is also a custom in-house system that has changed over time and was recently updated for improved performance. Significant hands-on coordination by dedicated personnel is required to facilitate the referral system, and Ecology stated their own concerns with implementing a new regional number that would either remove the existing ERTS coordinators (and their associated knowledge of Ecology programs) or place additional workload on the existing ERTS coordinators.

As stated by survey participants and interviewees, the most obvious course of action would be to adapt ERTS to achieve functionality desired for a regional reporting system. However, based on Ecology's response, adapting ERTS to create an Ecology-run program is not a suitable path forward.

The next phase of this project will evaluate several configuration options for a regional spill hotline, including software packages/mobile applications and further review of ERTS. A features matrix will be developed to support local jurisdictions, regional groups, and state agencies in objectively comparing optional and required functionality for each of the software packages evaluated. Given the lack of support for a regional hotline to replace or supplement existing hotlines, the focus of this research will be on systems and features that could provide benefits in combination with existing local spill hotlines.

APPENDIX A

Survey Results

HERRERA

TECHNICAL MEMORANDUM

Date: April 30, 2019

To: Todd Hunsdorfer, King County

Copy to: Doug Navetski, King County

From: Rebecca Dugopolski, Jennifer Schmidt, and Katie Wingrove, Herrera Environmental Consultants, Inc.

Subject: Regional Spill Hotline – Initial Survey Results

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INTRODUCTION

The purpose of the initial survey was to collect feedback from jurisdictions regarding their current practices, suggestions, and concerns related to the implementation of a regional spill reporting hotline. This survey was also intended to identify individuals who would be interested in participating in follow-up interviews on this topic. The survey was produced using SurveyMonkey and distributed to various jurisdictions and organizations throughout the state of Washington. A total of 89 respondents submitted answers to one or more survey questions, and 59 respondents provided their names and contact information for follow-up. Responses to survey questions are summarized in the following sections.

Question 1. How does your jurisdiction currently track illicit discharge reports?

According to 88 respondents, the most commonly used method for jurisdictions to track illicit discharge reports is via spreadsheet (43 percent), followed by a database (40 percent). Results are summarized in Table 1 and text field responses are summarized below. A wide variety of different software and tracking methods were listed by respondents, including systems integrated with various asset management workflows.

Table 1. Illicit Discharge Report Tracking Methods.

Current Tracking Method	% of Respondents	Number of Respondents[a]
Spreadsheet	43%	38
Database	40%	35
Other	32%	28
Proprietary software	31%	27
Hard copy notes	26%	23

[a]Respondents could select all applicable tracking methods.

Written responses specify the following summarized list of programs and tools:

- Maximo (2)
- Lucity (4) and Energov (2)
- ESRI ArcGIS Online
- Cityworks (3)
- iWorQ
- Cartegraph (3)

- VueWorks
- Reports from ERTS (upon request)
- Mobile311 from Facility Dude
- Customized Microsoft Dynamics CRM with an app handling field operations in areas without cellular data
- Forms prepared by Ecology (Abby Stockwell); spreadsheet following the Ecology IDDE tracking form data from the current permit
- Stormwater Hotline
- Trakit
- See-Click-Fix Kitsap has a county-wide hotline (Kitsap 1); SeeClickFix integrated with asset management system
- Database and in-house routing system called the RFI (Request for Investigation) system used for citizen calls tagged as Illicit Discharge
- WebQA
- Elements/Novotx
- Email/post-it notes

Question 2. What is the minimum information that you need to collect from a call to your illicit discharge hotline?

Nearly 100 percent of the 88 respondents indicated location as the minimum information needed to be collected from a report to the illicit discharge hotline. Other common responses include type of material (77 percent), approximate spill size/quantity (66 percent), source of spill (66 percent), and contact information (65 percent). Many respondents emphasized in their text field responses that first reports are often incomplete (investigation will occur even if a call provides minimal information) and that location is absolutely necessary. One jurisdiction indicated that they allow anonymous reports. Additional minimum information listed by respondents includes date found/when, response lead, hazard information, and whether or not the caller believes the spill presents a significant threat to storm, surface, or groundwater quality. Responses are summarized in Table 2 and text field responses are listed below.

Table 2. Minimum Information for Illicit Discharge Hotline Reporting.		
Information	**% of Respondents**	**Number of Respondents[a]**
Location	99%	87
Type of material (if known)	77%	68
Approximate spill size/quantity	66%	58
Source of spill (if known)	66%	58
Contact information	65%	57
Responsible party (if known)	56%	49
Whether or not the spill has entered the MS4	42%	37
Whether or not the spill has entered a receiving water	42%	37
Other	18%	16
Photos	7%	6

[a] Respondents could select multiple information fields.

Text field responses to Question 2 are summarized below:

- We are not responding to this survey as a municipal permittee. We are concerned about the impact of spills on fisheries resources, fishers, and research staff.
- When it happened. It is not always just prior to the call.
- Location is really the only necessary one, so we can get out to investigate but all the other info helps.
- When did this happen and for how long?
- More is always helpful, but this would be the ones marked are the absolute minimum.
- We want as much information as possible, but we'll take anything we can get and follow up on it.
- All of these items are good to know, but the first report is rarely complete or correct, so we don't get hung up having all of the information. We just try to get out there and investigate as quickly as possible.
- Location is the only required information to initiate response. All other information is strongly requested but is not always known or shared.
- We ask for all of the above information. However, location and material if known is the absolute minimum that we require. We also allow anonymous reports.
- Date found.

- All of this information would be helpful but at a minimum we like to know the location and what (if known) and how much was spilled in order to start an appropriate response.
- Above is all the information we would like to collect, but I wouldn't consider some of it "needed".
- We can respond to the most minimal information I suppose. Location is absolutely necessary. Type of material, estimated quantity and if it has or is near surface water is also extremely helpful. The rest is icing on that cake. The more information we have the more adequately we can
- Response lead
- At a minimum, does the caller believe the incident, issue, or spill presents a significant threat to storm, surface, or groundwater quality? Our municipal stormwater code references and protects all three without regard for public or private ownership.
- Hazard information for responders and the public

Question 3. Do you see value in making it easy for the public to report illicit discharges?

A majority of the 88 respondents (91 percent) indicated that there is value in making it easy for the public to report illicit discharges. Results are summarized in Table 3.

Table 3. Value of Easy Public Reporting for Illicit Discharges.

Response	% of Respondents	Number of Respondents
Yes	91%	80
Not sure	8%	6
No	1%	1

Question 4. Rank the following benefits of a regional spill hotline in order or importance

The most highly ranked regional spill hotline benefit was "Improved public reporting of spills." Approximately 40 percent of respondents ranked that benefit as the most important (score of 1) for the highest overall score. Standardized response and improved spill response time were also ranked highly. The lowest ranked regional spill hotline benefit was "Fewer notifications going through Ecology's Environmental Report Tracking System (ERTS)," considered the least important benefit (score of 6) by 62 percent of respondents. Results are summarized in Table 4.

Table 4. Ranked Benefits of a Regional Spill Hotline.

Benefit	1	2	3	4	5	6	n	Average Score
Improved public reporting of spills	38%	23%	16%	13%	10%	0%	82	4.66
Standardized response, reporting, data collection, and staff training	29%	18%	19%	13%	14%	6%	83	4.16
Improved response times to spills	23%	27%	21%	4%	17%	7%	81	4.14
Promoted assistance on large and cross-jurisdictional spills	5%	20%	18%	34%	18%	5%	79	3.46
Reduced number of incorrectly reported calls	5%	5%	19%	27%	27%	17%	81	2.81
Fewer notifications going through Ecology's Environmental Report Tracking System (ERTS)	2%	9%	7%	7%	12%	62%	82	1.95

Question 5. What are your primary concerns about implementation of a regional spill hotline?

Additional confusion caused by another phone number was the most common concern reported by 60 percent of survey respondents. Other common concerns include unknown cost (44 percent), insufficient information provided for local response (30 percent), and creating extra work at the local jurisdiction level (30 percent). Receiving more calls than the current hotline and having to learn a new system/approach were the two least common responses at less than 15 percent each. Responses are summarized in Table 5 and text field responses are listed below.

Various additional concerns were stated, including delayed response time, difficult logistics and reduced effectiveness for local spill response, investment in public education for current programs, investment in current spill response programs and technologies, duplicative efforts, redundancy with ERTS and other systems, misuse, and confusion. Respondents weren't sure what form the centralized structure would take, and whether employee turnover, unclear distinction from 911, or unclear jurisdictional boundaries would cause problems. Several respondents are also happy with their current systems and expressed concern that a centralized/regional system would limit the applications for unique local concerns (shellfish areas) and delay communication to key staff.

Table 5. Concerns Related to Having a Regional Spill Hotline.		
Concerns	**% of Respondents**	**Number of Respondents[a]**
Another phone number means more potential for confusion	60%	53
Unknown cost compared to current illicit discharge hotline	44%	39
Insufficient information provided for local illicit discharge response	30%	27
Creating extra work at the local jurisdiction level	30%	27
Other	29%	26
Local illicit discharge responders are still needed	27%	24
Documentation/reporting still required	25%	22
Receiving less relevant calls than current illicit discharge hotline (vehicle accidents, other environmental issues, etc.)	24%	21
Having to learn a new system/approach	13%	12
Receiving more calls than current illicit discharge hotline	10%	9

[a] Respondents selected up to three choices.

Text field responses to Question 5 are summarized below:

- Currently, ERTS has been effective and responsive to our reports/concerns. We do not want to see a non-state or non-federal agency replace this function.
- There is already a spill hotline for jurisdictions on the west coast: 800-OILS-911.
- For all the calls that come to us through this new system we won't have the benefits of our current system which is handled by our own staff who are trained on how to properly route calls and vet calls and are connected to our global work order system etc.
- We don't agree with the assumed benefits listed on question 4. We think that public reporting will increase only if there is one number for the entire state of Washington and that number is similar to 911 or 411. We also are concerned about the role of Emergency Management (i.e., National Response Center) in particular with oil and hazardous/toxic spills. While ERTS isn't perfect, the coordinators know where to send things and whom to send them to within a jurisdiction. We wouldn't want to lose this level of service.
- How is our program (DOH Shellfish) notified if potential impact the shellfish areas?
- All of the above.
- I see a likely delayed response time from the spill line to the local jurisdiction. Currently, I can get anywhere in 30 minutes from the time I get the call. This would have to be a well-run call center. Staff turnover, which could be likely, will increase notification time.
- Effectiveness and prudent setup.

- How will the calls get routed and who will staff that central receiving point?

- Duplicate effort—why fix something that is not broken?
    1) What we have seems to be working well. There are a local, specific numbers that can quickly reach those specific staff that do the investigation and direct clean up. There are also State/Federal phone numbers to catch calls for those citizens who have doubt about the correct phone number. The ERTS Staff that receive those calls know who to contact at the local level. I recommend we keep promoting the State number statewide and local numbers locally.
    2) Large spills are already elevated and cross supported through existing regional emergency responder network. When a problem arises in communication, they should be called to check things out and make additional contact at the local level.
    3) Additional phone numbers aren't a good substitute for promoting existing phone numbers. It dilutes and complicates the process.
    4) While having more information from the first report sounds great, as is true with all activities, the first report is usually inaccurate or incomplete. What we need to know from the initial report is where it is and what it looks like. I'm not saying that we don't want to know what the material is or if it is in the MS4, etc., but everything has to be investigated by a trained person anyway. It may be very hazardous; assuming it isn't or having a citizen poking around to try to figure it out on their own, isn't unsafe.

- Increased time between reporting and response by local responders, thereby increasing the difficulty of finding the responsible party.

- The logistics involved in making sure the call-in reports get forwarded to the correct jurisdiction(s) in a timely manner.

- Receiving reports outside of jurisdiction due to call center not knowing boundaries. DOE currently sends city issues to the county and vice versa.

- We already have a system that works with Kitsap County. Our app for mobile devices is "Bremerton1" and Kitsap County has the "ClickFix" application for mobile devices. A Puget Sound wide system would be costly, not locally beneficial, unwieldy to manage and may even cause confusion. It may also be diverting funds from more important effort to support water quality improvements. Our current regional system is working great and well promoted so there is no need to add another layer.

- I like the idea of a streamlined approach/one stop shopping so to speak. Regardless if we stick with just ERTS or add this into the mix as well, I think it would be great if ECY could consider making the position more attractive for long term employment and reducing turnover.

- We believe our existing system is already quite good and while we see value in a regional approach, we don't want it to diminish the system that we already have in place and have promoted.

- There's a general assumption that creating a regional hotline will make reporting better. This may be the case for King County where cities geographic boundaries are blurry, but in more rural cities this isn't an issue. Unless there is a dispatch center like 911, this will likely not help make reporting better. And may add another layer of confusion to the current confusing systems in place. There's already a National Response Center hotline for spills.

- Ecology already has a system. ERTS could be improved. Talking about yet another response number seems duplicative. We would need access to the system for reporting.

- Does "regional" include eastern Washington?

- We have invested in educating public about our hotline number. this might require significant ed/outreach campaign.
    1) City of Seattle has code language the requires reporting of spills to the city. Not doing so would be a code violation.
    2) Our current call intake system tracks spills from the time of call and populates data points for all staff to see. This includes a map layer that is live.
    3) Spill notifications are sent to several people in the agency to keep situational awareness.
    4) Staff working on specify types of spills like sewer overflows dispatch spills from their existing work orders. Having a second receiving process could cause confusion for responders.
    5) Software and updates and new technology is being evaluated to make spill dispatching more streamline with our data collection processes. Changing the way calls are received may cause issues with moving this process forward.
    6) SPU receives over 1000 spill or surface water pollution reports per year. Having a regional number does not seem like something that will benefit us given the effectiveness of our current process.
    7) Applications like find it fix it have increased the number of erroneous reports of pollution issues.

- Development of the system/approach is critical to making it a more efficient or time saving system than what is already in place for us, whatever that is. The outreach component to the public will be extremely important so the intent of the system is met and clear separation from 911 is established.

- Definition of local. Puget Sound vs. SW Washington vs eastern Washington , etc. the ERTS is basically a one call system already.

- We already have a regional system. If this is Western Washington wide, it could be difficult to integrate with asset management.

- Misuse from the public/retributive tenants, disgruntled employees

Question 6. If a regional spill hotline were implemented, what interface(s) would you prefer?

Of the 86 respondents who answered this question, nearly 80 percent indicated that they would prefer a phone hotline with an actual person answering the phone. Many respondents selected several options; both website and phone app interfaces were also selected by approximately 60 percent of respondents. Responses to question 6 are summarized in Table 6. Text field responses are listed below, including more detailed suggestions for phone apps to provide statewide coverage; "Find It, Fix It" or Mobile311 by Facility Dude were listed as current examples. Some respondents indicated that supplementing with phone or web apps would be better than adding another phone number, especially to reach younger people. Other respondents indicated that all three interfaces are necessary, and one respondent stated that their current system already includes all three interfaces.

Table 6. Preferred Regional Spill Hotline Interface.

Spill Hotline Interface	% of Respondents	Number of Respondents[a]
Phone hotline with an actual person answering the phone (caller would convey the location and spill details to the person answering the hotline)	79%	68
Website (user would enter location and spill details)	60%	52
Phone app (auto locate and/or user would enter location and spill details)	58%	50
Other	15%	13

[a] Respondents could select more than one preferred interface.

Text field responses to this Question 6 are summarized below:

- Mobile311 by Facility Dude has a Phone App that the citizen can use we have not implemented it yet but plan to do so in the future. On the website if there was some way to direct the user to the Local Jurisdiction's website that would be great.
- I think a phone app would be easier from our side, but it may be too much extra work for a passerby to download an app and report the spill
- This is complicated as some jurisdictions are already moving towards a phone app to report spills, as well as other problems, within their jurisdiction. We think another phone app just for spills would give mixed messages to the public. If we had to choose, a phone hotline would be best.
- Phone App similar to "Find it, Fix it" in Seattle

- A single statewide phone app or website that gathers initial information and a few photos would be good to consider. This could alert both the local and state spill response teams at the same time. I would recommend this over additional phone numbers. Keep in mind that large and complex databases that require login access and training in order to work are problematic for staff turn around, and often are counter to getting the real work done. We can't lose site of the point of all of this, quick response and clean up.

- These are what we have with our current system.

- The more options the better but even though it may be a lot to ask in lieu of times being slow in between spills, being able to deal with an actual person would be ideal.

- You literally need all three. Ecology would be the best host for this system, like ERTS. Improve what already exists—don't create a new wheel.
    1) Website can be accessed via computer OR phone. No app download required (this is a HUGE extra step that most people will not complete).
    2) Phone hotline with a mostly automated interface. People could access a real person if they needed to, but robots could do a lot of this work. The questions are the same every time.

- Web map to show location.

- People have different communication preferences and younger folks should have some of the online reporting technology currently available with some flexibility built in to incorporate advancements (shifting social media platforms?)

- All

- None

Question 7. If a regional spill hotline were implemented, how would you like to receive information?

Approximately 87 percent of the 87 respondents indicated that e-mail would be the preferred method to receive information, followed by a forwarded call to the existing discharge hotline (nearly 60 percent of respondents). However, multiple written responses questioned the value of a regional hotline if it forwarded to local numbers. Specific written suggestions included a time-based notification (hotline during working hours, text message after working hours) or an urgency-based notification (e-mail only for lower priority reports). Other comments requested to bypass the existing hotline and directly contact staff or provide an app notification. Responses are summarized in Table 7 and written responses are listed below, including some

responses related to the content and handling of calls (making sure there is someone to call back, improved IDDE enforcement, and whether or not an ERTS would be generated).

Table 7. Conveying Information from the Regional Spill Hotline to Local Jurisdictions.

Methods to Receive Information	% of Respondents	Number of Respondents[a]
E-mail	87%	76
Forwarded call to your existing illicit discharge hotline	59%	51
Text message	24%	21
Web map	20%	17
Other	13%	11

[a] Respondents could select more than one method.

Text field responses to this question included:

- App notification
- Bypass our existing hotline and contact staff directly.
- Make sure there is someone to call back for information.
- Either forwarded call or call from the person receiving calls from the regional hotline.
- It may depend on time of report. If it is during working hours I would want it to go to our existing hotline. If after hours I would like a text so that someone is notified immediately.
- Phone call from hotline staff if an immediate response is necessary. Email for lower priority response is OK but higher priority may get overlooked due to the volume of email staff receive or if they are away from their desk.
- If a call will be forwarded to our existing hotline, again, not sure how this is supposed to help.
- Why implement a regional hotline if all they do is forward? perhaps better to have regional hotline take down info and dispatch to appropriate jurisdiction/s (based on location of incident).
- Would there be an ERTS generated?
- All of these probably have potential (not sure what a web map is but willing to assess) strengths/weaknesses. NORCOM issues text messages for callouts but is heavy on the acronyms.

- This is the part that really needs to be addressed, connected jurisdictions already communicate clean-up/response needs. What needs addressing is the enforcement of the IDDE section. Too many mobile businesses get away with warnings. One common thing to all mobile businesses/and fixed businesses are State Business Licenses. The UBI system should be engaged with a NPDES Commercial Business Permit that ties surface water pollution back to their licensure. Without this "hook" business will continue to make money on the discharge, by charging fees to customers, but dumping in the ditch/MS4/etc., and pocketing the dollars. IDDE events should stack up to cost recovery where: State gets report, City gets call, City responds, City finds RP and documents UBI and costs of cleanup, City reports costs and is reimbursed, RP pays additional license fees and costs to cover their IDDE. How many businesses will discharge a second time?

Question 8. If a regional spill hotline were implemented, what scale of coverage would you like to have?

A regional spill hotline at the County scale was preferred by a majority of respondents; 43 percent of the 87 respondents ranked County scale as the number one priority, followed by watershed scale with 27 percent of responses for number one priority. Multi-County scale also ranked highly as second and third priority for approximately 30 percent of respondents (second highest overall score). The lowest ranked selections were “No preference” (ranked lowest priority by nearly 75 percent of respondents) and statewide, which was ranked 6th by approximately 50 percent of respondents. Question 8 responses are summarized in Table 8.

Table 8. Ranked Scale of Coverage of a Regional Spill Hotline.

Scale of Coverage	1	2	3	4	5	6	7	n	Average Score
County	43%	23%	16%	10%	4%	5%	0%	80	5.75
Multi-County	8%	33%	32%	15%	10%	1%	0%	78	5.09
Watershed	27%	18%	16%	7%	12%	12%	7%	67	4.75
Puget Sound	7%	15%	23%	33%	11%	8%	3%	73	4.38
Western Washington	11%	16%	6%	16%	43%	9%	0%	70	4.11
Statewide (Eastern and Western Washington)	16%	1%	1%	9%	13%	53%	7%	70	3.11
No preference	9%	0%	6%	4%	2%	6%	74%	53	2.00

Question 9. Are there any regional or statewide hotlines that you are aware of in Washington or other states that we should investigate further (they do not have to be illicit discharge/spill related)?

A large group of respondents (33) submitted written suggestions for other hotlines to investigate further. Some responses were repeated by multiple respondents. Kitsap County's system, ERTS, and 811 (or other X-1-1 numbers) were most commonly mentioned. Responses are summarized below:

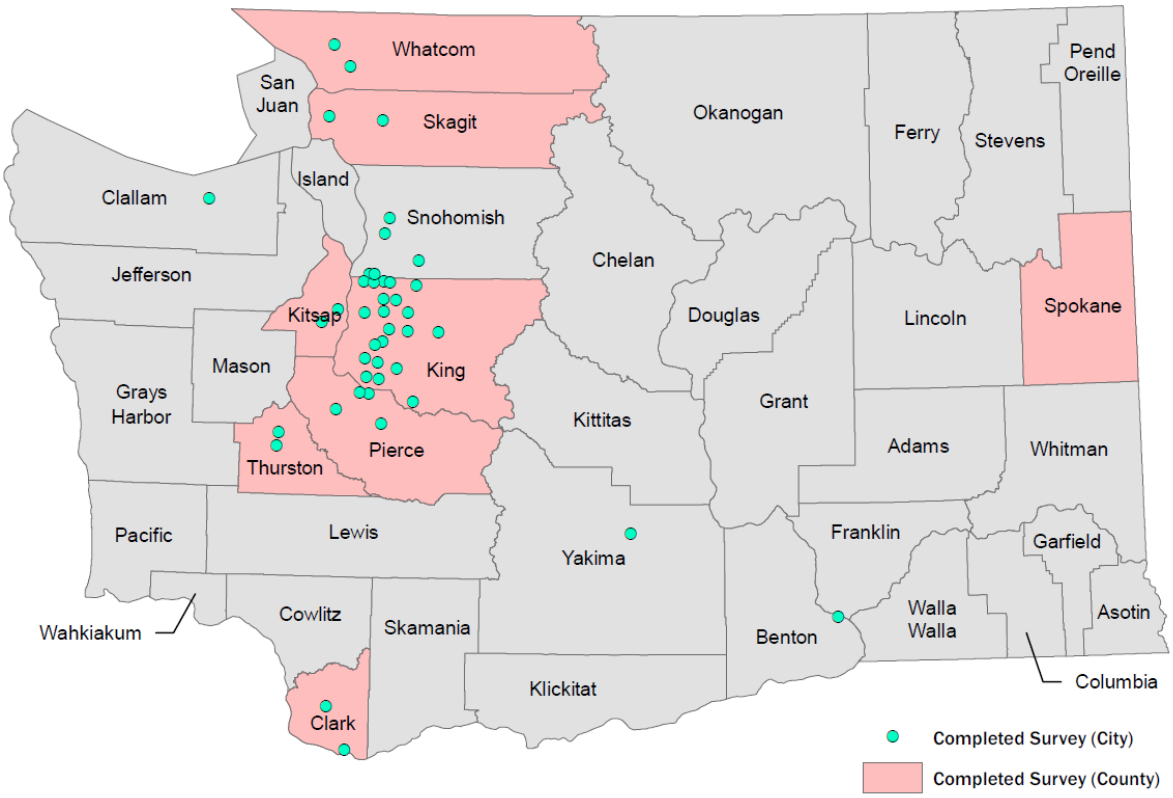
- ERTS
- Kitsap (Kitsap1)
- 811 Call Before You Dig
- Systems for 411, 211, 511, 811, 911
- TacomaFIRST 311: www.cityoftacoma.org/tacomafirst311
- Washington Emergency Management Division (1-800-258-5990): https://ecology.wa.gov/Regulations-Permits/Reporting-requirements/Spills-If-you-spill
- Snohomish County Water Quality Hotline (425-388-6481)

- Pacific Oil Spill Prevention Education Team (POSPET) (1-800-OIL-911): http://oilspilltaskforce.org/education/pospet/
- Puget Soundkeepers Alliance (1-800-42PUGET): https://pugetsoundkeeper.org/pollution-reporting-form/
- United States Coast Guard National Response Center (1-800-424-8802): http://www.nrc.uscg.mil
- Puget Sound Clean Air Agency File a Complaint: www.pscleanair.org/262/File-a-Complaint
- EnviroStars green business program: https://envirostars.greenbiztracker.org/site/contact
- New Castle County, DE county wide IDDE hotline: www.waterwordsthatwork.com/environmental-outreach-updates/discharge-webinar
- National suicide prevention lifeline (1-800-273-8255): https://suicidepreventionlifeline.org
- North East King County Regional Public Safety Communication Agency (NORCOM): www.norcom.org
- Northwest Straits Initiative Derelict Fishing Gear Reporting (1-360-733-1725): https://nwstraitsfoundation.org/derelict-gear
- Washington Poaching Hotline (1-800-447-6624 or 1-509-456-4101): http://westernwildlife.org/report-a-sighting
- Litter and it will hurt (1-866-LITTER-1) discontinued in 2011 due to budget cuts: https://ecology.wa.gov/Waste-Toxics/Solid-waste-litter/Litter/Past-litter-prevention-programs
- KING COUNTY DPER, which is not providing adequate (if any at all) response once we initiate a complaint.
- The Emergency Responders in all areas have a well-established communication system and are hazmat trained. They are often the Incident Command team leads for the region. They need to be a part of this conversation.

Question 10. Please let us know what jurisdiction/organization you work for and if you would be willing to participate in a 30-minute follow-up phone interview.

Of the 83 respondents who provided their jurisdiction, 59 provided contact information for follow-up. The full table of responses is included as an attachment to this memorandum. Respondents represent a diverse group of counties, organizations, and cities. Washington counties and cities are summarized in the map below. State government agencies and organizations that responded to the survey included the Washington State Department of Transportation (WSDOT), the Washington State Department of Health (WSDOH), and Westport LLC.

Figure 1. Map of Survey Respondents (excluding state government agencies and organizations).



APPENDIX A

SurveyMonkey Output

Detailed Survey Results: Regional Spill Hotline Feasibility Study

The contents of this appendix are provided as a separate electronic file, in PDF format.

APPENDIX B

In-Depth Municipal Interview Summary Report

Regional Spill Hotline

In-Depth Interviews
Local and County Agencies

Research Conducted June 2019

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Research Goals and Methodology

Background

This study was conducted with municipalities and county agency contacts in Washington State to understand how they currently handle spill response, their likes and dislikes with the current system, and the barriers to and benefits of a new regional spill hotline. In addition, their recommendations for funding, marketing, and integrating a new spill hotline were gathered.

All interviews were conducted via telephone in June 2019. They lasted an average of 42 minutes. Participants were not offered an incentive for their participation.

Nancy Hardwick from Hardwick Research conducted all the interviews. This report reflects the learning from the interviews, in essence bringing the voice of the participants to life. Note that for the most part, their language is used in this report, rather than technical/industry terms.

In-Depth Interviews

Ten interviews were conducted with the staff at the municipalities to understand their processes with regard to spill reporting and response, and their thoughts about a potential regional spill hotline. Municipality staff represented King, Kitsap, Pierce and Skagit Counties, and the Cities of Battle Ground, Bellevue, Kennewick, Kirkland, Redmond and Seattle. In each case the research participant was involved in spill response for their jurisdiction.

Interview Topics

The interview guide was developed specifically to learn about respondents' first hand experiences and perceptions. The following topic areas were covered during the interviews:

- Current practices: Learn from city and county governments how spills are reported and responded to. Understand their process around spill reporting. Identify what weakness residents might have with their systems.
- Test Idea of Regional Spill Hotline: Find out whether city and county governments are interested in the idea of a regional spill hotline.
- Integration with Current Practices/Barriers and Benefits: Learn how local governments would expect the spill hotline to integrate with their current systems. Understand barriers and benefits to adoption of a regional spill hotline, and how cities and counties would make it work.
- Who's in Charge: Understand who respondents think should manage the spill hotline.
- Other Hotlines: Gather benchmarks for the spill hotline among successful or memorable hotlines in other areas.
- What Region Makes Sense: Learn what region would be appropriate for the spill hotline to cover.

Research Annotations

The goal of this report is to provide the reader with the ability to hear the "voice" of the research participant. Quotes are verbatim and unedited.

In-depth interviews are qualitative research and are considered exploratory. Although in some cases we provide numerical tabulations of responses, these findings are based on small samples of individuals and are intended only to provide general direction. Broad generalizations to entire populations or any type of statistical inferences are not valid.

Throughout the report, quotes are identified as coming from an interview with a city or a county employee. The notation is [City] or [County].

Key Findings

Ten representatives from cities and counties across Washington State were recruited to participate in this study. They all are involved in spill response for their jurisdictions, some at the management level and others as staff, but they all actually go out to spill sites and evaluate the response needed. For the most part, these jurisdictions had the same opinions about the regional spill hotline and have similar perceptions about the barriers and motivators for their residents in reporting spills.

Current Practices

Most spill reports came from the general public. Other sources were Ecology/ERTS, government staff or agencies, emergency responders, public transportation agencies, waste haulers and towing companies. Most felt that that they rarely received calls that were not in their jurisdiction.

Many jurisdictions integrated with other emergency systems for off-hours calls. The dispatchers were highly trained to gather information and forward it appropriately.

Only a few integrated their spill response into other software systems. Mostly they integrated into utility or maintenance groups where it was tracked like any work order.

Jurisdictions varied on their current practices for spill reporting. During the day, most had a live person to answer calls (either direct or routed to them through a department switchboard) but in some cases calls were directed to voice mail when a smaller staff was busy on other calls.

A few jurisdictions were taking advantage of apps that made reporting of complete information, including images, easier and faster.

After hours, spill reporting varied more significantly. Some jurisdictions had on-call staff taking an office phone home to answer calls directly; others had calls routed to them via an answering service or 9-1-1 dispatch, sometimes with customized forms to be filled out. At the other end of the spectrum were jurisdictions where calls were left on voice mail or sent via ERTS and not responded to until the next business day.

Nearly all felt their process worked well. Many had spent years developing their response programs and educating emergency responders and the public call levels were high with good information provided. For most, if any improvements were desired they were around the areas of outreach and education.

Most jurisdictions felt public awareness was the biggest barrier to reporting of spills. Other barriers were limited understanding of what a reportable spill is, difficulty finding the number on poorly designed websites, language barriers for immigrant residents, or poor cell coverage.

Most jurisdictions did not track the costs of their spill hotlines or spill response. Rather, these costs were buried in department budgets and work order tracking. One county had a budget for spill clean-up and was able to track costs.

Idea of a Regional Spill Hotline

For the most part, response to the idea of having a regional spill hotline was tepid at best. All jurisdictions but one were not interested, and they struggled to come up with benefits regarding a regional spill hotline. Some potential benefits mentioned included potentially easier messaging to the public, potential for long term cost savings, reduced errors in determining the responsible jurisdiction and more timely information. Interviewees thought that a regional spill hotline could possibly benefit another jurisdiction, but not their own. Interviewees thought that participation in the hotline should be optional, though they recognized it probably wouldn't be.

The primary concerns with a regional spill hotline voiced by the interviewees included delays in getting information, disruption to their established individual spill hotline systems, and potentially confusing their citizens with more phone numbers.

Research participants suggested a variety of potentially viable sources of funding for a regional spill hotline including:

- Pay-in option from the jurisdictions that want to use it; this could be scaled based on population
- Annual fee plus a per-use fee modeled after 911
- Part of the NPDES municipal stormwater permit fees
- Funded by the State/Ecology
- Oil transportation taxes
- Code enforcement penalties
- Stormwater/surface water utility fees
- Percent of fines from Pollution Control Hearing Board to cover operational costs

It is important to note that many interviewees view ERTS as a regional spill hotline. They think that ERTS could be improved to meet any perceived needs by improving timeliness of notification to jurisdictions and better identifying notifications related to spills

Integration with Current Practices/Barriers and Benefits

Most interviewees felt that a regional spill hotline should be ancillary to their existing spill hotline systems. They would handle notification coming from a regional spill hotline like any other call into their system. They would add the regional spill hotline number to their website.

A few were concerned about potentially having to modify their individual spill hotline system and reporting to accommodate the regional spill hotline. Other concerns were related to staffing, training, upkeep and infrastructure, timeliness and accuracy/details of information for their jurisdiction. Another concern was liability for delays or misinformation.

Interviewees feel that jurisdictions would need the following information to support a regional spill hotline:

- Detailed cost information
- Detailed information about how the regional spill hotline would work
- Proof of time savings and improved accuracy
- Publicity for successful cases

Advertising was seen by most interviewees as more of a problem than a benefit as it would reduce the effectiveness of their own individual campaigns for local spill reporting information. They also pointed out that advertising is not as expensive as it used to be since so much of it can be done over social media.

Who's in Charge? What Region?

Most interviewees feel that Ecology should operate a regional spill hotline, providing coverage for the whole state. Ecology is a state agency, has the most dedicated staff and already manages ERTS. A state-wide spill hotline number was seen as the least confusing option for callers.

Hotlines to Benchmark

A variety of other hotlines were suggested as potential sources for best practices. Most were related to emergency response such as 911, the North East King County Public Safety Communication Agency (NORCOM), and the National Response Center. Other recommended hotlines included social marketing campaigns like "Litter and It Will Hurt," "Click It or Ticket," and the illegal dumping campaign.

Recommendations and Strategic Implications

Recommendation: Re-evaluate the concept of a regional spill hotline.

With the exception of one county, the jurisdictions interviewed as part of this study were not interested in the implementation of a regional spill hotline. While some interviewees could identify potential benefits, these benefits were not enough to sway their opinion.

Counties were more likely to receive calls that were outside of their jurisdiction, but for most, that was not enough to change their opinion about a regional spill hotline.

Recommendation: Consider using monies allocated for a regional spill hotline to increase educational and awareness-building efforts for the individual jurisdictions' spill response programs.

When asked what they thought about the potential for increased advertising associated with a regional spill hotline, many reacted positively to the idea of any increased awareness about spills and spill reporting that might come of it. In addition, many jurisdictions felt that one of the biggest barriers to the success of their current spill response efforts was lack of awareness and education among their constituents. Many wished for additional funding for educational and awareness efforts.

Topic areas to consider for educational efforts include:

- The difference between a storm sewer and a sanitary sewer,
- What constitutes a spill,
- The importance of reporting spills promptly
- How to report a spill

Recommendation: A regional spill hotline should be state-wide and managed by the Department of Ecology.

The most common suggestion for what region a regional spill hotline should cover and who should manage the hotline was that it should be state-wide and managed by Ecology. It would be the least confusing option for residents since everyone knows that they are in the state vs. a given county or city limits. It would also be easier for non-residents to report spills. In addition , the state has the ability to manage it since they already have ERTS, advertising efforts would be relevant whatever county they were in (an issue because most advertising methods cross counties and cities), budgets would be easier to allocate, and Ecology already has the most staff dedicated to spills.

Recommendation: If a regional spill hotline is mandated, consider converting the ERTS system to a regional spill hotline that includes improved functionality and increased staffing.

Many jurisdictions view ERTS as another source to notify them of recent spills in their area. They respond to an ERTS notification the same as a report from a citizen or other entity.

Many also had reservations about introducing an additional phone number and other contact information into an already crowded field. They do not want to confuse their residents. Because ERTS already exists and is associated with spill reporting, to many study participants it seems a logical number to use.

Recommendation: Any regional spill hotline efforts must emphasize speed and accuracy of notifications to the affected jurisdictions.

One of the primary concerns interviewees have about a regional spill hotline was the likely delay of receiving notification of spills. Most jurisdictions have well-honed procedures for gathering accurate data about spills and providing a swift response. They believe that inserting another layer into the process will inherently lead to delays in notification as well as inaccurate or incomplete information. Any delays could significantly increase the costs of clean-up, particularly during the wet season in the rainy western parts of the State. (A concern raised by participants from both Western and Eastern Washington.)

Recommendation: A regional spill hotline tracking system should gather the following information, if it is available:

- Name and contact information of the person reporting
- Date and time of report
- Location of the spill, preferably with GIS coordinates
- What was spilled
- Source of the spill
- When it was spilled
- Size of the spill
- What direction it is draining and where
- Images of the spill and area around it
- Party responsible for the spill
- Any water contamination
- Ability to notify neighboring jurisdictions if necessary
- Attach voice mails or emails if any
- Ability to track the request as it moves through their response process

Recommendation: Make sure to take the lingo used into account when developing intake forms that will be used with the public. Ask questions and provide direction to the public using everyday language. This holds true for phone calls, apps and websites.

> A concern of some interviewees was the use of technical vocabulary in communicating with the public or other responders. They have witnessed incidents of confusion about location and observational details about spills due to language used. An example is describing where a spill is draining to.

Recommendation: A new regional spill hotline tracking system should include a way to include images of the spill, including geotags.

> Most interviewees would like to have the ability for images to be uploaded into the reports sent to them. They felt that seeing a picture with the GIS coordinates on it would fix many problems they encounter with inaccurate reporting of spills by making it immediately clear what was actually happening.

Recommendation: Provide educational materials and reporting options in the primary non-English languages spoken in a given jurisdiction. Develop quick translation methods so as not to delay spill response.

> A concern of some jurisdictions was outreach to their large immigrant populations with limited English language skills. They would like to have ways to educate all of their citizens. A more difficult problem is providing a way for them to report spills in their native language that can be quickly translated to English. Standardized online reporting forms with check boxes might be a way to facilitate this.

Recommendation: Evaluate creating a short 9-1-1 style of number for residents to call state-wide.

> A short number like 9-1-1 is easy for residents to remember, speeding reporting time and therefore response time. People are already used to calling a quick number to report emergencies.

Recommendation: A regional spill hotline should function as another information source that would be connected to existing individual hotline systems, just like a resident would call/email/submit a report currently.

> Any other method, other than what is described above, will potentially be very cumbersome and complex, requiring integration with each software system and process. If an entirely new system was created, jurisdictions would have to revamp their entire process and re-educate all staff on how to use it. If treated as an addition information source, costs will be kept down, and integration will be the easiest.

Most jurisdictions were willing to add a new phone number to their websites as long as they could keep their current spill hotline telephone number and other reporting avenues (e.g.; email, text, app) there as well.

Recommendation: There was mixed interest in a large advertising budget that would potentially be associated with a regional spill hotline.

Participants voiced concerns about an advertising campaign for a regional spill hotline. They were concerned about confusing their citizens as to which number to call, and diminishing the effectiveness of the programs they have already built.

However, some of the areas that had very minimal or no advertising budget were cautiously interested in the potential for increased awareness of spills and spill reporting for their residents.

Recommendation: Develop a manual or guide of best practices for spill hotlines and spill response.

Several of the jurisdictions interviewed had state of the art tools and processes for managing spills. These included apps and software, as well as training for dispatch and responders, provision of supplies for responders and education for citizens and businesses. There is a huge knowledge bank in our state of what works well and it should be leveraged.

Recommendation: Encourage jurisdictions to develop strong and regular communication with other stakeholders within and across jurisdictions.

Those jurisdictions that had strong spill response programs shared the common thread of strong communication with others. For some, this was annual training and regular meetings of other organizations within their communities including dispatch and emergency responders. For others, this was monthly meetings with neighboring cities or counties to discuss current needs, infrastructure projects and improvements to handling spills. The relationships built through these efforts improved spill response for these jurisdictions in many ways. Some of the jurisdictions having difficulty with inaccurate information could benefit as well from meeting with their neighbors or constituents about how to improve their spill reporting systems and response. Some cities indicated that due to their excellent working relationship, when a spill happens near a border, both jurisdictions show up to assess the situation.

Detailed Findings

This section of the report outlines the actual content of the interviews. No interpretation is made regarding what the respondents shared. The focus of this report is to providing their "voice" regarding the topics they were asked about. The included respondent quotes are verbatim and unedited.

Current Spill Response Practices

Wide range of spill response staff interviewed

A total of 10 respondents were interviewed in order to learn about their spill response practices and needs. Those interviewed were directly responsible for spill response or else managed those directly responsible for spill response. They had a wide range of experience with some working the field for decades, and one who had been on the job only a few years. Most were intimately familiar with how their jurisdiction handled spill reporting and response.

Most receive spill reports from multiple sources

The majority of spill reports came directly from the general public. They ranged from about 50% to 90% of the reports received, though the one outlier was at 25% for public reporting. Other sources included Ecology/ERTS, government staff or agencies, emergency responders, public transportation agencies, waste haulers and towing companies. Rarely, they received spill reports from other jurisdictions if there was an error in where the original report was sent or if the spill was going to drain across jurisdictional boundaries.

> *"If our bordering jurisdiction had a spill, and they responded to it, according to their permit requirements if it's draining into our jurisdiction, they have to notify us. Now, that won't happen in the confines of a* [regional] *spill hotline. That will happen in the second or third step down the line."* [County]

Most felt that that they rarely received calls that were not in their jurisdiction. Of these out of jurisdiction reports, most of were received from ERTS. One county also mentioned having received incorrect information from new employees who don't know what is within city limits vs. the unincorporated county.

Some integrated with other systems

Many jurisdictions integrated with other emergency systems for off-hours calls. They spoke of how their entire emergency response was tied into 911 or their department of emergency management so spill reports were in the same system as fire, police and other emergency calls. The dispatchers were trained to gather the needed information and forward it on to the on call staff.

Only a few said their spill response was integrated into other software systems. Mostly these were for tracking work orders/service requests and were linked into other utility or maintenance

groups. Some were linked with other public works, maintenance or engineering groups. Specific software systems mentioned were Lucity and Cityworks. A few used Excel spreadsheets for internal tracking of spill reports and response.

Spills can be reported in many ways

Reporting can take place via a phone call, an app, an answering service, an email, via a government website, or through ERTS. During regular business hours, most answered the phone directly or the call was routed to them via a department switchboard (e.g., public works, engineering or utilities). This was preferred by many because of the ability to probe for more details about the spill location, size and type of spill.

However, some of the apps used can provide very detailed information by allowing reporters to submitted geotagged images of the spill and answer some questions. Apps being used by various jurisdictions were "Our Kirkland," "My Bellevue," and "See Click Fix."

Some jurisdictions had several staff full-time on spills, both fielding calls/reports and clean up. Others had staff that only worked part-time on spills.

After hours, the spill reporting (and therefore response time) varied considerably. Some have on-call staff who take a phone home with them, or to whom an answering service or 911 directs an incoming call 24/7. These reports are then addressed immediately. For a few jurisdictions interviewed, the reporter would leave a voicemail or send an email which then would not be addressed until the next business day.

Some spoke of customized forms for their teams or dispatchers to fill out. Customized fields included time reported, time responded and how long it took to close the case. Some provided their teams receiving calls access to detailed maps of their jurisdictions including catchment basins and streams where spills could drain.

> "*All our calls are related to infrastructure… so they can bring up the exact catch basin and the qualities of it. They do it all day long and they are not slow*." [City]

Most feel their current process works well

Municipalities were generally happy with their processes around spill reporting, tracking and response. Rationale for this was:

- The software solutions they use work well
- They receive spill reports quickly and can usually be on site within an hour
- They are able to gather enough information from the initial report to respond appropriately
- Their teams work together well
- Several have annual training with other entities that deal with emergencies
- They are rarely contacted about spills that were outside their jurisdiction

- They have good communication with other emergency responders and neighboring jurisdictions
- They are experiencing increased levels of spill reporting, due to better awareness among those reporting (residents, emergency responders, etc.)
- Some felt they had good outreach, so their citizens were aware of who to call

"*Our four cities play well.*" [City]

"We have practice every year with fire and P.D. We sit down with everyone. …Tow trucks have magnets or stickers for who to call… P.D. is now understanding the importance of getting that stuff cleaned up, so they're getting the tow trucks out of the way, allowing the tow truck companies to finish their clean up properly all while doing traffic control or spill response for them. That has been a huge, huge improvement. We actually spent a bunch of money for fire and donated a whole bunch of spill response kits to them. That has been super helpful for them…. We now have spill kits in all our police cars and fire trucks and drain protection kits and silicone mats in 10 of our fire trucks… anything they can do to help stop the pollution." [City]

"*The dispatch center is responsible for our system. They receive calls that relate to our infrastructure and they know it and know it well. They are focused in on the work that we do. … They are very efficient and able to correctly identify and coach people along to figure out where things are. … That is one of the strongest parts of the system that we currently use*." [City]

"*99% of calls are in our city limits and if they're on the border, we'll go anyway*." [City]

Several jurisdictions spoke of their outreach efforts which included going to schools and private businesses to talk about stormwater pollution and spill reporting.

Desired improvements to current systems

Most of the jurisdictions felt their systems were working very well and did not need much improvement. However, many would like to improve their outreach. Targets for this outreach included:

- Teaching the general public the correct number to call
- Training specific industries such as carpet cleaners
- Clarifying the differences between storm and sanitary sewers
- How to determine what constitutes a spill

"Like the sheen that's under a car from two drips of oil that we can't do anything about." [City]

"*More citizen awareness on how to report environmental upset and better integration between all the different organizations in the region that deal with them*." [County]

One county would like to have their spill hotline updated. They felt that their spill hotline was using outdated technology with an answering machine with an option for a call to go to 911 or Ecology. Inbound calls were covered because they were forwarded, but they would prefer to have something more modern, though they were not sure what that would be.

> "[After hours] *our system tells a caller to call 911 or Department of Ecology. Seems kind of old fashioned. If there's a way technology could automate that or… I don't know. We can't have somebody on that phone 24 hours a day."* [County]

Another would like to switch to an answering service so that a caller could always speak to a live person.

> "*What if a person doesn't feel like leaving a voice mail?"* [City}

Another county felt their website was not user-friendly and not mobile-friendly which hampered citizens' reporting.

One county felt that they would like to see better integration between agencies within their county, though it is important to note that the other respondents identified that as a strength of theirs.

Barriers for public use of current systems

Most jurisdictions interviewed felt that public awareness was their biggest barrier to reporting.

> *"Getting people to associate what they see* [a spill] *with calling that number seems to be a hurdle*." [City]

Along the same lines, for some residents just finding the number was potentially a barrier. Rationale was that there were a lot of numbers out there to sift through, and some felt their websites were not designed as well as they could be to facilitate finding the number to call.

Some felt that language was their biggest barrier, in that many of their citizens are immigrants whose English is not that good. This made reporting difficult. Another mentioned poor cell phone coverage as a potential barrier in their area.

> "*Either they don't know what constitutes a spill or something that should be reported. And maybe fear of getting in trouble."* [County]

> *"Knowing what the number is and where to find it."* [County]

Cost Tracking of Spill Reporting

Most jurisdictions did not specifically track the cost of their spill hotlines or spill response. Those that practiced any semblance of cost tracking linked the spill reports to work orders for

cleanup that were then fulfilled. Most just track the number of reports or requests completed. For some, these were tracked together with other public works projects, such as water main breaks, and not broken out as spills. One county spoke of having a budget for spill clean-up from which they could generate costs.

Some mentioned charging the person or entity that caused the spill. One said they only charge if they determine the spill was due to negligence rather than an accident. They felt charging for accidents deterred people from reporting spills. Another gives *"reduced fines if they call themselves in."* [City]

One city spoke of cost recovery efforts via clean up charges or fines, with an end goal of funding their department's outreach efforts. They also mentioned having very little staff dedicated full time to spill response, since they also worked on other city maintenance teams. Some would like to see a way of increasing funding to provide for more full-time staff or for outreach and education.

> *"We would like more money for education and outreach. Another person for that would be great."* [City]

Another city shared how they have actually saved costs related to spill cleanup by distributing spill kits to emergency responders. Police and firefighters are trained on how to clean up spills and typically have the spill cleaned up or at least contained before City cleanup crews arrive.

A county noted they have saved costs through the use of their website and app. These tools enable the public to enter all the information rather than county staff having to do it.

Idea of Regional Spill Hotline

What they like about the idea

For the most part, jurisdictions did not have much positive to say about the idea of a regional spill hotline. Some said it might be a great idea for other jurisdictions, but they were not interested in it for their jurisdiction.

For those who were potentially interested, they saw easier messaging to the public, hopefully no calls to wrong jurisdictions, potential for long term cost savings, and that it could "*get the right information to the right organization in a timely manner*." [County]

Some felt that the smaller jurisdictions, that just have a phone number and track calls on a spreadsheet, might benefit more from a regional spill hotline. Others felt the bigger jurisdictions might benefit more. In essence, all but one of the respondents struggled to come up with someone it would definitely help.

What they dislike about the idea

Respondents had many concerns about the idea of a regional spill hotline. The primary concerns were delays in getting information, upsetting their fine-tuned processes and confusing their citizens with more phone numbers.

> "*Here in Western Washington, it's how fast you can do it because of the rain. Even a one hour delay can be bad.*" [City]
>
> "*You don't want to pass a citizen from phone number to phone number.*" [County]
>
> "*You don't want to lose control of your process. So, if it takes longer… time is everything to mitigate environmental impact, cost of clean-up, less damage.*" [City]
>
> *"The public calls to report spills through the Department of Ecology that ends up with an ERTS. If there was some kind of campaign to publicize that number to the public…. Make it as common as 911. And it would make ERTS even better.* [County]
>
> *"We have our region set up so it would be disappointing if we had to abandon what we've worked on to this point. We've had a lot of conversations about standardizing data with a bunch of jurisdictions in the region and people just don't want the State telling them what to do down to the minutia."* [County]

Where funding should come from

There was a wide variety of ideas for how to fund a regional spill hotline. These included:

- Pay-in option from the jurisdictions that want to use it; this could be scaled based on population
- Annual fee plus a per-use fee modeled after 911
- Take from stormwater permit NPDES fees
- Funded by the State/Ecology
- Oil transportation taxes
- Code enforcement penalties
- Fund with fees charged for spill clean up
- Stormwater/surface water utility fees
- Percentage of fines from Pollution Control Hearing Board to cover operational costs
- *"Cost recovery"* from spill kits and training provided to emergency responders

> *"Funding an unnecessary thing is just silly."* [County]
>
> *"Through payments made to Ecology."* [County]
>
> *"We have other regional programs in the State. So I don't know if our permit charges would go up a bit…. I would assume jurisdictions would chip in a bit based on their population."* [County]

Perceptions of ERTS

To varying degrees, these cities and counties relied on ERTS as another method of notification of a spill. Many perceived it as a regional spill hotline number, though found it is inadequate in that there can be delays of several days before notification of a spill is received at the appropriate jurisdiction. In addition, ERTS does not only broadcast emergency spills but other types of information as well. This leads to difficulty in determining which ERTS notifications need to be reviewed immediately. One jurisdiction requests that ERTS phone their staff when there is an emergency spill in their area because "*most of the ERTS we get are not emergencies*." [City]

> "*ERTS works fine. What's the need? … I think ERTS is the regional spill hotline*." [County]
>
> "*Get rid of the ERTS system and make it a regional number that people can call. That's kind of how people treat it right now, but Ecology doesn't*." [City]
>
> "*I never understood Ecology's point that it's a tracking system and not a reporting system*." [City]

With regard to perceptions that ERTS is or should be the regional spill hotline, one county, unprompted, stated they were aware of this and disagreed. They felt that ERTS functionality was not designed to support hazardous waste response. ERTS uses outdated software, is delayed in providing notifications, is not staffed all the time, and was not designed for citizen calls.

What they think about the concept

Most jurisdictions were not interested in joining the regional spill hotline. They also felt that participation should be optional, though acknowledged that it was unlikely to be optional. Some felt it might be good for other jurisdictions, but their own jurisdiction did not need it.

> "*I worked a decade to get this program to where it's at and it scares me that something else is going be out there that is going to confuse the public and delay response*." [City]
>
> "*I know we'll have to participate but we'll be complaining a lot*." [City]
>
> "*There's not a lot that jumps out at me*." [City]
>
> "*It would be a duplication of what we already do*." [City]
>
> "*For small communities, it might be a good value*." [City]
>
> "*Maybe it would be better in more crowded areas*." [City]

A few were on the fence, as long as it did not disrupt their existing spill reporting systems. They wanted to see what the framework for the regional spill hotline would be before making a decision.

A couple of counties were potentially interested saying that they felt it would reduce the number of calls incorrectly placed with them.

Integration with Current Practices/Barriers and Benefits

Integration Methods

Counties and cities had similar ideas about how a regional spill hotline would integrate with their systems. Most felt it should be "on top" of what they currently have. Few foresaw the need for a regional spill hotline, and no one was willing to change the systems they had already developed. They felt that notification of a spill via a regional spill hotline would be handled like any other call into their system. Some mentioned:

- Wanting automation and automatic linking to and transfer of information to their systems
- Potential challenges with IT integration with various existing systems
- Concerns with how the system will confirm that the correct party received the notification (a concern for jurisdictions that currently have a live person answering calls 24/7)
- The need to use consistent lingo/terminology which can be different between jurisdictions or can be terms which the public does not understand

One city described how it would be hard to integrate a regional spill hotline because it would have to plug into their path, and there would challenges getting the information into a reportable format. They felt it could be "*like playing telephone*" where "*by the time the actual responder gets the data, it's taken longer and there may be some quality loss*." [City] They also felt that in the cases where the information did not come through correctly, getting more details would be difficult and they would have to have more systems in place to address errors.

> "*It is like one hotline calling our hotline."* [City]
>
> "*We would add the number to our website*." [City]
>
> *"A lot of these jurisdictions don't have the resources to do something like that. They would have to bring in outside experts to do that. How do you make a phone ring over here when somebody calls in Olympia? I just see it as an IT resource problem and maybe a staffing resource problem. Some of these smaller cities might not even staff a front desk half the time."* [City]
>
> "*It could be hard to integrate into our current report practices….But if it's an external platform that notifies us of an issue, then we'd just go about our business as we would anyway."* [City]
>
> "*An external umbrella system. Receive calls and send to us. Like a rapid referral system. It wouldn't change what we do*." [City]

"We would not have to change a thing. We'd add the hotline number to our website. We'd still keep our local engineering number too." [City]

"I don't think having two numbers is confusing. It's like a business having a 1-800 number and a local number." [City]

Concerns with hotline

- Who is liable for delays or misinformation
- Will they need to add staff
- Will they need to retrain existing staff
- What will upkeep and infrastructure cost
- Will the person answering ask the right questions
- Will they be familiar enough with our area
- How fast will they pass on spill reports
- Might not be notified of spills that could drain into their jurisdiction (whereas current relationships with neighboring jurisdictions do take care of that)

"If it's just a phone call, it's going to make the time longer before we can respond to spills. It needs to be some other technology other than someone just calling on the phone." [County]

"*I currently can't get info [from ERTS] in a timely way and the initial message is often inaccurate*." [City]

"*We know the region, the system, the roads. We know the levels of vulnerability which help make our program function just a little bit better*." [City]

"*Time is money when it comes to spills."* [City]

A few noted that if the regional spill hotline resulted in an increase in spill reporting, some smaller jurisdictions might have difficulty responding to more calls.

"*What will it cost them to get it? Budgets are already tight*." [City]

"*The last thing they need is more work*." [County]

One city was concerned with increases in reporting, which might in turn cause an increase in public reported spills that are not in their area of responsibility, such as on-water spills, air release reports or soil contamination.

What they need to make it work

Most indicated that regardless of what details were reported, if they received a call with just an address, they would visit the site to either triage or begin clean-up. However, more information

was always better. The information that these jurisdictions said they ideally needed from a regional spill hotline included:

- Name of and contact information for the submitter/responsible parties
- Images of spill and area around the spill, ideally geo-tagged
- Where the spill is located - GIS pinpoints, address
- What the spill is
- What direction it is flowing
- Has there been water contamination
- What was observed
- Time of call/time of spill
- Notification of at-risk neighboring jurisdictions
- Have a completed form like the ERTS and match up with Ecology's data entry form
- Any voice mails captured
- Use terminology that the public understands (e.g., not 'discharge' or 'storm-driven')
- Tracking of requests and responses

"*We want as much information as possible, but we know people don't want to spend the time*." [County]

"*We would ask a few extra questions because we know the area*." [City]

"*Images would be huge. We use images daily for our spill response stuff. You know that old corny saying, 'a picture is worth a thousand words' is extremely, extremely true. … That's something we use daily in our arguments and in our hearings telling contractors, 'Yes, you will pay and this is why. We've got photos that show exactly what happened.' "* [City]

"*We meet with [neighboring cities] to build common lingo and a theme for efficient communication*." [City]

"*If we have the address, we go*." [County]

"*More spatial technology to get faster notification.*" [County]

One county cautioned that they did not want the reporting forms to become overly technical, for example with "*web-based maps where you can zoom in and they show the storm water piping… That's way too fancy and does not help us do our job any better*." [County]

What they need to get them on board

Jurisdictions shared what information they would like to see to help them understand why a regional hotline would be a good idea. Some also gave suggestions that they felt would help others get on board. These included:

- Costs
- Proof of time savings
- How it will be less work for them
- Want to talk to someone who thinks it's a good idea
- Explanation of how off-hours would be handled
- What the plan is to confirm a message (email, text or voice) was received
- That it can provide more accurate information than their systems generate
- How it would integrate with their current systems
- News stories/publicity around successful responses from a hotline notification
- Number of "*captured incidents*"- those reported to prove hotline effectiveness [County]

"I want to understand the basic framework really well and what expectations are for it and what expectations for responding jurisdictions or jurisdictions receiving referrals form it will be. …Everybody's using their own documentation software format. Does that have to change all of a sudden to incorporate this? Will we have to change all our reporting structures? Will it create redundancy?" [City]

"They'd need a phone tree to reach a live voice. They have to have that set up." [City]

"If your house is on fire, you just call 911. But you don't have to have something where you're pulling out your iPhone and clicking on a map. I want it simplified like you're calling somebody. But like I said, I think ERTS does it." [County]

"Ecology will lay down the law because some only want to do the lowest level required. It will take a while." [County]

"Cities that do have programs will understand it's not going to undermine their programs and the cities that don't have programs will understand how it will benefit them. Then they'll bless it." [City]

Does advertising make a difference?

For most the idea of umbrella advertising for a regional spill hotline was not seen as helpful to them. They did not feel it would reduce their own advertising costs, and some felt it might cause them to need to spend more to reinforce their existing local spill hotline number. Another felt they'd probably have to "*pay into it in some form or fashion*." [City]

A few pointed out that these days, advertising is not as costly as it used to be. With so much advertising done on social media, the days of big TV ad buys are over. Most felt that a new regional spill hotline number should be advertised on social media and on relevant websites. A few felt radio and bus wraps would be a good idea. Additional ideas were signage along highways, sidewalks near waterway, beaches, parks. A few mentioned doing outreach at schools to teach about the regional spill hotline and what should be reported.

"*There's a deficit of understanding about storm drains, so you can't really overeducate.*" [City]

"The big plus to having a regional [spill] *hotline is maybe having that bigger entity managing this. Maybe they can do a more effective advertising campaign and then we might be able to make redundant advertising here so that people get the number into their head."* [County]

Who's in Charge?

Most feel the State/Ecology should manage a regional spill hotline. Ecology seems the logical home for a regional spill hotline because it is a state agency, has the most dedicated staff, and it already manages ERTS. Its number would be effective state-wide, and callers would not have to figure out what sub-region they are in, as everyone knows when they're actually in the State versus a neighboring state.

A few felt it should be managed at the county level. Some interviewees from less populated areas felt that the City of Seattle should manage it. Another interviewee mentioned that they did not want the responsibility or the liability that would be associated with running it.

"*Seattle would have better IT for integration and cloud communication because they have more people working on it. But it's harder to get one-on-one communication.*" [City]

"If we're marketing one number, it should be the Department of Ecology." [City]

Hotlines to Benchmark

When asked what other hotlines they thought did a good job and might serve as a benchmark for best practices, the following suggestions surfaced:

- 911
- 811
- National response center
- Fire departments
- Spills aren't slick
- NORCOM
- Other emergency responder processes
- Litter and it will hurt
- Click it or ticket
- Thurston County's approach
- Webinar from Delaware about an app-based program like this
- Illegal dumping

What Region Makes Sense

Most respondents had many ideas of what region would be best. Those from less populated areas felt it should be comprised of multiple counties. The more populated regions and/or those with strong programs already in place were more likely to prefer a single county or a city. Others already felt their region already cooperated and met their needs. A few felt the regions could divide along the mountains to have an eastern and western region, in part due to their different biomes.

> *"All of Western Washington except us!"* [County]

One felt it should be county by county with a network between counties. However, one participant noted that if King County became its own region, there would be challenges due to its size and irregular shape (small areas that jut into other counties). In addition, it has Seattle as part of it which has the largest population and therefore the most spills.

In the end, many agreed a state-wide hotline would be the preferred option.

> *"It should be one number statewide. Then truck drivers can report, or out of region visitors."* [City]

What Else Need to Know

Respondents were given the opportunity to share additional thoughts about the regional spill hotline. Some are listed below:

> *"Getting buy in from all the jurisdictions and planning – maybe there needs to be a subgroup up front- planning on this is the general idea how to do this and we think it will cost this much, before reaching out to the broader region to say, 'Hey this is what we're hoping to do, what do you think?' If there are too many questions up front, people just get scared and don't want to be involved in things."* [County]

> *"Individual businesses that have NPDES permits and stormwater pollution prevention plans… In the City there are hundreds. In the State there are probably tens of thousands. All of those pollution prevention plans would need to be changed and their permits would need to be updated if this is a new reporting process. If in the reporting process, there is another conflict with another regional reporting line…"* [City]

> *"I think it's a question of scale. If you're in an agency that does 20 spills a year your perspective on how this hotline is going to affect how you do business and the benefits is going to be different than ours."* [City]

> *"If we can't stop it, we're involved. But I want people to realize it has an effect on others."* [City]

"We really need to have a broader discussion about the citizen engagement aspect of this. We talk about the behind the scenes stuff of how does this work, how does this get the right information to the right organizations in a timely manner. … it really comes down to 'this doesn't work unless people know that this number exists.' It's like selling Frosted Flakes. If you don't have a good campaign, you're not gonna sell your product. It's not a one-and-done either, the thing about these efforts… [You need] to sustain it over the long term…" [County]

Regional Spill Hotline Feasibility Study
Interview Guide for State Agencies

Thank you for agreeing to speak with me. I am contacting you on behalf of King County for a project funded by the Source Identification subgroup, which is part of the Stormwater Action Monitoring program. I am contacting you to learn about your thoughts and opinions regarding the feasibility of a new regional spill hotline.

Current Practices (8 min.)

1. Tell me about how spills are currently reported in your jurisdiction?

    a. In what way do you receive spill reports (for example online, over the phone, direct emails, etc.)?
    b. Does someone answer the calls or does the caller get sent to a voice mail message?
    c. What happens after hours (evenings/weekends)?
    d. Who typically reports spills? *(e.g., citizens, jurisdiction staff/fire/police/etc.)*
    e. Who typically receives those reports? *(e.g., public works staff, voice mail)*
    f. Is your hotline currently integrated into other emergency response programs/ emergency management software?
    g. Have you developed a cost associated with administering your local spill hotline? If so, what is the cost estimate and what activities does that cost estimate include?

2. Thinking about the process you currently have for spill reporting, what do you think works well? What would you like to change?

3. What do you see as the barriers for the public to use your current spill hotline/system? What do you think could be done to help the public overcome this barrier?

    a. In the past were you able to overcome any barriers to public use of your spill hotline? If so, how did you accomplish this?

Test Idea of Regional Spill Hotline (5 min.)

4. What do you think about the idea of a regional spill hotline?

    a. What do you like about the idea?
    b. What concerns do you have with the idea?
    c. What region do you think the spill hotline should cover?
    d. Where should the funding for a regional spill hotline come from?

5. The folks interested in creating a regional spill hotline feel that it will help to improve the notification accuracy and reduce confusion by helping to determine which jurisdiction the spill is actually located in and making sure the information is passed onto that jurisdiction. What do you think about that? *(If needed: Do you think that will work?)*

Integration with Current Practices/Barriers and Benefits (10 min.)

6. If a regional spill hotline were to be established, how do you see it integrating into your current spill reporting and response practices?

7. What is it about a regional spill hotline that will make it hard for jurisdictions to integrate it into their current spill reporting and response practices?

8. What is it about your existing practices that may prevent you from integrating a regional spill reporting hotline?

9. As you think about a regional spill hotline, what does it need to do so it will work for your jurisdiction?

    a. What information do you need?
    b. How would you like to receive that information?
    c. What features and benefits do you need?
    d. What would you like this regional hotline to do that you aren't currently getting with your current spill reporting process?
    e. How would you like to see a regional spill hotline advertised?
    f. What would be an appealing cost model for participation?
    g. If this hotline were advertised for you, is it possible that it might save your jurisdiction some money? What makes you say that?

10. I'm sure some jurisdictions will be very interested in this regional spill hotline, while others might not. What do you think jurisdictions need to hear, be shown, or be provided in order for them to be excited about this new regional spill hotline?

11. What would have to happen to make this regional spill hotline a success?

Who's in Charge? (2 min.)

12. In your opinion, what organizations have the capacity to manage a regional spill hotline? What makes you say that?

Other Hotlines (2 min.)

13. We are looking to learn best practices from other hotlines as we are assessing the feasibility of a regional spill hotline. Does your jurisdiction currently have a hotline in place that is working well (it doesn't have to be a spill hotline)? What about it makes you say it would be a good resource for best practices? *(If needed: What about it is working well?)*

14. What successful hotlines (locally or nationally) are you aware of that we can study to learn what they are doing that works? (Gather hotline name, software used [if known], what they think is good about that hotline's practices, etc.)

What region makes sense (2 min.)

15. We have been talking about a regional spill hotline. When it comes to a regional spill hotline, what makes the most sense to you… should it be a single county, watershed-based or multi-county-based?

    a. What region do you think would work best? What makes you say that?

Final Question (1 min.)

16. What is it that you think I should know about a regional spill hotline, that I haven't asked you about or you haven't already shared?

APPENDIX C

In-Depth State Agency Interview Summary Report

Regional Spill Hotline

In-Depth Interviews

State Agencies

Research Conducted October 2019

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Research Goals and Methodology

Background

This study was conducted with Washington State agency contacts to understand how they currently handle spill response, their likes and dislikes of the current system and the barriers to and benefits of a new regional spill hotline. In addition, their recommendations for funding, marketing, and integrating a new spill hotline were gathered. This research was requested as follow up to earlier research conducted in June 2019 with municipalities and county agency contacts in Washington State.

All interviews were conducted via telephone in October 2019. They lasted an average of 65 minutes. Participants were not offered an incentive for their participation.

Nancy Hardwick from Hardwick Research conducted the interviews. This report reflects the learning from the interviews, in essence bringing the voice of the participants to life. Note that for the most part, their language is used in this report, rather than technical/industry terms.

In-Depth Interviews

Three interviews were conducted with the State staff to understand their processes with regard to spill reporting and response, and their thoughts about a potential regional spill hotline. The participants represented the Department of Ecology (DOE) at a high level in spill response including oil and drug lab spills, the Department of Health (DOH) in protecting shellfish growing areas and the Department of Transportation (DOT) in tracking and notification of spills along the State's roads and highways. All worked at department headquarters. Participants were each individually recommended by Herrera Consulting and King County as a key person to speak to within their department.

The interview guide used for this research is attached at the end of this report.

Interview Topics

The interview guide was developed specifically to learn about respondents' first hand experiences and perceptions. The following topic areas were covered during the interviews:

- Current practices: Learn from state agencies how spills are reported and responded to. Understand their process around spill reporting. Identify what weakness there might be with their systems.
- Test Idea of Regional Spill Hotline: Find out whether state agencies are interested in the idea of a regional spill hotline.
- Integration with Current Practices/Barriers and Benefits: Learn how state agencies would expect the spill hotline to integrate with their current systems. Understand barriers and benefits to adoption of a regional spill hotline, and how state agencies would make it work.

- Who's in Charge: Understand who respondents think should manage the spill hotline.
- Other Hotlines: Gather benchmarks for the spill hotline among successful or memorable hotlines in other areas.
- Statewide Option: Understand perceived benefits and drawbacks to a statewide spill hotline.

Research Annotations

The goal of this report is to provide the reader with the ability to hear the "voice" of the research participant. Quotes are verbatim and unedited.

In-depth interviews are qualitative research and are considered exploratory. Although in some cases we provide numerical tabulations of responses, these findings are based on small samples of individuals and are intended only to provide general direction. Broad generalizations to entire populations or any type of statistical inferences are not valid.

Executive Summary

Three representatives from Washington State departments participated in this study. The departments were Department of Ecology, Department of Health and Department of Transportation. Each participant was responsible for management of spill response for their departments.

For more information, please refer to the Detailed Findings section of this report.

Current Practices

Three respondents were interviewed about their agencies' spill response practices and needs. In most cases, spill reports were made by wastewater operators, other NPDES permit holders, local agencies, ERTS and sometimes by the general public.

The DOE integrates ERTS with their SPIIS system (Spills Program Integrated Information System). SPIIS was created to gather more data as part of the DOE's participation in the Pacific States British Columbia Oil Spill Task Force.

These departments felt their process worked well overall. Reasons included many avenues to report spills to a live person, ability to report anonymously, generally fast response time to spills, and the belief that ERTS worked well and sent them what they needed to know.

Improvements these participants would like to see included

- Fewer delays in initial reporting
- Better methods (email or text) to disseminate information to their department's "customers"
- Make it easier for reporters to understand the legal requirements for reporting
- Better alignment between state and federal reporting requirements
- To receive ERTS notifications continuously rather than in a batch on Monday morning

Perceived barriers for spill reporting include that the public is often unsure of what they are reporting, 911 operators don't always know how to dispatch for a spill, uneven awareness of what needs to be reported and how to report among emergency responders such as fire departments.

The DOT was the only department that indicated that they actively tracked costs associated with administering spill responses.

Idea of a Regional Spill Hotline

The DOH and DOT felt that there was no need for a new regional spill hotline. They felt the DOE was managing it well and already has regional numbers to call and if there was actually an issue,

the current system should be optimized/improved rather than implementing something new that could further confuse people.

DOE liked the idea of a regional spill hotline because they felt it would be easier to identify and keep track of who needed to be notified at the lower levels of government. They currently only notify the county emergency management but thought the notifications should be broadcast to individual jurisdictions.

Funding for a new regional spill hotline should come from taxes/public funding to increase the DOE budget, or through fees charged to spillers.

Because the DOE already has regional numbers, one felt that a new hotline could follow that plan. Another suggested that the hotline should cover a few counties.

Both the DOH and DOT felt that a new hotline would be redundant to ERTS and what the DOE does. The DOE only found it appealing in the potential for improved contacts at a local level.

Integration of Current Practices/Barriers and Benefits

The DOH felt that the scope of their work would not change, therefore integration with a new regional spill hotline a non-issue. They would continue to receive wastewater/sewage-related calls from the local jurisdictions and all other spill notifications from DOE. They focused on those that would affect shellfish areas.

The DOE thought that integration of emergency management systems might help with data analysis and might help unify usage of ERTS. DOE currently does some data analysis but has a limited budget: they focus on what the state legislature sets as priority areas. They felt that there is an opportunity for more analysis at the community level and implied that maybe with a regional hotline that might be possible.

The DOE also felt that there might be some issues with modifying systems to collect data for a metric that was not already an option in the system. They added that it would be important for this new regional hotline to incorporate flexible software so that all needed/desired data can be gathered.

To help a new hotline succeed, information sharing between agencies and reduction in costs without reduction in service could be selling points. In addition, collaboration between stakeholders to ensure everyone's needs were being met and funding for outreach would be key. However, there was a strong sense that rather than a new hotline, this should be "*a procedural fix rather than an infrastructure fix*."

Who's in Charge? What Region?

There was consensus that if there was a new regional hotline created, it should fall under the DOE to manage and cover the entire state. However, DOE thought it should be managed more locally, perhaps covering clusters of one to five counties.

Hotlines to Benchmark

Suggested hotlines to look at for best practices were

- 411/511/811
- National Response Center
- Littering hotline along highways
- Smoke hotline for farmers
- Complaint trackers within the DOE

Statewide Option

Benefits shared included:

- One point of contact/one number
- Potential efficiencies/Cost savings
- Consistency between subregions
- Process would not change as entities join
- Could mean easier state funding because it would be one state agency with requirement to participate

Drawbacks shared included:

- Maintaining the distribution lists of who needs or wants to be notified of spills (DOE notes this is an existing challenge also)
- Statewide number with subregions could get confusing
- Would need input and buy-off from many more jurisdictions
- Different regions have different priorities

What Else Need to Know

Respondents were given the opportunity to share additional thoughts about the regional spill hotline.

The DOH would like to have better predictive modeling of where a spill might go, to answer their question: *"Is a spill contaminant going to get in an area that I'm interested in*?" They would also like to be able to model different scenarios e.g. a sewage spill from a treatment plant on the shore of Puget Sound.

The DOH also reiterated their stance that "*There is a state-wide system. It exists. It's the Ecology Spill Response Program.*"

The DOT would like to "*make sure that what is in place is not able to meet the needs*" before bringing in a new regional hotline. "*Don't reinvent the wheel, modify what we have*." [DOT]

Strategic Implications

FINDING: A new/separate regional spill hotline is not desired
In interviews with state departments, and previously with counties and municipalities, we heard over and over the belief that Ecology already has systems in place for spill reporting. The ERTS program currently receives reports of spills statewide and widely disseminates that information.

It was determined that the state DOE should continue to manage the statewide hotline as they currently do. Participants felt that the DOE does a good job gathering spill information and informing agencies about spills. In addition to having reporting systems in place, the DOE has strong technical knowledge about spills. That is not to say that everyone felt the DOE system was perfect but overall they were satisfied with it.

Although the state departments could see some potential benefit to a new regional spill hotline – faster dissemination of spill information (DOH and DOT) and opportunity for gathering more data which will provide further in-depth analysis (DOE) – all shared that there is already a working hotline in place.

In discussing the topic of a regional hotline, it was pointed out that if regions are desired, the DOE already has four regional numbers (Northwest, Southwest, Central and Eastern) posted on their website.

FINDING: Updates can be made to the current system to better meet needs, including improving communication with jurisdictions.
Repeatedly these state agency representatives said that they felt ERTS could be improved and that an effort should be made to do so before creating something new. They felt that ERTS was well-known and widely used and accepted.

Participants suggested making some minor changes to the current program rather than creating a new regional spill hotline. These changes could be made to ensure that the current system better meets the needs of all those using it.

- The state agencies interviewed would like to see more timely notifications from ERTS. They mentioned receiving a lot of notifications on Monday mornings, while receiving nothing over the weekend. Often they would have liked to have known about the incident earlier.

- Ensure that contacts are regularly updated in the system in order to provide the right person the information as quickly as possible. Every entity that receives ERTS notification should have or create a centralized telephone number and email address that is checked by whoever is on duty to receive spill information at a given time. This will ensure that information is received over the weekend and after hours. It will also ensure continuity

of contact information when staff leaves or changes roles. At minimum for each entity, that centralized contact information should be used for ERTS notifications, though any other staff that requires the information can be added as well. Entities should make sure their contact information is updated in ERTS.

In addition, we heard in both phases of this research that certain entities were receiving email notification for incidents not in their jurisdiction or purview. This resulted in delays and frustration with the volume of contacts they had to review.

To help improve the targeting of ERTS notifications, Hardwick Research suggests looking at the system used by Bellevue Public Schools for parental notifications. Like the Bellevue Public Schools, ERTS could create an online form where entities that require notification from ERTS can update contact information and indicate what types of notices they would like to receive. For example, the DOT wants to be copied on any spills on highways, even if King County was responsible for cleaning it up. We heard similar comments from Cities that wanted to be notified of spills in neighboring cities in case the spill flowed across city borders.

- Make sure the notification system (ERTS) is providing the desired details. Use research recently conducted with counties and municipalities to identify desired information. Create a work team with the goal of optimizing ERTS to better serve its customers. Include representatives from state agencies, counties and municipalities and gather input from a broader range of stakeholders at key decision points.

FINDING: Unexpectedly, the DOE shared that they distribute spill reports at the county level and rely on each county to then disseminate that information to the individual municipalities.

This was information that we had not heard in other interviews with State departments or in the previous phase of this research. This approach to disseminating information is beneficial as the county will know what spills have occurred within their boundaries; however it requires that each county triage all the reports, directing them to the affected jurisdiction(s).

Larger counties, like King County, can be dealing with a significant number of spills annually, resulting in an additional workload for spills they are not required to respond to. Hardwick Research suggests the DOE should change that procedure. Instead, reporting to the individual jurisdictions directly will significantly speed up the process. As suggested earlier, each jurisdiction can provide updated contact information (their spill hotline number and their spill email address) to the DOE.

FINDING: The Department of Ecology wants better ability to analyze spills.
DOE shared the need for improved analysis of spill-related data and that ERTS is not capable of it to that level in part due to limits on what data is collected. The need is so great that the DOE created a separate system (SPIIS) to track more detailed information required for a large west coast organization they work with. In addition, due to difficulty and cost, fewer analyses are being conducted than the DOE would like.

- Consider how to improve data collection and analysis tools to make these easier and more cost effective to conduct. Ensure that customization or addition of fields for data collection is easy to do. These features should be a requirement of any new systems. Broader analyses could help identify areas needing more scrutiny as well as improve spill reporting, tracking and remediation.

- Learn what analyses would be most helpful for all involved. This will help leverage any system improvements across other jurisdictions that might be interested in analyzing spill data.

FINDING: All participants acknowledge that there needs to be better awareness of the spill hotline numbers.

- Improve awareness among the general public and other spill reporters about ERTS as one way to report spills. Several times we heard that awareness of who to call to report a spill was an issue and that the ERTS number should be *"broadcast more widely"* to help improve reporting of spills. Social media was a frequently suggested method of advertising.

- Make it easy to find the correct contact information for reporting. The DOE website could highlight the number better, as well as the regional numbers. Other websites a person wishing to report a spill might go to could also highlight the DOE number.

- Work together with emergency responders to improve spill reporting. Several times we heard that even though they were required to report a spill during an accident or fire, many emergency responders across the state did not know about it. Others did not understand the circumstances under which they were required to report. Investigate further what the City of Kirkland's approach is to teaming with their local emergency response teams.

Detailed Findings

This section of the report outlines the actual content of the interviews. No interpretation is made regarding what the respondents shared. The focus of this report is to providing their "voice" regarding the topics they were asked about. The included respondent quotes are verbatim and unedited.

Current Spill Response Practices

State spill response staff interviewed

Three respondents were interviewed in order to learn about their spill response practices and needs. Those interviewed were directly responsible for spill response or managed those directly responsible for spill response. They were intimately familiar with how their agency handled spill reporting and response.

Receive spill reports from a variety of sources

Spill reports were made by wastewater operators and other entities with NPDES permits, local agencies and sometimes the public. Some also received notifications from ERTS.

The DOH received notification of spills via the ERTS reports or via a phone call from the DOE. They also received phone calls directly from NPDES permit holders, typically wastewater operators that empty into shellfish areas who are required to report. Calls were answered by a human during business hours and after hours there was on call staff who received the call via an iPhone pager.

The DOE received notification of spills in several different ways. These were:

- Phone call to regional office then entered by the complaint tracker into ERTS and directed to the appropriate program or agency. During non-business hours phone calls to the regional office number are forwarded to the State Military Department Division of Emergency Management (EMD). They take the report and contact the two on-call spill responders in that region who then triage the information and determine who to forward it to among local governments and agencies. Note that DOE staff also is required to call the regional office number to make a report.
- Enter online on DOE website
- Phone call to Pacific States British Columbia Oil Spill Task Force which automatically routes the call to the appropriate state based on where the call is coming from
- Phone call to the National Response Center which then issues an email notification to a list of federal and state agencies who then determine what action will be taken

The DOT receives spill notifications primarily from ERTS. An example shared was that the State Patrol calls ERTS and then ERTS notifies the DOT. They also might learn of a spill via backup radio logs of the State Patrol communications or via a government listserv to which the State Patrol is supposed to post spill-related information. Because the DOT does not cleanup spills,

they are not typically the first line of reporting. Their website instructs reporters to call DOE unless it is an emergency in which case they call 911.

> *"Basically, they* (State Patrol) *send an email to this address and that pings the gov delivery site to send it out to anybody that's signed up. "Anybody that's signed up," means any government or city agency. The general public can't sign up for that at this time." [DOT]*

Internal DOT employee spill reporting varies between business and non-business hours. They typically notify their IDDE (Illicit Discharge Detection and Elimination) contact at the DOT and that contact will determine whether to call DOE or DOH. They have 24 hours to make the notification. After hours, DOT employees will call the DOE directly.

Some integrated with other systems

The DOE said that ERTS and their Spills Program Integrated Information System (SPIIS) "*talk to each other*." SPIIS is used for broader reporting obligations such as maritime incidents that do not always result in spills and the reporting is more granular than that in ERTS. An example of the type of information gathered included advance notice of crude oil shipments and their volumes coming into Washington State via train or ship. Occasionally there is overlap in reporting between the two systems.

The DOH system integrates with an email listserv that notifies shellfish growers of the need to close growing areas.

The DOT does not integrate with other software currently.

Most feel their current process works well

Both DOH and DOE felt that their processes worked well overall. DOH felt that what works well is that they try to respond immediately on receiving a call. They erred on the side of caution and closed areas if information was incomplete regarding likelihood of contaminating shellfish.

DOE felt that the following aspects of their process worked well:

- Their ability to have a person answer every call and take information and ask questions is what works best. They are able to triage the situation more easily on the phone and determine urgency of response needed and who should respond.
- The number of options there are for reporting that lead to their agency
- The ability to report anonymously or confidentially

> *"I think that probably the bonus feature is we're going to talk to a live person, we're going to screen and make a decision about whether or not the agency's going to immediately incur costs with the field response on it."* [DOE]

The DOT felt that their process works well because they rely heavily on ERTS, which they believed functions well as "*a catchall for spills.*"

Desired improvements to current systems

DOH would like to see less delay in reporting from wastewater operators.

> *"Sometimes there's a delay. A lot of that has to do with if there's been a change of staff or something like that. People aren't up to speed."* [DOH]

Often the operators are not sure of the spill quantity or how long it has been happening. Both affect the area impacted.

DOH would also like to have an email or text system rather than having to telephone shellfish growers in the affected area.

> *"It's getting to the point where there shouldn't be a reason why we can't do this via cell phone, by a text message or something like that. We would like to get to that rather than calling each grower [in an affected area] individual, but we're not there yet."* [DOH]

DOE feels they would like to make it easier for reporters to understand the legal requirements for reporting. For example, reporting requirements for an oil spill differ based on where the spill took place – on the ground, in the water, or from a leaking underground storage tank.

> *"I think the frustration for a lot of folks is understanding the state notification requirement and those are the legal requirements either in statute or rule. Depending upon the incident type the state law will direct you to a different reporting place or and have a different associated timeline with the reporting requirement. I know I answer a lot of questions just on people calling looking for clarity in what state law requires them to report."* [DOE]

The DOE would also like to see better alignment between state and federal reporting requirements.

The DOT would like to receive ERTS notifications more quickly. The notifications did not come during non-business hours and they often got a lot of them on Monday mornings.

> "*So we'll get a slew of them on Monday mornings of spills that might have happened over the weekend. The state emergency management system got notified. ERTS got notified. Spill responders were dealing with it from Ecology but the actual ERTS system didn't send out a notification that something happened until Monday. If it happened after business hours in the evening you would get it the next day*." [DOT]

DOT would also like to see broader training for the State Patrol on use of the government listserv for spill notification.

> *"For accident-related spills, it works. It wouldn't work regionally because state patrol doesn't necessarily work in the city and county. That's something that we did for accident-related spilling. It needs to be expanded and it needs more training on the state patrol side*

to make sure whenever there is a release that they are sending them all out to that email." [DOT]

Barriers for public use of current systems

The DOH finds that the public is often unsure about what they are reporting. For example,

> *"Most of the times that when complainants call in and they think it's a sewer thing and it's just rotting algae. We have to confirm that so what we'll do is we'll call the people on the ground, normally the local health department, and ask them to go out and verify."* [DOH]

DOE has found that informing the public and others about what number to call and what to report was an issue. They have noted that the public will often call 911 to report a spill, but not all 911 centers know how to dispatch for a spill. Also fire departments often come across spills but not all know how to report or even that they have to report.

> *"Ecology does outreach at points where we think spills will happen and we're encouraging the public to call. Things like marinas, waterfront centers we've posted signs for, "Hey, if you see spills call this number." It's just hard, with resources available, for the government agencies to really comprehensively educate people on what the reporting systems are."* [DOE]

DOE would like to see additional resources set aside for educational outreach that includes funding for the communications and funding for staffing.

DOT does not receive any spill reports from the public.

Cost Tracking of Spill Reporting

The DOH did not track the costs but feels they would be able to determine costs relatively easily. The DOE also did not track reporting/tracking costs but tracked the costs of the actual spill response.

The DOT tracked certain aspects of the IDDE process but not others. Examples of what they tracked include staff costs for creating a notice and tracking it. They have a budget for administrative costs and track against the budget.

Idea of Regional Spill Hotline

What they like about the idea

The DOH felt that Ecology was the point for spill reporting and it should remain that way. They felt that call lists or phone trees could be amended to ensure the current jurisdiction is alerted to a spill needing clean up. *"It just seems like more a procedural thing than a need to set up a new system."* [DOH] They also felt that it would be redundant to what already exists.

The DOH shared that they get complaints from local agencies about poor communication. The local agencies find that the county does not communicate with them about things affecting them, such as beach closures.

The DOE thought that a regional hotline would push information coordination to a lower level of government and make it easier to identify and keep track of who would need to be notified. In addition, a lower level of government would be more familiar with who the various contact persons are as well.

> *"Part of the challenge of receiving a phone call is getting that information to the organizations who need to know or want to know. For example, at the state level if we have a spill that impacts a local community we have a procedure in which we'll notify the county emergency management in which the spill occurs. Then we rely on them to notify the sub-agencies or cities or county health districts or whoever needs to know within their communities. That doesn't always go as deep as those additional people who need to know would like it to. From my perspective, we struggle with maintaining contacts and it's very difficult for a state agency to know in a certain county, who is the responding agency."* [DOE]

The DOE also shared this perspective on a new regional hotline:

> "*Some of our regional partners share access to our ERTS database and it would maybe unify that. It would be a more useful tool for data analysis. Collecting data is great, but data collection has a cost, it's expensive and if you don't do anything with the data then you're not really getting the value out of it. Perhaps you can look for trends in the data which might lead to prevention."*

The DOT felt that the hotline was a good idea but wondered, "*Why not broadcast ERTS more widely?*"

> "*Or it should be expanded so that ERTS works as the municipalities need. If there are problems that a lot of people are having is the reason of what's driving this, then it needs to be modified if it can be. If it can't be to meet those needs, then yes. It makes sense to have a regional slot*." [DOT]

What they dislike about the idea

The DOH was primarily concerned with duplication of effort and felt that just changing procedures would address any issues that were resulting in the regional hotline effort.

> *"I think there's an existing system and I think the problem is that when people call King County, whoever's getting the call at King County doesn't know where it should go. We have binders* [for that]." [DOH]

The DOT maintained that ERTS "*should be expanded to meet everyone's needs, if that's the driver*."

Where funding should come from

Since DOH felt that a regional spill hotline was unnecessary, they did not provide a suggestion for a funding source. However the DOE felt it should have to be public funding or possible a fee charged to spillers. They added that a charge to spillers would be hard and expensive to administer.

The DOT felt that since a statewide hotline made sense, it should be funded via taxes with an increase to the DOE budget rather than "*piecemeal in the jurisdictions*."

What region should be covered

The DOE was not sure if a hotline should cover a county or several counties. They felt it should not be too large (perhaps 5 counties) as that would make it harder to be 'on top of' changes in local contacts.

The DOT mentioned that the DOE already has regional numbers. They felt that a similar plan could be used for a new hotline, but wanted it to be well-integrated statewide.

What they think about the concept

The DOH felt the concept is redundant to ERTS and what DOE does.

The DOE felt that a regional hotline might make it easier to maintain contacts and relationships to make sure information gets to the people who need it, particularly if the region is not too large. They suggested that 5 counties might be too large an area.

The DOT felt that the concept doesn't feel that different than the current system using the DOE number and ERTS. He felt that the person taking the call still needs to know what to do with it.

Integration with Current Practices/Barriers and Benefits

Integration

The DOH felt that the scope of their work would make integration a non-issue. They receive wastewater/sewage-related calls from the local jurisdictions and all other spill notifications from DOE. They focused on those that would affect shellfish areas.

The DOE thought that integration of systems might help with data analysis and might help unify usage of ERTS. DOE currently does some data analysis but has a limited budget: they focus on what the state legislature sets as priority areas. They felt that there is an opportunity for more analysis at the community level and implied that maybe with a regional hotline that might be possible.

The DOE felt that there might be some issues with modifying systems to collect data for a metric that was not already an option in the system. They would like a new system that has more flexibility for gathering future data needs.

The DOT thought that it would work similarly to the current system where the correct persons would be notified via a call or email.

What would make it work

The DOH thought that information sharing was the primary issue between agencies and would be a selling point for the new regional hotline. They felt that a system similar to SharePoint would work.

> *"If there was a similar kind of system where access was limited to people who had business on it so that people could freely share updates so that everybody knew who was doing what. We're reducing duplication of effort and that people have the information that they need to do whatever their piece of response is. The sitreps, the situation reports, things like that. That's what we do within the EOCs. I'm thinking maybe the EOC should handle this, because that's what they do in an incident anyway."* [DOH] (Note EOC is Emergency Operations Center)

The DOH strongly felt that rather than a regional hotline, this should be a "*procedural fix rather than an infrastructure fix*."

> *"Like I keep saying, there are existing systems. The instant management is done through the EOC. They have existing systems for information-sharing. They have an existing system for emergency contact. I keep coming back to... This sounds like something that's a procedural fix rather than an infrastructure fix."* [DOH]

The DOE felt that "*cost savings without a reduction in service*" as well as the potential for increased ease of data collection and analysis tools would help get others on board with a new regional spill hotline. Access to more data is important enough that they created the SPIIS system to collect more information, in part to comply with legislative direction and agreements with regional organizations.

> *"The ERT system was not accommodating* [information we needed]. *We created our own data system that, yes, it did two-way communication back and forth between SPIIS and ERTS, but SPIIS is much more comprehensive in the type of information that we collect in there."* [DOE]

Additionally, the DOE thought that collaboration among all the stakeholders to ensure everyone's needs were met would be key. Funding for outreach would also be very important.

> *"I think one risk of doing it is there's currently existing systems in place, so communicating change. I think is a challenge. There are going to be a lot of people impacted by that whether it's the public or industry or agencies. Change management I think is going to be an important piece of a successful outcome of it."* [DOE]

The DOT thought that a new hotline would have to lead to more timely responses. They also felt that there would need to be a solid system for what happens once the initial phone call

notifying of a spill was answered. They felt it would have to be similar to ERTS in how responders would be notified.

How to Advertise

Ideas shared included:

- Sandwich boards
- Skywriting
- Signs in marinas
- Signs at points of discharge
- Social media

Who's in Charge?

The DOH and DOT thought that the State/DOE should manage a hotline. DOE seems the logical home for a regional spill hotline because it is a state agency and it already manages ERTS, administers the permits and monitors water quality. In addition, the DOE number is already used for spill reporting.

The DOT explained why the DOE should manage a new regional spill hotline:

> "*They administer the permits and the water quality standards, and requirements for the state. They are the enforcement authority. They would have to work with all the jurisdictions on bills and reporting. Especially in Puget Sound. Everybody's on their NPDES requirements and is tracking, reporting. Finding the spills is a big part of that. I think they have something in place already.*" [DOT]

Interestingly the DOE felt that it should be handled more locally, saying:

> "*The local discharge with the permits already available…It is the responsibility of the public systems to eventually discharge waters into the state and navigable waters of the United States. That's the origin of the regulatory environment and I think that's where it needs to be.*" [DOE]

Hotlines to Benchmark

When asked what other hotlines they thought did a good job and might serve as a benchmark for best practices, the following suggestions surfaced:

- 411/511/811
- National Response Center
- Littering hotline along highways
- Smoke hotline for farmers
- Complaint trackers within the DOE

The National Response Hotline was suggested because it is "*very procedure driven*" and very reliable for collecting and sharing information.

Statewide Option

Benefits shared included:

- One point of contact/one number
- Potential efficiencies/Cost savings
- Consistency between sub-regions
- Process would not change as entities join
- Could mean easier state funding because it would be one state agency with requirement to participate

Drawbacks shared included:

- Maintaining the distribution lists of who needs or wants to be notified of spills (DOE notes this is an existing challenge also)
- Statewide number with sub-regions could get confusing
- Would need input and buy-off from many more jurisdictions
- Different regions have different priorities

What Else Need to Know

Respondents were given the opportunity to share additional thoughts about the regional spill hotline. Some are listed below:

The DOH would like to have better predictive modeling of where a spill might go, to answer their question: *"Is a spill contaminant going to get in an area that I'm interested in*?" They would also like to be able to model different scenarios e.g. a sewage spill from a treatment plant on the shore of Puget Sound.

The DOH also reiterated their stance that "*There is a state-wide system. It exists. It's the Ecology Spill Response Program.*"

The DOT would like to "*make sure that what is in place is not able to meet the needs*" before bringing in a new regional hotline. "*Don't reinvent the wheel, modify what we have*." [DOT]

Regional Spill Hotline Feasibility Study
Interview Guide for State Agencies

Thank you for agreeing to speak with me. I am contacting you on behalf of King County for a project funded by the Source Identification subgroup, which is part of the Stormwater Action Monitoring program. I am contacting you to learn about your thoughts and opinions regarding the feasibility of a new regional spill hotline.

Current Practices (8 min.)

1. Is your agency receiving reports of spills or other environment incidents?
2. Tell me about how spills and other environmental incidents are currently reported to your agency?
    a. How does someone contact you?
    b. Does your agency have a spill hotline?
    c. I'm assuming your staff might come across a spill in their daily work. Where do they report a spill or environmental incident? *(Do not offer: Ecology, WA Dept. of Emergency Management, Coast Guard)*
    d. Who typically reports these incidents to your agency? *(e.g., citizens, jurisdiction staff, staff from your agency, staff from other agencies, etc.)*
    e. [ASK IF THEY HAVE THEIR OWN HOTLINE] Who takes those calls? *(e.g., agency staff, voice mail)*
    f. [ASK IF THEY HAVE THEIR OWN HOTLINE] Does someone answer the calls or does the caller get sent to a voice mail message? How does this differ, if at all, after normal business hours (evenings/weekends)?
    g. [ASK IF THEY HAVE THEIR OWN HOTLINE] Is your hotline currently integrated into other emergency response programs/ emergency management software?
    h. [ASK IF THEY HAVE THEIR OWN HOTLINE] Have you developed a cost associated with administering your hotline? If so, what is the cost estimate and what activities does that cost estimate include?

3. [ALL] Thinking about the process you currently have for reporting environmental incidents (including spills), what do you think works well? What would you like to change?

4. [ASK IF THEY HAVE THEIR OWN HOTLINE] What do you see as the barriers for the public to use <u>your</u> current hotline/system? What do you think could be done to help the public overcome this barrier?

Test Idea of Regional Spill Hotline (5 min.)

5. What do you think about the idea of a single regional spill hotline for all spills that may enter a stormwater drainage system or receiving water?
    a. INTERVIEWER NOTE: IF THEY THINK THERE IS ALREADY ONE IN PLACE CONFIRM WHO THEY THINK IS RUNNING IT - *Ecology, WA Dept. of Emergency Management, Coast Guard, etc.)* EXPLAIN THAT THERE ARE CURRENTLY MANY CITIES OR COUNTIES AROUND THE STATE WITH THEIR OWN HOTLINES. IT'S UNDER CONSIDERATION TO COMBINE THEM.
    b. What do you like about the idea?
    c. What concerns do you have with the idea?
    d. What region do you think the spill hotline should cover?
    e. Where should the funding for a regional spill hotline come from?
6. The folks interested in creating a regional spill hotline feel that it will help to improve the notification accuracy and reduce confusion by helping to determine which jurisdiction the spill is actually located in and making sure the information is passed onto that jurisdiction. What do you think about that? *(If needed: Do you think that will work?)*

Integration with Current Practices/Barriers and Benefits (10 min.)

7. If a regional spill hotline were to be established, how do you see it integrating into your current reporting and response practices?

8. What is it about a regional spill hotline that will make it hard for state agencies to integrate it into their current spill reporting and response practices?

9. What is it about your existing practices that may prevent you from integrating a regional spill hotline?

10. As you think about a regional spill hotline, what does it need to do so it will work for your agency?
    a. What information do you need?
    b. How would you like to receive that information?
    c. What features and benefits do you need?
    d. What would you like this regional hotline to do that you aren't currently getting with your current spill reporting process?
    e. How would you like to see a regional spill hotline advertised?

11. Some agency and jurisdiction staff will be very interested in this regional spill hotline, while others might not. What do you think agency and jurisdiction staff need to hear, be shown, or be provided in order for them to be excited about this new regional spill hotline?

12. What would have to happen to make this regional spill hotline a success?

Who's in Charge? (2 min.)

13. Who do you think should be responsible for managing this regional spill hotline? What makes you say that?

Other Hotlines (2 min.)

14. We are looking to learn best practices from other hotlines as we are assessing the feasibility of a regional spill hotline. Does your agency currently have a hotline in place that is working well (it doesn't have to be a spill hotline)? What about it makes you say it would be a good resource for best practices? *(If needed: What about it is working well?)*

15. What successful hotlines (locally or nationally) are you aware of that we can study to learn what they are doing that works? (Gather hotline name, software used [if known], what they think is good about that hotline's practices, etc.)

Statewide Option (2 min.)

16. One of the options under consideration is a statewide spill hotline.
    a. What do you think are the benefits of a statewide spill hotline?
    b. What do you see as the drawbacks to a statewide spill hotline?

Final Question (1 min.)

17. What is it that you think I should know about a regional spill hotline, that I haven't asked you about or you haven't already shared?

FINAL REPORT APPENDIX 2

Options Matrix Narrative for the Regional Spill Hotline Feasibility Study

- Vendor Research
- Implementation Considerations
- Condensed Options Matrix
- Detailed Options Matrix

HERRERA

TECHNICAL MEMORANDUM

Date: November 19, 2020

To: Todd Hunsdorfer, King County

Copy to: Technical Advisory Committee (TAC)

From: Rebecca Dugopolski, Jenn Schmidt, Katie Wingrove, and Makie Matsumoto-Hervol, Herrera Environmental Consultants, Inc.

Subject: Options Matrix Narrative for the Regional Spill Hotline Feasibility Study

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OVERVIEW

The regional spill hotline feasibility study is a Source Identification Information Repository (SIDIR) project that is being implemented through the Stormwater Action Monitoring (SAM) program with oversight from the Stormwater Group (SWG). The goal of this study is to evaluate feasibility and interest in implementing a regional spill hotline system to replace or supplement local systems currently in place. Previous work under this project includes a survey with 86 responses and research interviews with state agencies, municipal permittees, and other representatives of active hotline systems. See the **Interview Summary Report** developed for this project for additional information.

This narrative summarizes research of potentially viable software packages and services that provide desired functionalities for a spill reporting system. This narrative accompanies an Options Matrix that compares 28 features across 12 potential systems. The purpose of the matrix is to easily identify and compare systems that meet required functionality ("must haves") and optional functionality ("nice to haves") identified during the project survey, municipal interviews, state agency interviews, and technical interviews.

As stated in the Interview Summary Report, findings from the municipal, state agency, and technical interviews indicated that jurisdictions and state agencies are generally not in favor of implementing a new regional spill hotline. The research summarized in this narrative examines technology solutions available to support local or regional spill reporting. This research applies to scenarios for individual jurisdiction implementation, integrating with existing local spill hotlines, or providing supplemental services to existing programs.

A Technical Advisory Committee (TAC) was formed to provide guidance and review deliverables for this feasibility study. Based on TAC review of the Options Matrix, three systems were selected for more detailed evaluation focused on implementation considerations. This narrative was amended with cursory content to highlight implementation research findings. A final report will provide overall recommendations for the study and detail the recommended core components and workflows for a regional spill system based on specific vendor packages.

DEFINITIONS

The following terms are used to clarify roles and responsibilities for sending or receiving information as described in the Options Matrix.

Personnel and Points of Contact

The following terms are used to clarify roles throughout the process of identifying, reporting, and responding to spills:

- **Spill Reporter** applies to the individual who first identifies a spill and submits an initial spill report via hotline, mobile application, or other means. The Spill Reporter is assumed to be a member of the public.

  Note: Spill reports may also be submitted/documented by internal city, county, or agency staff or communicated from one jurisdiction to another entity (such as when spills are reported to the Washington State Department of Ecology [Ecology]). For this evaluation, these communications are addressed separately; the Spill Reporter is assumed to have no affiliation with the spill response effort or regulatory agencies.

- **Spill Responding Agency** applies broadly to the jurisdiction responsible for spill response. This includes cities, counties, state agencies, Ecology, or any other entity that manages a spill response program. For the purposes of this study, the Spill Responding Agency may be considered as a member of a regional spill hotline, or as a standalone spill response program.

- **Spill Response Staff** applies to the individual(s) (or team) within a Spill Responding Agency who are tasked with mobilizing to investigate reported spills.

- **Ecology** refers to the Washington State Department of Ecology. Ecology is both a regulatory authority and a Spill Responding Agency.

Reporting

The term "reporting" has dual meaning for communications received or distributed by the Spill Responding Agency. To improve clarity in the Options Matrix, the following terminology is used:

- A **Spill Report** is submitted by the original Spill Reporter (typically a member of the public) and contains the initial data that is collected regarding spill location and properties.

- A **Spill Alert** is a notification received by Spill Response Staff to bring their attention to a new Spill Report.

- A **Summary Report** or **Analytical Report** is prepared by the Spill Responding Agency after the spill (or multiple spills) has been addressed. This may include reporting for regulatory reasons or internal documentation but is not related to addressing an active Spill Report.

Technology

- **Front end** refers to a public-facing web portal or mobile application for submitting a spill report; it shows the program branding, spill-related questions, and other interactive features for the public to enter spill data.

- **Back end** refers to a database and internal portal that local jurisdiction staff would access to manage data, update status of spill reports, etc.

- **Local integration** is the ability to interact or configure workflows to an individual jurisdiction's GIS or asset management system(s).

- **Geofencing** refers to the ability to dynamically configure unique workflows and data access based on mapped boundaries; this feature applies to both front-end and back-end users based on their physical location or selected location.

Summary of Evaluated Features

For the purposes of this evaluation, a "feature" is a characteristic or function that defines the operational capabilities of a spill reporting system. Each feature listed in Table 1 is included in the Options Matrix under the following categories:

- **General/Core Criteria** are intended to assess the overall compatibility of each system for spill reporting. Systems were removed from consideration and further research if five general/core criteria were not at least partially addressed:

    1. The system is specific to spill response [optional].

    2. The system emphasizes receiving or collecting data from the public.

    3. A majority of packaged system features are user friendly for spill reporting.

    4. The system performs spill-reporting functions without excessive customization.

    5. If using a prepackaged build, underutilized or irrelevant system capabilities can be excluded.

- **Receiving Spill Reports** addresses public interaction, modes of communication, and data collection for the initial spill report.

- **Routing and Responding to Spill Reports** is focused on system capabilities to receive and handle a spill report in a manner that facilitates rapid response.
- **Data Storage and Analytics** includes considerations for housing the data, integration with other systems, and functionality to build analytical reports.
- **Cost and Effort of Implementation and Maintenance** addresses configuring and updating the system.
- **Public Education and Awareness** is related to proactive communication features and system branding.

Some features represent desirable program elements identified during the survey, municipal interviews, state agency interviews, and technical interviews conducted earlier in this study. Other features are determined by client preference and may be desirable (or not) depending on local perspective. See the Options Matrix (Appendix A) for prioritization of these features based on TAC input.

Table 1. Summary of Features.

Category	Features	Description
General/ Core Criteria	System is specific to spill response [optional]	This feature indicates whether a system was built specifically for spill response, or if it will be adapted for spill response.
	System emphasizes receiving or collecting data from the public	This feature emphasizes the public side of bi-directional communication. As a core function, the system collects information submitted by the public.
	A majority of packaged system features are user friendly for spill reporting	The system provides a suite of features that will promote easy and approachable reporting for the public.
	System performs spill reporting functions without excessive customization	Most systems under consideration are not designed specifically for spill response, but some are more easily adapted than others. An example of excessive customization would be scenarios in which the mobile application interface requires a complete overhaul to be used for spill reporting. Ideally, a system could readily be adapted to spill reporting purposes.
	For a prepackaged build, underutilized or irrelevant system capabilities can be excluded	Cost is not being evaluated in detail in the Options Matrix, but any paid features should be implemented and actively used. Underutilized capabilities might include advanced security features, voice analytics, or other specialized functionality that would not be cost effective for a spill reporting program.

Table 1 (continued). Summary of Features.

Category	Features	Description
Receiving Spill Reports	Spill reports can be submitted by the public via phone hotline, answered by a real person	Many survey participants (see the Interview Summary Report) expressed a preference for speaking directly to a person who is trained to route incoming calls, rather than an automated system. This "real person" might be located at a call center or could be a municipality/agency staff member.
	Spill reports can be submitted by the public via mobile application (download required)	Mobile applications are rising in popularity and support on-the-go reporting with minimal interaction needed. Mobile applications must be downloaded from an app store to a personal smartphone or other mobile device.
	Spill reports can be submitted by the public via web data entry form (no download required)	"Web form" includes any electronic questionnaire or survey-format interface that can be accessed via a web browser without downloading a mobile application. The form may be accessed via any internet browsing device, including mobile phones.
	Spill reports can be submitted by the public via email	The system can integrate email report submissions and standardize data collection (as either prebuilt package or customized feature). Note, email is an approachable mode for citizens to submit complaints but lacks structure for database entry or standardization.
	Spill reports can be submitted by the public 24/7	Spills may occur after business hours or on weekends, so rapid 24/7 response is critical. Most electronic systems are accessible 24/7 but may not be monitored 24/7. For this reason, an option for a 24/7 emergency call number may be needed to provide coverage. This feature is highly dependent on the system type and Spill Response Staff capabilities for off-hours response.
	Customizable back-end interface for the Spill Responding Agency to configure question types that appear to the public (i.e., dropdown menus, multiple choice, open text field)	The Spill Responding Agency can customize back-end interfaces of either the mobile application, web forms, or other public facing components. Examples include language of prompts, format, or ability to change prompts. For a regional shared spill reporting system, the system allows each group or jurisdiction to customize individual interfaces or prompts specific to the jurisdiction.

Table 1 (continued). Summary of Features.

Category	Features	Description
Routing and Responding to Spill Reports	Internal routing of spill alerts to Spill Response Staff can be automated based on spill data (geographic area, spill category, etc.)	A centralized system that includes multiple municipalities may include different offices with unique routing needs based on location. The system has capability to auto route spill reports based on user inputs (spill type, specialized staff) to designated groups.
	Internal routing of spill alerts to Spill Response Staff can occur via multiple formats (email, text, mobile application notification)	Spill responders may have personal preferences for what style of alerts are most effective. The system offers custom settings to format preferred alerts and spill response notifications (email, text, mobile application notification).
	Allows two-way communication for Spill Response Staff to contact the Spill Reporter for additional information or spill report close out	Two-way communication supports (1) following up to get more details about a spill report or (2) providing status and close-out updates to let the Spill Reporter know that the reported spill has been resolved.
Data Storage and Analytics	Option to integrate with an asset management system	The system can integrate into the local municipality's existing asset management system. Asset management software can support tracking labor and time spent responding to spills.
	Option to integrate with Geographic Information Systems (GIS) software	This feature indicates spatial integration compatibility with ESRI ArcGIS software or another GIS program.
	Data is stored in the cloud (but managed by the client)	The municipality (or collection of municipalities) hosts and manages data stored in the cloud.
	Data is stored in the cloud (but managed by a third party)	A third party hosts and manages data stored in the cloud.
	Data is stored on premise	The data can be stored and managed on local servers, not in the cloud.
	Tracks spill analytics for future analysis	The system stores information in an accessible manner that supports analysis over time to identify trends and patterns of spills (geographic location, time of report submission, spill types).
	The Spill Responding Agency can query to generate custom summary reports for internal use or external sharing	The system supports and export functionality to query and compile data for custom internal or public facing summary reports.
	Allows for the spill reporter to submit geotagged images	The system allows users to attach photo(s) and photos are GPS enabled.
	Automated latitude and longitude tracking of spill locations	The system records point data for the location of a reported spill and spill locations are mappable.

Table 1 (continued). Summary of Features.

Category	Features	Description
Cost and Effort of Implementation & Maintenance	Prebuilt application (configured by the client)	The system includes a prebuilt template that clients can customize to develop their own prompts.
	Prebuilt application (configured by a third party)	The system has a prebuilt structure intended for prepackaged feature and system use. Or the supplier offers configuration services to customize the system for spill response reporting.
Cost and Effort of Implementation & Maintenance (continued)	System updates managed by the client	The client provides IT support to manage system updates.
	System updates managed by a third party	The system supplier provides IT support or processes to manage updates.
Public Education and Awareness	Built-in advertising or proactive communication features	The system offers education, communication, or advertising features to encourage spill reporting and awareness of the program.

SUMMARY OF EVALUATED SYSTEMS

For the purposes of this study, "system" refers to a software product or other service (and all associated features) that is being evaluated as a potential standalone solution to implement a regional spill reporting system. Five categories of systems were included in this evaluation and are summarized below:

- Citizen Engagement and Request Management Systems
- Asset Management Systems
- Phone Systems
- Emergency Management Systems
- Other Systems

Several evaluated systems do not meet all the general/core criteria as a standalone product. These systems are included in the detailed Options Matrix (Table A-2 in Appendix A) and are briefly described in Appendix B, but were not recommended for further evaluation.

Citizen Engagement and Request Management Systems

Citizen Request Management (CRM) includes software products designed for government use to engage the community in reporting issues including, but not limited to, spills. These systems facilitate citizen interactions with various government departments and often include a variety of services. Systems that fall under this category include **Rock Solid**, **GovQA** Citizen Request Management, **Accela** Service Request Management, and **SeeClickFix**.

Asset Management Systems

Asset management systems are used to manage proactive and reactive maintenance activities associated with stormwater or other infrastructure system assets. These products typically house a work order or ticketing structure, assigning staff to specific issues and locations. Although asset management systems are not intended specifically for spill response, they often have functionality that augments response capabilities and asset tracking. Systems that fall under this category include **CitizenVUE** by VUEWorks and **Asset Essentials** from Dude Solutions.

Phone Systems

Phone systems provide a hotline service or other general communications solutions not specifically related to spill response. Systems that fall under this category include **Google Number** (G-Suite) and **AnswerNet**.

Emergency Management Systems

Emergency Management or Critical Event Management Systems are designed to help communities respond more effectively to emergency situations through mass notification and bi-directional data sharing. Systems that fall under this category include **WebEOC** and **Everbridge**.

Other Systems

The remaining systems that did not fall into previously listed categories are listed as Other Systems. Other systems include **ERTS**, **NICE**, and the **Custom Build** option. Refer to the individual system descriptions for more information.

A total of 12 systems were selected for preliminary evaluation in the Options Matrix (Table A-2 in Appendix A). A 13th option (**Custom Build**) is also included as a placeholder for further evaluation if no existing systems will provide an adequate solution. The following section summarizes research and correspondence with vendors for the 12 system options. The unique features or key limitations associated with each system are highlighted. Systems were moved to Appendix B if they did not partially meet all general/core criteria.

Citizen Engagement and Request Management

Four systems were evaluated under this category:

1. **Rock Solid**
2. **GovQA** Citizen Request Management
3. **Accela** Service Request Management
4. **SeeClickFix**

These products are competitors, offering similar features. All four systems include a customizable, public-facing mobile application designed for citizens to submit service requests (not limited to spill reporting). These products meet all general/core criteria and provide many features desired in a spill reporting system.

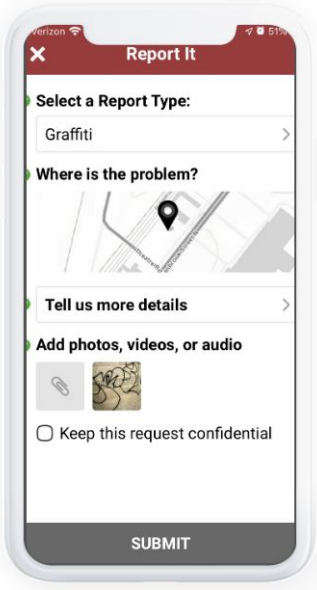
Implementation considerations are similar for all systems in this category and will be evaluated in detail in the next steps for this project. The mobile applications and web interfaces are all customizable (with varying degrees of oversight from the vendor) for branding, public-facing questions, and automated report routing. Several CRM systems integrate IFrame to provide web data entry forms (no download required) for public education and awareness on existing web pages (social media, websites, etc.). IFrame is an HTML element to embed documents, videos, or pop ups on a webpage.

Workflows and contact protocols are responsive to user inputs and can be configured to meet local preferences. However, none of these systems provide a calling function. Supplemental service or partnership with a call center would be necessary to enable that feature. All systems in this category have experience integrating with existing call centers and provide various coordination services to facilitate call center integration.

Rock Solid

Overview

Rock Solid emphasizes collaborative citizen engagement for collecting and sharing information with the public. The platform is specific to public reporting of information (e.g., potholes, wires, graffiti) with a mobile application (or web form) to a municipality or other government entity and integrating hotline services. **Rock Solid** systems include the OneView Civic Engagement Platform, which connects to the central data location and OneLink, the public-facing mobile application.



Example reporting interface (mobile application). Source: **Rock Solid** website.

Example map interface (mobile application). Source: **Rock Solid** Honolulu case study.

Rock Solid additionally provides a 311 call center training CRM (Customer Relationships Manager) to ensure consistent data collection and integration into OneView.

Unique Features

- Advanced GIS capabilities that direct automated workflows and auto route report information based on geofenced boundaries to specified groups.
- Flexibility to design multi-jurisdictional back-end system processes and multi-jurisdictional front-end interfaces.
- High flexibility to incorporate multiple existing asset management and permitting products (CityWorks, ESRI, etc.).
- "Out of the Box" (OOTB) integrations available at no additional cost: Cityworks, Cartegraph, Central Square (Lucity), Maximo, Accela, Tyler (EnerGov), Infor, Salesforce, ESRI, GovQA, Citizen Serve, O365/Office, and Dynamics.
- Can configure specific regional language needs in addition to default-language options (i.e., Spanish, English).
- Can configure push notifications to alert public of a spill are available.
- Can redirect auto-generated reports to neighboring jurisdictions.
- Implementation examples of large population coverage (e.g., Puerto Rico, Panama, etc.).
- Can have jurisdiction-specific mobile application interfaces with specific brands, colors, fonts, and logos; data storage is centralized and accessible under the same management system.

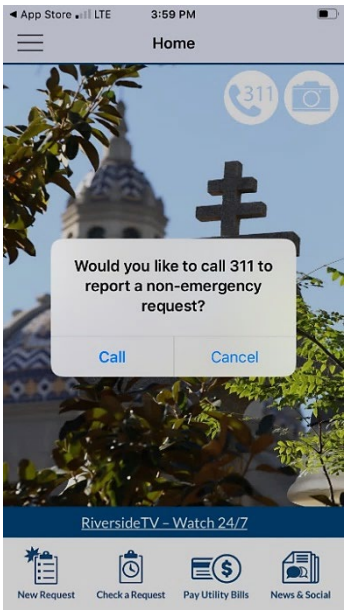
Key Limitations

- Similar to other Citizen Request Management Systems, **Rock Solid** does not provide a hotline service or public telephone number. However, **Rock Solid** does provide coordination services to integrate the system with existing call centers.

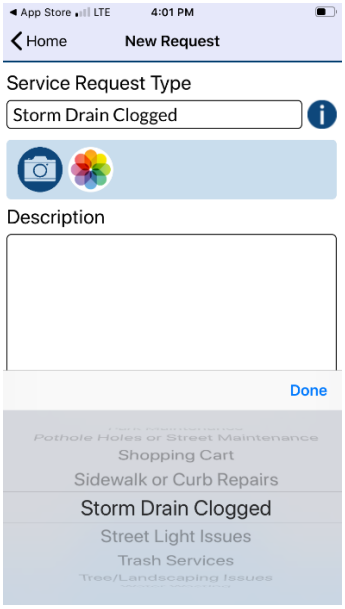
GovQA Citizen Request Management

Overview

GovQA provides a 311 and Citizen Request Management (CRM) system that addresses a broad range of municipal needs. Case studies feature successful implementation of streamlined automation for improving departmental processes that involve both collecting and sharing information with the public, including several examples of streamlining public records requests for various cities and agencies. **GovQA** is not specific to spill reporting but provides a customizable mobile application and web portal interface that could be used for spill reporting.



City of Riverside mobile application. Smart phone screenshot taken of current mobile application. Note local imagery and easy option for 311 call using top button.



Example request for City of Riverside. Smart phone screenshot taken of current mobile application. A large variety of request types are included.

Unique Features

- Have extensive client network in Washington (typical application is for public records requests).
- Can provide a tracking number for anonymous submissions, so a spill reporter can track a report even if it is submitted anonymously.

Key Limitations

- Relies on Google Translate for multiple language functionality, which is not as accurate as other systems.
- Has limited experience and case-study examples of multiple jurisdictional entities utilizing a single system.
- Similar to other systems in this category, **GovQA** does not provide a hotline service or public telephone number. However, **GovQA** does provide coordination services to integrate the system with existing call centers.

Accela Service Request Management

Overview

Accela's Civic Solution is a Service Response Management (SRM) platform specializing in public reporting of information to government agencies and municipalities. **Accela** simplifies existing paper and manual processes to be automated for internal processes and specialization public reporting of information to a municipality to government entity. The SRM is anticipated to be released in the fall of 2020.

Note: Further investigation of this system did not yield satisfactory responses to address system needs. This system has been removed from consideration.

Unique Features

- Thorough automated audit trail to maintain data for audit requests.

Key Limitations

- SRM is new system; features may be subject to change (anticipated fall 2020 release).
- Uncertain customer service experience (due to difficulty with correspondence during project research).
- This system can be linked to **Accela's** proprietary asset management system; integration with other existing asset management systems is limited.
- No anonymous report submission or non-login submission is possible, which may discourage reporting in some instances.
- Similar to other systems in this category, **Accela** does not provide a hotline service or public telephone number but does provide integration and training services for existing call centers.

SeeClickFix

Overview

SeeClickFix is a customizable 311 request and work management application designed for engaging citizens to report issues such as spills, graffiti, illegal dumping, or other repair/maintenance service requests. Local jurisdictions can configure the mobile application to fit their needs and can customize the appearance of the mobile application. The software is designed to integrate with asset management, work or task management, CRM, or Enterprise Resource Planning (ERP) systems (Cartegraph, CityWorks, Lucity, VUEWorks, etc.). Integration with asset management is recommended for local applications to utilize work order systems and

track cost of spill response. Incoming reports can be configured for routing based on geography or other user input data.

Unique Features

- Extensive **SeeClickFix** network established in Washington with dual option to use generic mobile application (routes to existing **SeeClickFix** accounts based on user location) or a jurisdiction-specific branded mobile application.
- Eleven languages integrated into system.
- Duplicate report detection: If a user submits a report that is similar to a previous report, the user is notified and prompted for optional update notifications for the same report.
- **SeeClickFix** hosts quarterly regional workshops for user entities for regional knowledge sharing.
- Offers CivicPLUS extension to bolster launch using social media news channels, etc.
- Ability to view live updates to spill reports instantaneously through an ArcGIS online service.
- Ability to have jurisdiction-specific mobile-application interfaces with specific brands, colors, fonts, and logos; data storage is centralized and accessible under the same management system.

Key Limitations

- Similar to other systems in this category, **SeeClickFix** does not provide a hotline service or public telephone number. To provide calling functionality, a supplemental service or partnership with a local call center would be necessary. **SeeClickFix** can provide a back-end data entry interface to standardize data collection across the multiple modes of communication.
- Solutions for communicating with neighboring spill reporting systems (hosted by other vendors) are limited; geofencing can be used to prevent reporting in certain areas but does not support actively redirecting reports.
- Social media emphasis can be beneficial for spreading word to the public but may be misleading and ineffective for public to report spills via unmonitored social media platforms.

Emergency Management Systems

Two Emergency Management Systems were evaluated at a high level:

1. **EverBridge**

2. **WebEOC**

These systems have robust capabilities, but do not meet all general/core criteria. Rather than collecting information from the public, these systems are designed for mass notification to *send* information to the public.

These systems also have advanced protocols for widespread disaster scenarios. Spills do require urgency and can cause danger to public health but are otherwise unlikely to require the full system capabilities for earthquake response or other large-scale disasters.

Since both systems did not meet the general/core criteria, they were excluded from the condensed matrix (Table A-1 in Appendix A) and further review (for more details, see Key Limitations and Appendix B).

Key Limitations

- Wide range of flexibility for customizations is excessive for spill reporting and adds additional cost.
- Focused on push notifications to public, rather than receiving data from the public.
- Limited call center features or call routing capabilities on spill reporting mobile application (Press 2 to speak with representative).
- Prepackaged build system features would be underutilized.

Asset Management Systems

Two asset management systems are included in the Options Matrix for this category:

1. **CitizenVUE** by VUEWorks

2. **Asset Essentials** from Dude Solutions

For local implementation, integration of spill reporting systems with asset management can offer robust capabilities to track labor and cost associated with spill response. However, these systems are less economical to implement at regional scale and offer functionality geared towards assets, which may or may not be affected by a spill. **CitizenVUE** is only compatible with VUEWorks. **CitizenVUE** was excluded from the condensed matrix (Table A-1 in Appendix A) and further research (see Appendix B).

The citizen request software by Dude Solutions, Mobile 311, is now a legacy product. Dude Solutions **Asset Essentials** did not meet the five general/core criteria and was excluded from the condensed matrix (Table A-1 in Appendix A) and further research (see Appendix B).

Key Limitations

- Customizations are excessive for spill reporting and add cost.
- Focus on asset management, rather than receiving data from the public.
- Limited call center features or call routing capabilities on spill reporting mobile application (Press 2 to speak with representative).
- Prepackaged build system features would be underutilized.

PHONE SYSTEMS

Phone systems were evaluated specifically for "hotline" functionality. These systems do not provide the database functionality or mobile applications included with other systems. As a standalone solution, phone systems do not meet all five general/core criteria but remain in consideration as possible supplements to provide a calling option to mobile applications that do not otherwise support calling functionality. Alternatively, municipalities can partner with existing emergency management call centers or local 311 call centers to provide a calling functionality. Two phone systems were evaluated for this study:

1. **AnswerNet**
2. **Google Number**

Google Number is highly customizable for meeting business communication needs but lacks prebuilt functionality to support key features of interest for a spill hotline. Automated routing is limited. Geographic routing relies on caller input, and answering service is not provided. For these reasons, Google Number was not considered viable as a standalone solution or a supplemental service. This system was excluded from the condensed matrix (Table A-1 in Appendix A) and further research (see Appendix B).

AnswerNet

Overview

AnswerNet provides a call and toll-free answering hotline and 24-hour call center (closest call center location is in Portland, Oregon). Beneficial features include configurable workflows to enter data from incoming calls into an existing client's web form or to route calls as needed. The service can cover a geographic area of any size and distribute configured alerts (email, text) based on established protocols. This service was used successfully to implement the Squeal on Pigs three-state hotline (see Interview Summary Report) and is considered a viable option to provide centralized hotline functionality.

Note: Research did not include an exhaustive review of all available vendors for call and answering services; other vendors may provide comparable services.

Unique Features

- **AnswerNet** contracts with a vendor to provide in-house live translations for multiple languages when needed.
- Texting can be enabled for the toll-free number but is not recommended for spill reporting; texts are unlikely to include sufficient information to locate and address a spill.

Key Limitations

- Only call and answer service is available.
- **AnswerNet** agents will not be able to provide specific the local knowledge or expertise related to the spill that local responders might be able to provide.

OTHER SYSTEMS

Three other systems did not fit into the system categories already identified and include:

1. **NICE Investigate Mobile**
2. **ERTS**
3. **Custom Build** Option

NICE is typically used for police work and did not meet several general/core criteria of the evaluation. The customization needed to convert from criminal case format to spill response format would be excessive, and multiple advanced features would be underutilized. The system was excluded from the condensed matrix (Table A-1 in Appendix A) and further research (see Appendix B).

ERTS

Overview

Ecology's in-house Environmental Report Tracking System (**ERTS**) is a custom-built database used to refer environmental incident reports to relevant internal programs (such as the Spills Program) or external parties (other state and local agencies). Incident reports are manually routed by an **ERTS** Coordinator, who selects the referrals based on the incident and associated jurisdiction or need for response. Once referral agencies are selected within the **ERTS** software, an email notification is autogenerated based on an assigned email for the respective agency. Regional Ecology staff maintain this external contact information.

Unique Features

Trained **ERTS** coordinators field calls and enter information into **ERTS**. This is the only system in the Options Matrix (Appendix A) with trained staff dedicated full or part time to routing incoming reports.

Implementation Notes

ERTS is already established as a regional system. Reporting phone numbers are posted for each Ecology regional office. Some municipal permittees already use **ERTS** as their primary mode for reporting compliance to Ecology and ensuring that incidents are referred to relevant entities statewide. Despite this practice, Ecology requires local jurisdictions to maintain their own spill reporting systems and does not view **ERTS** as a regional reporting tool.

Ecology contracts with the Washington Emergency Management Division for after-hours call referral. Phone system notifications are 24/7. Calls are also overseen by the on-call spill responder, who enters reports into SPIIS. SPIIS reports are then imported to **ERTS**, but not referred to internal/eternal entities until the following business day.

Key Limitations

- Ecology does not intend for **ERTS** to perform as a regional spill hotline.
- **ERTS** is not available as a mobile application.
- **ERTS** has limited analytical functionality for tracking spill data over time.
- **ERTS** lacks automated features for follow up with the initial spill reporter (manual entry by staff).

Custom Build Option

A **Custom Build** option is an open-ended placeholder for further evaluation if no packaged systems are available to provide an adequate solution.

Note: This evaluation has determined that multiple solutions are available to address regional spill hotline functionality. A **Custom Build** option is not recommended.

RECOMMENDED SYSTEM VENDORS

Of the system categories evaluated, only Citizen Engagement and Request Management (CRM) contained viable system options that sufficiently address general/core criteria for a regional spill system. The four CRM systems evaluated include **Rock Solid**, **GovQA**, **Accela**, and **SeeClickFix**. Based on a more detailed assessment of implementation considerations and technical capabilities, only two systems are recommended for a multi-jurisdictional regional spill system:

1. **Rock Solid**

2. **SeeClickFix**

A brief rationale for recommendation or elimination of the top systems (as listed in the Condensed Options Matrix, Table A-1 in Appendix A) is included below:

- **Accela** met the general/core criteria but is not recommended as a regional spill hotline system due to multiple limitations. **Accela** lacked anonymous reporting capabilities (a potential barrier in some instances) and had a limited capability to integrate with asset management systems outside of **Accela's** default system. Moreover, **Accela's** CRM system is not yet released (anticipated fall 2020), which limited the detailed research that could be completed for this evaluation. A newly released system without substantial vetting is not recommended for implementation.

- **GovQA** also met the general/core criteria and has promising features for local implementation of a CRM system but is not recommended for a regional spill hotline system due to limited experience with implementing a multi-jurisdictional system. For example, **GovQA** expressed limitations to integrating multiple local-level asset management systems. **GovQA** additionally had limited capabilities to forward time-sensitive spill notices to outside organizations; efficient routing to specific local spill responders is a function-critical feature.

- **ERTS** is included in the Condensed Options Matrix (Table A-1 in Appendix A) for comparison; many participants in the survey and interviews indicated that **ERTS** already provides or could in the future provide statewide spill reporting services. However, **ERTS** (in its current form) does not fully meet several of the general/core criteria due to limitations with tracking analytical data and a lack of automated follow-up features. Moreover, Ecology does not intend for **ERTS** to perform as a regional spill hotline. For this reason, **ERTS** was excluded from further evaluation as a regional spill hotline system.

- The **Custom Build Option** was not pursued for further evaluation because viable alternatives have been identified to meet the general/core criteria and address key features.

- Both **SeeClickFix** and **Rock Solid** met the general/core criteria, addressed multiple key features, and can accommodate multi-jurisdictional entities including possibilities of a hybrid system if desired (Table A-2 in Appendix A, and see Table 2).

- Because hotline calling functionality is not provided by CRM systems, **AnswerNet** or another viable 24-hour call center system is recommended to provide a supplemental centralized calling service. Communication workflows for a centralized call center will be explored further in a final report.

For reference, information has been retained for all evaluated systems (Appendix B and Table A-2 in Appendix A). Eliminated alternatives are greyed out.

RECOMMENDED SYSTEM COMPONENTS

Based on vendor capabilities, the recommended structure for a regional spill hotline is to migrate all jurisdictional spill response systems to a centralized system. A centralized spill system can meet all general/core criteria, can accommodate desired features identified by jurisdictions, and is feasible for multi-jurisdictional use. The following general components of a regional spill hotline system are recommended based on all previous research, including the survey, interviews, Options Matrix, vendor capabilities, and TAC meeting discussions:

- **Primary coordinating entity** – An entity (existing or formed) that coordinates and manages the centralized data storage and phone system. This entity could be formed as a new non-profit or could be housed within an existing state agency or local jurisdiction. An example of a non-profit primary coordinating entity is the NW Clean Air Agency, a non-profit that coordinates air quality data with buy-in participation from multiple regional municipalities.

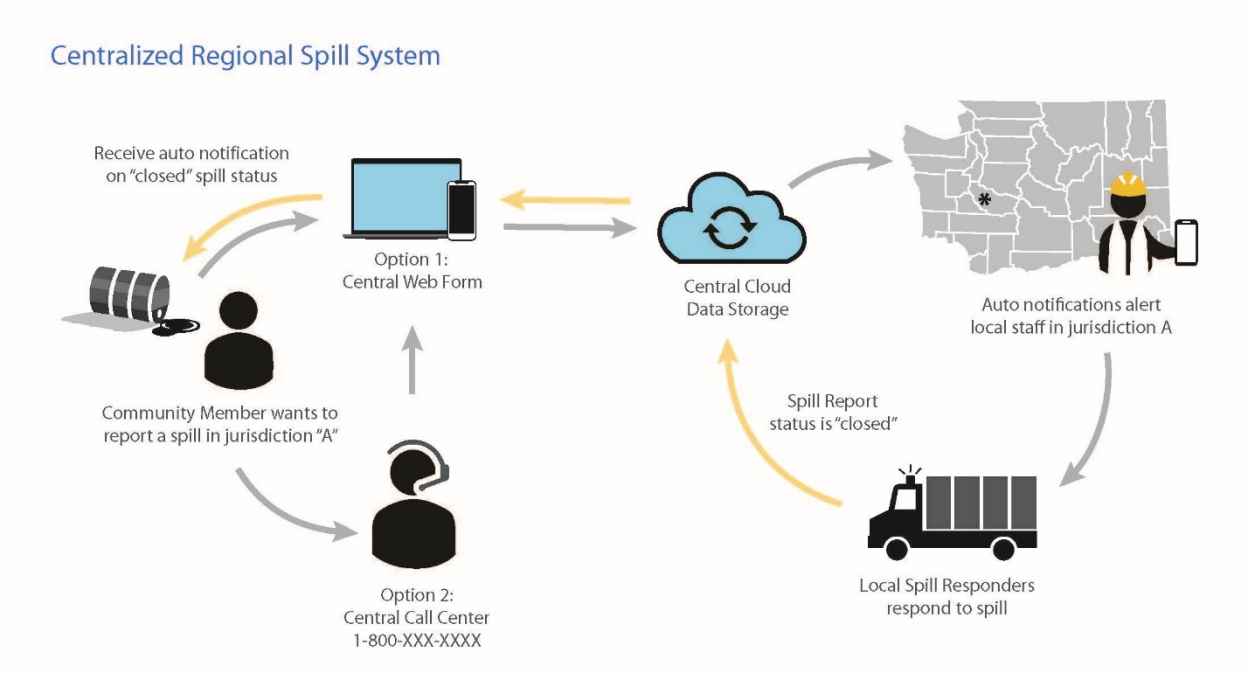
- **Centralized web form** – A centralized, single public-facing web form that standardizes spill reporting data and auto routes reports to appropriate local spill responders. This web form should be mobile responsive and accessible for the public to submit reports via a web browser on mobile devices and computers.

- **Central call center** – One number and a centralized call center that recieves any spill report, enters data in a standardized form (i.e., directly into the system web form), and routes both to local spill responders or local call centers. The ability to report spills by phone is important for equity and accessibility.

- **Centralized data storage with configured user permissions** – A centralized hub where all spill reports are stored, but each jurisdiction is granted unique user permissions to jurisdiction-specific spill reports based on geographic or legal distinctions configured via geofencing. This system promotes ease in regional analysis, report tracking and review, as well as enabling quickly retrievable data.

- **No mobile application** – It is not recommended to pursue a mobile application that an individual would install on a personal mobile device. Both the regional spill number and regional spill online web form are both accessible by mobile device or computer via weblink without a mobile application. A downloadable mobile application does not provide sigificant advantage and would likely be underutilized by the public. It is also problematic for jurisdictions with existing local mobile applications. Multiple apps may result in app sprawl.

The overall workflow including these recommended components is summarized graphically in the Centralized Regional Spill System workflow graphic:



*Note: Unique configurations for **SeeClickFix** and **Rock Solid** will be presented in the final report for this project.*

Rock Solid and **SeeClickFix** (with supplemental services from **AnswerNet**) can both accommodate the core recommended components for a centralized, multi-jurisdictional regional spill hotline system. Both options are web-based platforms with minimal software requirements besides access to a web browser. Distinctions between the two options are primarily the capability to add expanded functionality at additional cost and flexibility to accommodate features for a hybrid implementation scenario, further discussed in the next section.

IMPLEMENTATION SCENARIOS

The TAC reviewed potential implementation scenarios and identified pros and cons for key features of a regional spill system (call center, data storage, and mobile application or web portal system). These scenarios include:

1. Centralized – A unified system that routes reports and calls to invidual jurisdictions and stores information in a single accessible location for jurisdictions to access. This scenario involves a single outward-facing portal for public input.

2. Distributed – A system that focuses on individual jurisdiction flexibility for retaining existing systems with less emphasis on (or exclusion of) a regional spill system.

3. Hybrid – A system that provides a centralized structure but allows jurisdictions the flexibility to retain local integrations or separate communications for existing spill-response systems.

Table 2. Implementation Scenario Considerations.

Category	System	Pro	Con
Call Center	Centralized	Public only needs to remember one phone number (easier for public spill reporting) Can help smaller jurisdictions with efficiency/time of spill response (current challenge of **ERTS** system)	Regional call centers may have limited local geographic knowledge; local call centers may be more knowledgeable
	Distributed	Little to no additional reorganization or disruption of current systems (status quo)	Time/efficiency difficulties coordinating spill response for a smaller jurisdiction (see Centralized pros)
	Hybrid	Economies of scale for jurisdiction sizes and population use	Could add redundant/overlapping cost compared to local call centers (additional research needed to confirm)
Data Storage	Centralized	Supports regional analysis of spill data over time Standardization of data collection can assist with efficiency of data sharing, reporting, and two-way communication across multiple jurisdictions	Reformatting to central schema Public records request consideration; complying with contracts/enabling actions
	Distributed	Local jurisdictions can easily access their own data	Data sprawl and difficulty collecting data at regional scale Standardization is absent for data analysis/validity

Table 2 (continued). Implementation Scenario Considerations.

Category	System	Pro	Con
Data Storage (continued)	Hybrid	Collect individual jurisdiction data within larger regional schema Retain existing system structures while providing an overview system	Standardization is required for data analysis/validity
Mobile Application System or Web Portal System	Centralized	Cohesive shared branding, recognizable to public One shared location to submit data	Obsolete local branding (loss of investment in local branding) Underutilized mobile application (requires downloading a mobile application for spill reporting which may not be used frequently) Loss of local customization and control over data collection
	Distributed	Retain existing interface(s) and familiarity	App sprawl or web portal sprawl (confusion for public) Would require complex workflow to access distributed mobile applications or web portal data for regional analysis
	Hybrid	Benefits of central system with potential to retain local branding Potential to retain existing mobile applications and local integration	Complex/expensive workflows; complex system management App sprawl or web portal sprawl (confusion for public) Potential difficulty managing and using multiple mobile applications (could impact the public and individual jurisdictions)

Implementation Scenario Feasibility

Many jurisdictions were in favor of a distributed system and satisfied with existing local spill hotline system functionality. However, a distributed system is not recommended as it lacks the ability for efficient multi-jurisdiction cooperation and lacks data standardization among other limitations discussed in this evaluation.

A fully centralized system is the simplest, lowest cost method to implement but requires broad multi-jurisdictional support, cooperation, and a reliable funding source. **Rock Solid** and **SeeClickFix** both indicated a central platform has potential financial cost savings as a bulk system (rather than implementing individual jurisdictional spill hotline systems). A bulk system may lower barriers for smaller jurisdictions to have access to a more robust spill hotline system.

A hybrid system is technically feasible and can accommodate jursidictional preference to maintain existing, individual spill-response systems. However, a hybrid system requires more advanced configuration and processes for seamless, regional coverage to respond to a spill, regardless of regional spill affiliation. For example, if a spill reporter identifies a spill in a geographic region where the jurisdiction has opted out of the regional system, the hybrid

system and non-participating jurisdiction must set up an effective communication and notification system to respond quickly and efficiently to the spill report and follow up to the spill reporter.

This workflow and other advanced hybrid configurations (such as multiple front ends or multiple back ends for individual jurisdiction accessibility) are technically feasible by the proposed solutions (**Rock Solid** and **SeeClickFix**) at varying capacities. However, these features are more costly to implement than a fully centralized system due to the individualization and complexity of creating local system workflows. Each jurisdiction-specific feature or integration option to create a hybrid system requires more complex technical (back end) and functional (front end) workflows to create a seamless overlapping, complex network.

COST CONSIDERATIONS

Cost estimates are limited at this time due to uncertain participation in a regional spill hotline system. Rough estimates and a summary of cost structures are included in Table 3 for **AnswerNet** and Table 4 for the CRM Systems. Both **Rock Solid** and **SeeClickFix** communicated limitations on accurate cost estimating for a regional spill hotline system with an unknown number of jurisdictions and unknown degree of complexity. **AnswerNet** provided a granular cost estimate (see Table 3) based on the following high-level assumptions:

- Data collection for approximately 12 questions addressed to the spill reporter
- Live translations provided for Spanish, Mandarin, Cantonese, Vietnamese
- Approximately 700 to 800 or fewer than 1,000 calls per year (based roughly on the number of spill hotline calls received in 2018 by King County [454], Seattle [98], and Kitsap County [103])

Table 3. Summary of Central Call System Costs.

Cost Category	AnswerNet
Set-up Cost	$680 (includes 2 hours accounting/programming and 2 hours training)
Monthly Cost	$480/month (recommended service package for 60 to 80 calls/month, approximate 4-minute call duration)
Additional Costs and Cost Considerations	●$40 – Monthly Direct Inward Dialing (DID) to support four language translations ●$2.60 per minute – Live translator cost ●$15 per holiday a year (typically assumes six holidays per year) ●$0.18/minute – Patching transfers ●$1.23/minute (overage charge beyond recommended service package) ●$120 per language for additional language recordings

Table 4. Detailed CRM Cost Structures.

Cost Category	Rock Solid	SeeClickFix
Set-Up Cost	8 percent of contract value (approximate implementation cost)	N/A (included in license cost)
Annual Base Cost per Staff User License	N/A (unlimited internal users)	$1,000/user/year and minimum package of five users (based on number of staff users with regional spill hotline system permissions and capabilities) Cost is expected to increase by 5 percent each year
Annual Base Cost per Population Coverage	$60,000 to $72,000/year [$5,000 to $6,000/month] (rough estimate for statewide coverage, based on highest population pricing tier 750,000+)	N/A (cost not based on population)
Additional Cost Considerations	●Legacy data integration for migrating existing mobile applications; volume of legacy data dependent ●Custom Integrations for 3rd party systems via custom API (asset management system or connector for ArcGIS)[a] ●"Redirect" option; sending notifications and basic reports (text, email) to jurisdictions not participating in the regional spill hotline to respond to spills and provide two-way communication ●Dynamic front-end mobile application or web form (for hybrid option if specific jurisdictions, need jurisdiction-specific data collection on the mobile application or web page) ●Dynamic, multiple back ends (for hybrid option, if jurisdictions want specific integration of regional system into local asset management systems to directly route notifications, data, etc.)	●Legacy data integration for migrating existing mobile applications; volume of legacy data dependent ●Custom Integrations for third-party systems via custom API (e.g., asset management system or connector for ArcGIS)[a] ●Civic Plus marketing strategy and suggestions for successful live kickoff ●View live updates to spill reports instantaneously as an ArcGIS service connector

[a] Vendors also have "Out of the Box" or other advanced integrations and features available at no additional cost. That level of detail is not included here due to variety of local systems currently in place.

Both **Rock Solid** and **SeeClickFix** have variable cost options for configuring and integrating hybrid system features for individual jurisdiction needs. The add-on cost for each hybrid feature is highly dependent on important, unconfirmed cost variables including:

- The number of participating jurisdictions.
- Population coverage estimate (i.e., how many people expected to cover).
- Confirmed desire for hybrid-system configurations (e.g., legacy data migration, integration in local asset management systems, connection to neighboring systems, notification for non-participants in the regional spill hotline, etc.).
- Funding and billing (e.g., single contract, multiple contracts with a legally binding agreement).
- Each vendor alluded to potential cost savings for bulk implementation for multiple jurisdictions as a regional system. However, this cost saving is dependent on the structural variables above; and calculation is specific to each vendor cost structure.

A hybrid system that allows jurisdictions to maintain their own local system requires additional workflow considerations. For example, if participation in a regional spill hotline system is optional and "Jurisdiction X" declines participation, keeping their local mobile application. A custom workflow must then be configured using geofencing to route spill reporting (calls, webform) correctly in that area. One option is to block reporting capabilities in Jurisdiction X through the regional spill system so that a reporter can only use Jursidiction X's individual spill reporting system. However, there is associated risk of missing a spill report with that option. Alternatively, **Rock Solid** has the capability to configure a workflow that would redirect the report to the non-participating Jurisdiction X, but at an additional cost.

To obtain more accurate cost estimates for **Rock Solid** and **SeeClickFix**, it is recommended that these cost variables are confirmed. Table 4 provides a general overview of cost structures and is **not recommended for direct cost comparison** between **SeeClickFix** and **Rock Solid** due to unconfirmed cost variables for the proposed regional spill hotline system.

Ideally, a large number of jurisdictions would participate in the regional spill system to decrease overall cost for all jurisdictions. Washington's 119 jurisdictions include the following by permittee categories:

- Six (6) Phase I jurisdictions
- Eighty-eight (88) Phase II jurisdictions (Western Washington)
- Twenty-five (25) Phase II jurisdictions (Eastern Washington)

Both **Rock Solid** and **SeeClickFix** indicated that a reduced bulk cost may be possible for a large group. However, this reduced bulk cost could not be quantified without confirming important cost variables mentioned previously.

An example cost scenario for regional implementation is explored below. The cost scenario explores minimum costs for statewide regional implementation for the recommended centralized system and excludes the costs for hybrid system features.

These cost-scenario estimates are based on preliminary CRM vendor discussion, where **SeeClickFix** and **Rock Solid** emphasized the necessity of confirming key cost variables (see above). **These costs do not represent formal quotes**.

The cost senario considers a centralized system with the following cost variables specified below:

- Minimum centralized spill system features, excluding hybrid features and add-on costs (e.g., local integrations, live phone translations, etc.)
- Statewide scenario with 25 percent participation (roughly 30 permitees)
- Phase I county or city participation to cover more than 750,000 people
- Sixty to eighty (60 to 80) hotline calls per month

Table 5. Example Estimated Cost Scenario.

Cost Category	AnswerNet	Rock Solid	SeeClickFix	
Implementation Cost	$680	$4,800 to $5,760	$0	
Monthly Cost	$480	$5,000 to $6,000 (unlimited staff users)	30 staff users (1 per permittee)	$2,500
			60 staff users (2 per permittee)	$5,000
Annual Cost	$5,760	$60,000 to $72,000 (unlimited staff users)	30 staff users (1 per permittee)	$30,000
			60 staff users (2 per permittee)	$60,000

It is recommended that a more detailed cost scenario be revisited for all three vendors after the overall structure of a regional spill system (number of participating jurisdictions and populations, need for local integrations, etc.) has been established.

NEXT STEPS

The final report for this project will include a summarized asssessment of regional implementation considerations including general cost structure, software needs, and workflow scenarios for **Rock Solid** and **SeeClickFix**, with **AnswerNet** providing a supplemental service to support centralized hotline calls.

APPENDIX A

Options Matrix

Table A-1. Condensed Options Matrix for the Regional Spill Hotline Feasibility Study.

OPTIONS			CITIZEN ENGAGEMENT AND REQUEST MANAGEMENT				PHONE SYSTEMS	OTHER SYSTEMS	
CATEGORY	**FEATURES**	**FEATURE PRIORITY**	**Rock Solid**	**GovQA**	**Accela Civic Solution**	**SeeClickFix**	**AnswerNet**	**ERTS**	**Custom Build Option**
General/Core Criteria	System is specific to spill response	**LOW**	PARTIAL	PARTIAL	PARTIAL	PARTIAL	NO	PARTIAL	Custom
	System emphasizes receiving or collecting data from the public	**HIGH**	YES	YES	YES	YES	YES	PARTIAL	Custom
	A majority of packaged system features are user-friendly for spill reporting	**HIGH**	YES	YES	YES	YES	PARTIAL	PARTIAL	Custom
	System performs spill reporting functions without excessive customization	**HIGH**	YES	YES	YES	YES	NO	YES	Custom
	For pre-packaged build, under-utilized or irrelevant system capabilities can be excluded	**HIGH**	YES	YES	YES	YES	NO	YES	Custom
Receiving Spill Reports	Spill reports can be submitted by the public via phone hotline, answered by a real person	**HIGH**	PARTIAL	PARTIAL	PARTIAL	PARTIAL	YES	YES	Custom
	Spill reports can be submitted by the public via mobile application (download required)	**HIGH**	YES	YES	YES	YES	NO	NO	Custom
	Spill reports can be submitted by the public via web data entry form (no download required)	**HIGH**	YES	YES	YES	YES	NO	YES	Custom
	Spill reports can be submitted by the public via e-mail	**LOW**	YES	YES	YES	NO	NO	YES	Custom
	Spill reports can be submitted by the public 24/7	**HIGH**	PARTIAL	PARTIAL	PARTIAL	PARTIAL	YES	PARTIAL	Custom
	Customizable back-end interface for the Spill Responding Agency to configure question types that appear to the public (i.e., dropdown menus, multiple choice, open text field)	**HIGH**	YES	YES	YES	YES	NO	PARTIAL	Custom
Routing and Responding to Spill Reports	Internal routing of spill alerts to Spill Response Staff can be automated based on spill data (geographic area, spill category, etc.)	**HIGH**	YES	YES	YES	YES	NO	NO	Custom
	Internal routing of spill alerts to Spill Response Staff can occur via multiple formats (e-mail, text, mobile application notification)	**HIGH**	YES	YES	YES	YES	YES	YES	Custom
	Allows 2-way communication for Spill Response Staff to contact the Spill Reporter for additional information or spill report close-out	**HIGH**	YES	YES	YES	YES	NO	NO	Custom
Data Storage and Analytics	Option to integrate with an asset management system	**HIGH**	YES	PARTIAL	PARTIAL	YES	NO	NO	Custom
	Option to integrate with Geographic Information Systems (GIS) software	**MODERATE**	YES	YES	YES	YES	NO	NO	Custom
	Data is stored in the cloud (but managed by the client)	**Client Preference**	NO	NO	NO	NO	PARTIAL	NO	Custom
	Data is stored in the cloud (but managed by a third party)	**Client Preference**	YES	YES	YES	YES	PARTIAL	NO	Custom
	Data is stored on premise	**Client Preference**	YES	YES	YES	NO	NO	YES	Custom
	Tracks spill analytics for future analysis	**MODERATE**	YES	YES	YES	YES	NO	NO	Custom
	The Spill Responding Agency can query to generate custom summary reports for internal use or external sharing	**MODERATE**	YES	YES	YES	YES	NO	NO	Custom
	Allows for the spill reporter to submit geotagged images	**MODERATE**	YES	YES	YES	YES	NO	NO	Custom
	Automated latitude and longitude tracking of spill locations	**HIGH**	YES	YES	YES	YES	NO	NO	Custom
Cost and Effort of Implementation and Maintenance	Pre-built application (configured by the client)	**Client Preference**	PARTIAL	PARTIAL	PARTIAL	PARTIAL	NO	NO	Custom
	Pre-built application (configured by a third party)	**Client Preference**	YES	YES	YES	YES	NO	NO	Custom
	System updates managed by the client	**Client Preference**	NO	NO	NO	NO	NO	YES	Custom
	System updates managed by a third party	**Client Preference**	YES	YES	YES	YES	YES	NO	Custom
Public Education and Awareness	Built-in advertising or proactive communication features	**MODERATE**	YES	YES	PARTIAL	PARTIAL	NO	NO	Custom

Table A-2. Detailed Options Matrix for the Regional Spill Hotline Feasibility Study.

OPTIONS			CITIZEN ENGAGEMENT AND REQUEST MANAGEMENT			
CATEGORY	**FEATURES**	**FEATURE PRIORITY**	**Rock Solid**	**GovQA Citizen Request Management**	**ACCELA Service Request Management (Accela Civic Solution for Service Request Management)**	**SeeClickFix**
General/Core Criteria	System is specific to spill response	**LOW**	**PARTIAL** Platform is specific to public reporting information (potholes, wires, graffiti) via a hotline and/or mobile application to a municipality or government entity.	**PARTIAL** Citizen Request Management is an 24/7 automated tool that specializes in the public reporting information for governments and municipalities. Includes sending information/push notifications to public	**PARTIAL** Service Response Management Civic Solution is a platform specializing in public reporting of information to a municipality or government entity.	**PARTIAL** System is a request service for increasing citizen engagement, not limited to spill response.
	System emphasizes receiving or collecting data from the public	**HIGH**	**YES**	**YES**	**YES**	**YES**
	A majority of packaged system features are user-friendly for spill reporting	**HIGH**	**YES**	**YES**	**YES**	**YES**
	System performs spill reporting functions without excessive customization	**HIGH**	**YES**	**YES**	**YES**	**YES**
	For pre-packaged build, under-utilized or irrelevant system capabilities can be excluded	**HIGH**	**YES**	**YES**	**YES**	**YES**
Receiving Spill Reports	Spill reports can be submitted by the public via phone hotline, answered by a real person	**HIGH**	**PARTIAL** Rock Solid can integrate a centralized phone hub system (CRM- Customer Relationships Manager). Call center staff are trained with scripted questions, record information electronically, then route the calls to specified entities.	**PARTIAL** Provides structure for existing call centers. No contract out services, but it is possible to arrange if needed (customize package).	**PARTIAL** Provides services to organize call-center staffing and data collection training to route/track reporting. Does not provide a call center, but can integrate it into the system for an existing call-center.	**PARTIAL** Hotline is not included in the SeeClickFix product line, but partnership with call center is possible. **Implementation Example:** Kitsap County requested that call center enter reports directly into SeeClickFix interface. Mobile application prompts users to call 911 with emergency reports after-hours.
	Spill reports can be submitted by the public via mobile application (download required)	**HIGH**	**YES** Mobile application name is OneLink.	**YES**	**YES** Requires Spill Reporter to create a unique log-in.	**YES**
	Spill reports can be submitted by the public via web data entry form (no download required)	**HIGH**	**YES** Web interface (IFrame) mimics the mobile application interface without mobile application download. Link to existing website or social media site.	**YES** Spill reports can be captured by website, phone, voicemail, or e-mail and integrated into the centralized data center.	**YES** Web interface (IFrame) does not require mobile application download. Link to existing website or social media site.	**YES** Same system for mobile application and web form, consistent data entry across platforms.
	Spill reports can be submitted by the public via e-mail	**LOW**	**YES** Available as a pre-built package option, but not available for all system packages.	**YES**	**YES** E-mails can added as a workflow "ticketing" system to then be added manually to the system.	**NO**
	Spill reports can be submitted by the public 24/7	**HIGH**	**PARTIAL** Electronic reports can be submitted 24/7 but response is dependent on local staffing arrangements. System can integrate with existing call centers to provide support after-hours.	**PARTIAL** Electronic reports can be submitted 24/7 but response is dependent on local staffing arrangements. System can integrate with existing call centers to provide support after-hours.	**PARTIAL** Electronic reports can be submitted 24/7 but response is dependent on local staffing arrangements. System can integrate with existing call centers to provide support after-hours.	**PARTIAL** Electronic reports can be submitted 24/7 but response is dependent on local staffing arrangements. System can integrate with existing call centers to provide support after-hours.
	Customizable back-end interface for the Spill Responding Agency to configure question types that appear to the public (i.e., dropdown menus, multiple choice, open text field)	**HIGH**	**YES** Customizable mobile layout.	**YES** Conditional dropdown menus are also possible to generate prompts based on selected answers.	**YES** Client can set up custom configurations for categories and request types.	**YES** Customization functionality is available through back-end user interface, or implementation support services are available from the vendor.
Routing and Responding to Spill Reports	Internal routing of spill alerts to Spill Response Staff can be automated based on spill data (geographic area, spill category, etc.)	**HIGH**	**YES** Spill routing can be customized based on mobile application spill response entries. Auto-routing can be customized based on routing at call center data or GIS designated location.	**YES** Client can create rules and service triggers for different Spill Response Agency groups for both website and mobile application portals to automatically track specific requests (time logs).	**YES** Auto-transfer to specified Spill Responding Staff and automated reporting and completion records. Includes an audit trail of the request so data is maintained.	**YES** Can notify specified Spill Response Staff based on location (e.g., cities within a County, DOT, etc.). Create Spill Alerts based on Spill Response Staff groups. For example, geographical location reports may go to a specific group. Spill reports can be routed to a call center for emergency backup. Non-emergency reports or complaints may be sent elsewhere.
	Internal routing of spill alerts to Spill Response Staff can occur via multiple formats (e-mail, text, mobile application notification)	**HIGH**	**YES** OneLink can integrate with existing systems to build custom automated workflows via multiple formats (e-mail, text, etc.)	**YES** Different website and mobile application portals can be configured for different Spill Response Agency groups. Create rules and service triggers (e-mail, text, mobile application notification) based on Spill Report data.	**YES** Accela platform workflow is able to specify groups within Spill Response Staff. Able to do variation of formats. Each Spill Response Staff user can set up preferred notification types.	**YES** Spill Response Staff can receive notifications via multiple formats, including mobile application notifications.
	Allows 2-way communication for Spill Response Staff to contact the Spill Reporter for additional information or spill report close-out	**HIGH**	**YES** Customize mobile application to collect Spill Reporter's contact information, or set up call-script to record contact information after receiving a call.	**YES** Customize mobile application to collect Spill Responder contact information, or set up Spill Alerts.	**YES** Due to the existing log-in requirement system, it is possible to follow up with an Spill Reporter.	**YES** Reponses and close-out notifications can be sent to the Spill Reporter for follow-up (may require staff training to ensure public-facing communication is appropriate).
Data Storage and Analytics	Option to integrate with an asset management system	**HIGH**	**YES** Existing asset management integrations include CityWorks, Central Square, Maintenance Connection, CarteGraph.	**PARTIAL** GovQA has its own asset management system but is customizable to integrate with a different asset management system if needed.	**PARTIAL** Accela has its own asset management system but is customizable to integrate with a different asset management system.	**YES** Software is designed to integrate with asset management, work or task management, CRM, or ERP systems (CarteGraph, Cityworks, Lucity, VUEWorks, etc.).
	Option to integrate with Geographic Information Systems (GIS) software	**MODERATE**	**YES**	**YES**	**YES**	**YES**
	Data is stored in the cloud (but managed by the client)	**Client Preference**	**NO**	**NO**	**NO**	**NO** Data is managed by third-party vendor.
	Data is stored in the cloud (but managed by a third party)	**Client Preference**	**YES**	**YES**	**YES** Hosted on Azure Microsoft.	**YES**
	Data is stored on premise	**Client Preference**	**YES** Customizable set up based on client preference.	**YES** Option to store all or some data locally. API library access capabilities. Manual data export data (retention policy/public record purposes).	**YES** Can store some data locally.	**NO** Data is stored in the cloud, not on local servers.
	Tracks spill analytics for future analysis	**MODERATE**	**YES** Dashboard graphics for spill report tracking (location, date, time) available.	**YES** Automated track-log for received spill report information (time, date, location).	**YES** Ability to track cases and manage queues including tagged information for the request (audit information).	**YES** This includes types of spills, location, whether it flowed into storm drain, etc. Additional analytic features (cost of spill response, response time) are available through integration with asset management software. See "Custom Reports." **Implementation Example:** Kitsap County is now using these analytics for CIP planning.
	The Spill Responding Agency can query to generate custom summary reports for internal use or external sharing	**MODERATE**	**YES** Additional back-end dashboard feature available to create customized reports, dashboard, graphics (pie charts, etc.). data	**YES** Additional back-end dashboard feature available to create customized reports, dashboard, graphics (pie charts, etc.). data	**YES** Additional back-end dashboard feature available to create customized reports, dashboard, graphics (pie charts, etc.). data	**YES** Additional back-end dashboard feature available to create customized reports, dashboard, graphics (pie charts, etc.). data
	Allows for the spill reporter to submit geotagged images	**MODERATE**	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.
	Automated latitude and longitude tracking of spill locations	**HIGH**	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.
Cost and Effort of Implementation and Maintenance	Pre-built application (configured by the client)	**Client Preference**	**PARTIAL** OneLink (mobile application) front end interface can make broad set of changes but specific configurations requires Rock Solid Customer Success Team. ONEVIEW (client backend product) similarly allows broad changes, but specific changes configurations requires Rock Solid Customer Success Team.	**PARTIAL** Admin and Power users (Spill Responding Agency) can make broad set of changes but specific configurations require IT assistance from Gov QA.	**PARTIAL** Aspects of SRM are customizable by the client, but specific configurations require IT assistance from Accela.	**PARTIAL** Can be configured by client or vendor service. May also require mobile device management system to ensure updates are pushed to all devices.
	Pre-built application (configured by a third party)	**Client Preference**	**YES** Ability to modify pre-built application and make customizations if needed. Customer Success Team is available to support customization.	**YES** Ability to modify pre-built application and make customizations if needed, including workflows.	**YES** Ability to modify pre-built application and make customizations if needed.	**YES** Ability to modify pre-built application and make customizations if needed.
	System updates managed by the client	**Client Preference**	**NO** Third-party vendor manages data storage and system updates.	**NO** Third-party vendor manages data storage and system updates.	**NO** Third-party vendor manages data storage and system updates.	**NO** Third-party vendor manages data storage and system updates.
	System updates managed by a third party	**Client Preference**	**YES** Releases and new features are updated by the RockSolid Customer Success Team.	**YES** Quarterly releases of new features updated by GovQA IT-Help Desk.	**YES** Releases and new features updated by the Accela IT team.	**YES**
Public Education and Awareness	Built-in advertising or proactive communication features	**MODERATE**	**YES** Ability to integrate brands and logos. IFrame provides link to existing municipality social media and web presence infrastructure.	**YES** Customizable portals to emulate existing client brand design and logos. IFrame to link existing municipality social media and web presence infrastructure.	**PARTIAL** Branding and design can be incorporated into SRM internal and external systems.	**PARTIAL** Branding and design can be incorporated. Option for push notifications for community-wide updates to mobile application users.

Table A-2. Detailed Options Matrix for the Regional Spill Hotline Feasibility Study.

OPTIONS			ASSET MANAGEMENT		PHONE SYSTEMS	
CATEGORY	**FEATURES**	**FEATURE PRIORITY**	**VUEWorks CitizenVUE**	**Asset Essentials from Dude Solutions (Mobile311 legacy product)**	**Google Number (G-Suite)**	**AnswerNet toll-free number (1-800 or 1-888)**
General/Core Criteria	System is specific to spill response	**LOW**	**NO** Asset management software with community engagement platform open for maintenance/service requests.	**NO** Products emphasize maintenance management systems.	**NO** Communications solution for business or personal use, can be used for any purpose.	**NO** Call and answer service for toll-free numbers, can be used for any purpose.
	System emphasizes receiving or collecting data from the public	**HIGH**	**YES**	**NO** Mobile311 was used for this purpose but is now a legacy product. Asset Essentials emphasizes collecting data from Spill Agency Staff (not from a public Spill Reporter)	**PARTIAL** G-Suite provides communication solutions for business, internal or customer-facing.	**YES** Used for hosting hotlines.
	A majority of packaged system features are user-friendly for spill reporting	**HIGH**	**YES**	**NO** Heavy customization needed to reconfigure crime reporting as spill reporting.	**PARTIAL** Communication elements of package are user-friendly but lack spill reporting features.	**PARTIAL** Only mode of reporting is via phone.
	System performs spill reporting functions without excessive customization	**HIGH**	**NO** System requires custom configuration with asset management software.	**NO**	**NO** Customization would be needed to provide database structure.	**NO** Customization would be needed to provide database structure.
	For pre-packaged build, under-utilized or irrelevant system capabilities can be excluded	**HIGH**	**NO** Asset management functionality cannot be excluded. Service request application does not stand alone.	**NO**	**NO** G-Suite includes messaging, video chatting, and other general communication services that would be redundant with local systems.	**N/A** This is a service rather than a build. Possible add-on to another system.
Receiving Spill Reports	Spill reports can be submitted by the public via phone hotline, answered by a real person	**HIGH**	**PARTIAL** Call data is stored with AnswerNet. If paired with a system for data entry, storage will depend on that system.	**PARTIAL** Option to customize public calls by area calling (e.g., "Press 2 for [City]"), but requires caller input (not automatic).	**YES** Google Voice provides a central phone number. Configuration is flexible.	**YES** AnswerNet provides a call center and live answering service. Numbers can also be enabled for texting.
	Spill reports can be submitted by the public via mobile application (download required)	**HIGH**	**YES** Mobile application is primary mode for submitting reports.	**PARTIAL** Mobile application intended for Spill Response Agency staff to collect data. Can set up a community-log that enables Spill Report Submission.	**NO**	**NO**
	Spill reports can be submitted by the public via web data entry form (no download required)	**HIGH**	**YES** There is a service request portal that can be accessed via browser.	**PARTIAL** SmartGov Community Development Software (separate product) provides single web-based system. community portal (log in required) that enables Spill Report submission.	**YES** G-Suite has a web forms feature that can be customized.	**NO**
	Spill reports can be submitted by the public via e-mail	**LOW**	**NO**	**NO** Mobile application is primary system.	**YES** Custom business e-mail is provided with G-Suite.	**NO**
	Spill reports can be submitted by the public 24/7	**HIGH**	**PARTIAL** An "after-hours" request could be configured as a category with a unique workflow and assigned to the on-call team. There is no built-in functionality for forwarding to emergency call center(s).	**YES** Through mobile application and SmartGov Community Development Software but requires log-in.	**PARTIAL** Calls can be made 24/7. Response would depend on availability of the Spill Response Staff.	**YES** Agents are available 24/7. Two agents are on staff at night at nearest call center in Oregon.
	Customizable back-end interface for the Spill Responding Agency to configure question types that appear to the public (i.e., dropdown menus, multiple choice, open text field)	**HIGH**	**PARTIAL** Spill Responding Agency selects categories and types of service requests visible to the public, but otherwise the mobile application interface is pre-constructed.	**YES** "Submitting a Work Request" allows descriptions, photos, type, etc.	**YES** G-Suite has a web form feature that can be customized.	**NO** There is no mobile application functionality associated with this service. However, workflows can be implemented for call center agents to enter data into the client's web form.
Routing and Responding to Spill Reports	Internal routing of spill alerts to Spill Response Staff can be automated based on spill data (geographic area, spill category, etc.)	**HIGH**	**YES** Client can configure routing of spill alerts to particular Spill Response Staff based on the issue category selected. Geography can be configured for routing to the correct jurisdiction.	**YES** Automated routing for specific spill data.	**NO** Geographic routing for public calls could be achieved by area calling (e.g. "Press 2 for [City]"), but requires caller input (not automatic).	**NO** Workflows can be established to route calls but these are carried out by agents at the call center, not automated.
	Internal routing of spill alerts to Spill Response Staff can occur via multiple formats (e-mail, text, mobile application notification)	**HIGH**	**PARTIAL** Custom staff assignments can be configured through the VUEWorks work order system; there are multiple digital options for receiving notifications (email, text, dashboard).	**YES** Specific Spill Response Staff can have customized notification systems.	**YES** There are options to customize notifications incoming calls.	**YES** Contact protocols can be established to route calls or collected data via e-mail, text, or other method.
	Allows 2-way communication for Spill Response Staff to contact the Spill Reporter for additional information or spill report close-out	**HIGH**	**YES** If the Spill Reporter provides contact information, they will be notified via email when the work order is resolved.	**PARITAL** Can customize in the report application or web portal to prompt user to list contact information for 2-way communication.	**NO** Contact information could be collected for follow-up, but no automated features for incident close-out.	**NO** Contact information could be collected for follow-up, but no automated features for incident close-out.
Data Storage and Analytics	Option to integrate with an asset management system	**HIGH**	**YES** CitizenVUE is a component of VUEWorks asset management software. Note: CitizenVUE cannot be integrated with other asset management software options.	**YES**	**NO**	**NO**
	Option to integrate with Geographic Information Systems (GIS) software	**MODERATE**	**YES**	**YES** ESRI-integrated map, need more information if this is one way or two way	**NO**	**NO**
	Data is stored in the cloud (but managed by the client)	**Client Preference**	**NO** Data is hosted by VUEWorks or stored on premise by client.	**NO**	**NO**	**PARTIAL** Call data is stored with AnswerNet. If paired with a system for data entry, storage will depend on that system.
	Data is stored in the cloud (but managed by a third party)	**Client Preference**	**YES** Based on client preference. Data can be hosted by VUEWorks.	**YES** Stored in the cloud indefinitely (no data limit).	**YES** Managed by Google.	**PARTIAL** Call data is stored with AnswerNet. If paired with a system for data entry, storage will depend on that system.
	Data is stored on premise	**Client Preference**	**YES** Based on client preference. Data can be stored on site.	**YES** Can be stored locally.	**NO**	**NO**
	Tracks spill analytics for future analysis	**MODERATE**	**YES** Asset management integration facilitates tracking of spill data (cost, labor, materials) through work order system.	**YES**	**PARTIAL** Can analyze Spill Report responses with automatic summaries.	**NO** See narrative regarding workflow customization.
	The Spill Responding Agency can query to generate custom summary reports for internal use or external sharing	**MODERATE**	**YES** VUEWorks has a robust reporting engine that can export multiple file types (PDF, CSV, RTF, etc.). Some expertise may be required to build the report format, but anyone can run a configured report for target data or date ranges.	**YES** Additional simple feature "Insight Dashboard" that allows different data sets comparisons.	**YES** Additional feature "Spill Reports" with automatic summaries available.	**NO** See narrative regarding workflow customization.
	Allows for the spill reporter to submit geotagged images	**MODERATE**	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**NO**	**NO** See narrative regarding workflow customization.
	Automated latitude and longitude tracking of spill locations	**HIGH**	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**NO**	**NO** See narrative regarding workflow customization.
Cost and Effort of Implementation and Maintenance	Pre-built application (configured by the client)	**Client Preference**	**PARTIAL** CitizenVUE is pre-constructed but the client can designate public-facing issue categories. In a regional scenario, these would be shared by all municipalities involved.	**PARTIAL** Has open APIs that are customizable by client.	**PARTIAL** Google provides features that client can customize (such as web forms intended for surveys).	**NO** This is a service, not a mobile application.
	Pre-built application (configured by a third party)	**Client Preference**	**YES** Configured by VUEWorks with client input.	**YES** Dude Solutions can create specific configurations and customizations.	**NO** Google provides tools, but any mobile applications or forms would be configured by the client.	**NO** This is a service, not a mobile application.
	System updates managed by the client	**Client Preference**	**YES** Based on client preference. Clients that store data on premise are provided with files to manage their own updates.	**NO** Third-party vendor manages data storage and system updates.	**NO** Third-party vendor manages data storage and system updates.	**NO** Third-party vendor manages data storage and system updates.
	System updates managed by a third party	**Client Preference**	**YES** Based on client preference. VUEWorks manages updates for clients that store data with VUEWorks.	**YES** IT service that can manage updates.	**YES** Google Voice IT service that can manage updates.	**YES**
Public Education and Awareness	Built-in advertising or proactive communication features	**MODERATE**	**PARTIAL** Mobile application can be branded with local images/logos.	**PARTIAL** Limited to name and logo use.	**NO** Google banners and online advertising options are available, but not part of G-Suite package.	**NO** Answering service protocol could provide information to the Spill Reporter to encourage future reporting.

Table A-2. Detailed Options Matrix for the Regional Spill Hotline Feasibility Study.

OPTIONS			EMERGENCY MANAGEMENT SYSTEMS		OTHER SYSTEMS		
CATEGORY	**FEATURES**	**FEATURE PRIORITY**	**WebEOC**	**Everbridge**	**ERTS**	**NICE Investigate Mobile**	**Custom Build Option**
General/Core Criteria	System is specific to spill response	**LOW**	**PARTIAL** WebEOC is designed for disaster incident notification and data compiling system.	**PARTIAL** Disaster incident notification and data compiling system. System emphasizes pushes notification features to communicate to public. Customizable "unsolicited" workflow to receive spill reports on the mobile application.	**PARTIAL** ERTS is for reporting environmental incidents, including categories beyond spills. Ecology has a SPIIS system that is specific to spills, which auto-generates an ERTS report that includes a link back to the original SPIIS entry.	**NO** Mobile application used to build case files and engage community in public safety. Typically used by police, DAs, and 911 call centers.	Custom System
	System emphasizes receiving or collecting data from the public	**HIGH**	**NO** System emphasizes sending information to the public.	**NO** System emphasizes sending information to the public.	**PARTIAL** Intended to refer spill or incident reports to relevant internal or external entities.	**YES** Intended to collect evidence from the public.	Custom System
	A majority of packaged system features are user-friendly for spill reporting	**HIGH**	**NO**	**NO**	**PARTIAL** Configured specifically for reporting but lacks desirable built-in features.	**NO** Designed for easy transfer of information, but limited by "case" structure.	Custom System
	System performs spill reporting functions without excessive customization	**HIGH**	**NO** Heavy customization would be required.	**NO** Heavy customization would be required.	**YES** System is already designed for reporting of spills and other environmental incidents.	**NO** Heavy customization needed to reconfigure crime reporting as spill reporting.	Custom System
	For pre-packaged build, under-utilized or irrelevant system capabilities can be excluded	**HIGH**	**NO**	**NO**	**YES** Custom build by Ecology.	**NO** Several features would be under-utilized.	Custom System
Receiving Spill Reports	Spill reports can be submitted by the public via phone hotline, answered by a real person	**HIGH**	**PARTIAL** Does not provide a call center, but can customize phone numbers to be added on mobile application when submitting a report for public to call.	**PARTIAL** Call center is not provided, but option to customize One Mobile App for public calls could be achieved by area calling (e.g., "Press 2 for [City]"), but requires caller input (not automatic).	**YES** Numbers are posted for each Ecology regional office. Incident Reports are then manually entered into ERTS by an ERTS Coordinator.	**PARTIAL** Mobile application is designed to integrate with existing call center but does not provide calling functionality.	Custom System
	Spill reports can be submitted by the public via mobile application (download required)	**HIGH**	**YES** Can customize "solutions" to add dropdown menus, geotag photos, etc.	**YES** "One Mobile App" for Spill Reports to customize report dropdown menu options, geolocations, pictures, and videos.	**NO**	**NO** Mobile application is for Spill Response Agency use. If Spill Reporter provides e-mail or phone number, a request to upload information can be sent directly to their phone.	Custom System
	Spill reports can be submitted by the public via web data entry form (no download required)	**HIGH**	**YES** Web portal available.	**NO** One Mobile App is the primary way in which Spill Reporters would submit an Spill Report.	**YES** There is an online state-wide web form available for reporting. However, reports must then be manually entered into ERTS by an ERTS Coordinator.	**YES** A secure link can be posted or sent directly to the Spill Reporter to request information.	Custom System
	Spill reports can be submitted by the public via e-mail	**LOW**	**NO** Mobile application is primary system.	**NO** One Mobile App is primary system.	**YES** There is a dedicated email address for each regional office. Reports are then manually entered into ERTS by an ERTS Coordinator.	**PARTIAL** Mobile application can be used to text or e-mail a secure link to public to prompt upload of photos, etc.	Custom System
	Spill reports can be submitted by the public 24/7	**HIGH**	**PARTIAL**. Customizable (not a default) option to route to specific centers after hours. Not an existing feature.	**YES** Mobile application is accessible 24/7.	**PARTIAL** Ecology contracts with the Washington Emergency Management Division for after-hours call referral. Phone system notifications are 24/7. Calls are also overseen by the on-call spill responder staff, who enters reports into SPIIS. SPIIS reports are then imported to ERTS, but not referred to internal/eternal entities until the following business day.	**PARTIAL** Spill Reporter can report 24/7 via existing emergency call center. Evidence can also be submitted at any time.	Custom System
	Customizable back-end interface for the Spill Responding Agency to configure question types that appear to the public (i.e., dropdown menus, multiple choice, open text field)	**HIGH**	**YES** "Solutions" feature allows dropdown menus, geotagged photos, etc.	**YES**	**PARTIAL** ERTS is a state-wide system; local customization is not available. The ERTS web-form has a variety of question types including dropdown menus for Activity, Cause category, Medium category, Source category, Substance category, etc. Ecology has the capability to modify their input form, but not easily.	**NO** Mobile application is constructed in "case" format that is shared across police precincts, so customization (beyond re-naming) is limited.	Custom System
Routing and Responding to Spill Reports	Internal routing of spill alerts to Spill Response Staff can be automated based on spill data (geographic area, spill category, etc.)	**HIGH**	**YES** Ability to "limit" specific classifications or geolocations, reports auto-routed to specific groups without a limit.	**NO** Geographic routing for public calls could be achieved by area calling (e.g., "Press 2 for [City]"), but requires caller input (not automatic).	**NO** User must select county to determine which regional office receives the report, but notification is not automated based on a map interface or geolocation service. The web form has dropdown menus for spill categories, but is submitted to ERTS Coordinator at the regional office, who then decides what subsequent notifications are needed based on spill information. This process is not automated.	**YES** Based on custom workflows configured in the software.	Custom System
	Internal routing of spill alerts to Spill Response Staff can occur via multiple formats (e-mail, text, mobile application notification)	**HIGH**	**YES** All formats.	**YES** "One Mobile App" for Spill Reporters and Spill Response Staff to receive specified alerts via text, notification, e-mail etc.	**YES** Spill Response Staff receive notifications via mobile phones, pagers, etc.	**YES** Based on custom workflows configured in the software.	Custom System
	Allows 2-way communication for Spill Response Staff to contact the Spill Reporter for additional information or spill report close-out	**HIGH**	**PARITAL** Can customize in the report mobile application or web portal to prompt user to list contact information for 2-way communication.	**NO** It is not possible to follow up with the Spill Reporter.	**NO** The current system does not allow Incident Reports to be "re-sent" through auto-notification system. Updates are sent manually (outside ERTS database) via email to all notified agencies. There is no follow-up with the Incident Reporter; Incident Reporter does not see response time because it is not shown in the printed ERTS report.	**YES** Workflow can be configured to notify the Spill Reporter when a "case" is closed. Can also configure to set follow-up for later dates if needed.	Custom System
Data Storage and Analytics	Option to integrate with an asset management system	**HIGH**	**NO**	**PARTIAL** Can support tracking labor and time spent responding to spills.	**NO** Ecology's database is not tied to any asset management system (there is no state-wide asset management system).	**NO**	Custom System
	Option to integrate with Geographic Information Systems (GIS) software	**MODERATE**	**YES** ESRI integration.	**PARTIAL** Can upload and manage geocoded addresses and custom maps	**NO**	**YES**	Custom System
	Data is stored in the cloud (but managed by the client)	**Client Preference**	**NO**	**NO**	**NO**	**NO**	Custom System
	Data is stored in the cloud (but managed by a third party)	**Client Preference**	**YES**	**YES** 18-month data cycle.	**NO**	**YES**	Custom System
	Data is stored on premise	**Client Preference**	**YES** Can be stored locally.	**YES** Can be stored locally.	**YES**	**NO**	Custom System
	Tracks spill analytics for future analysis	**MODERATE**	**YES** "BoardSet" to track analytics, create graphics and layers.	**PARTIAL** Emphasis on analytics and reporting capabilities for push notifications through "Quick Reports" on the fly, summary of notification analysis, offline pivot tables/cross referencing. Data for reports can be downloaded and queried.	**NO**	**YES** Analytical capabilities are intended to analyze years of trends in case data.	Custom System
	The Spill Responding Agency can query to generate custom summary reports for internal use or external sharing	**MODERATE**	**YES** Additional feature "BoardSet" can download data to create custom reports. Can also request for customized report features at additional cost.	**YES**	**NO** Queries are limited. There is a pre-built auto-generated report; recipients have indicated the report format is not easy to read. .ZIP attachments are blocked by many agencies.	**YES**	Custom System
	Allows for the spill reporter to submit geotagged images	**MODERATE**	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**NO**	**YES** Device location must be enabled on mobile device.	Custom System
	Automated latitude and longitude tracking of spill locations	**HIGH**	**YES** Device location must be enabled on mobile device.	**YES** Device location must be enabled on mobile device.	**NO**	**YES** Device location must be enabled on mobile device.	Custom System
Cost and Effort of Implementation and Maintenance	Pre-built application (configured by the client)	**Client Preference**	**PARTIAL** The client can customize ESRI product maps including uploading interactive maps to web application.	**YES** Can be configured and modified	**NO** Custom-build.	**PARTIAL** The system is pre-built for case file structure. Certain elements can be customized based on client preferences.	Custom System
	Pre-built application (configured by a third party)	**Client Preference**	**YES** WebEOC can configure customizable features but each would have associated costs	**YES** Can be configured by EverBridge to set up customized report dropdown menus etc.	**NO** Custom-build.	**YES** The system is pre-built for case file structure. Certain elements can be customized based on client preferences.	Custom System
	System updates managed by the client	**Client Preference**	**NO** Third-party vendor manages data storage and system updates.	**PARTIAL** Download data every 18 months and store locally for long-term data analysis and storage.	**YES**	**NO**	Custom System
	System updates managed by a third party	**Client Preference**	**YES** WebEOC IT service that can manage updates.	**YES** EverBridge IT service that can manage updates.	**NO**	**YES** NICE IT service that can manage updates.	Custom System
Public Education and Awareness	Built-in advertising or proactive communication features	**MODERATE**	**PARTIAL** Has customizable option for brand and logos.	**YES** Can send push notifications to multiple social media sources at once and link alerts to specific social media posts.	**NO** Ecology advertises through their website, business cards, and calls routed through reception. ERTS does not have advertising function.	**NO** System can put out a public appeal for information, but not intended for advertising purposes.	Custom System

APPENDIX B

Additional Evaluated Systems

Table B-1. Additional Evaluated Systems.	
System, Vendor, or Product	**Description/Notes**
Calabrio: Workforce Optimization (WFO) Suite	**Calabrio** is a contact center workforce optimization suite (cloud based, on premise, or hybrid) that is typically used in the customer service realm. Incoming calls can be recorded and analyzed for key phrases or vocal tags that can be used for improved workflow and routing automation, quality assurance, and evaluating performance of call agents. This system includes software only; call center agents are not provided by **Calabrio**. It is anticipated that the advanced voice analytics included in this software package would be underutilized, while other preferred features for spill reporting are not present. For these reasons, this system will not be evaluated further.
1-800-OILS-911	This system was replaced with the phone system **AnswerNet**, a call and answer service that provides toll-free numbers (see **AnswerNet**).
EverBridge	**Everbridge** is a prebuilt application that specializes in critical event management for preparing and responding to emergencies, including mass notification and support to avoid business disruptions. The primary system for citizen and employee access is the One Mobile App. Rather than collecting information from the public, the **Everbridge** system features emphasizes notification to the public. The system also has advanced protocols for widespread disaster scenarios that would be underutilized and were not user friendly to spill response reporting. For these reasons, this system was not evaluated further.
WebEOC	**WebEOC** is Emergency Management Software powered by Juvare Exchange to respond and prepare for emergencies using emergency management software. Is a prebuilt application with add-on customization options. Rather than collecting information from the public, **WebEOC** is designed for mass notification to send information to the public. The system also has advanced protocols for widespread disaster scenarios that would be underutilized and were not user friendly to spill response reporting. For these reasons, this system was not evaluated further.
Google Number (G-Suite)	G-Suite by Google provides general communication solutions for personal or business use, including calls, email, web forms, etc. This system is not designed for spill response but could be customized to provide a single public-facing phone number across multiple jurisdictions (shared licensing cost). A **Google Number** was successfully used in New Haven County (see Interview Summary Report) to temporarily host a public spill hotline, where calls were fielded and manually routed by a consultant. G-Suite does provide a web application for survey format data collection, but there is no prebuilt interface available for public spill reporting. This system is highly customizable to meet the client's needs, but lacks prebuilt functionality to support key features of interest for a spill hotline. For example, routing is not available based on location; and the system cannot integrate with GIS or asset management software. The system has limited routing functionality, for example, for calling (e.g., "Press 2 for [City]") is available but not automated and relies on caller input. For these reasons, this system was not evaluated further.

Table B-1 (continued). Additional Evaluated Systems.	
System, Vendor, or Product	**Description/Notes**
NICE Investigate Mobile	**NICE** Investigate Mobile is a mobile application for collecting and managing digital evidence, commonly used by police and DAs in partnership with 911 call centers. Recorded 911, 999, or 311-related incident calls can be merged and auto routed to a specific case folder. A case folder houses all associated case information, including evidence submitted by the community through the mobile application or web portal (witnesses can be provided with a secure link to submit photos and other information via the portal). Investigators in the field have access to all information associated with the case and can playback 911 calls if needed. Unique features of **NICE** include a folder format that is searchable using OCR (Optical Character Recognition), easy sharing of case files with other entities (fire department, regulation agencies) and public appeal capabilities. However, **NICE** did not meet several general/core criteria of the evaluation. Though the vendor stated the mobile application can be rebranded, the customization needed to focus on spill response would be excessive and not user friendly for spill reporting. Additionally, specialized system features for **NICE** would be underutilized. The **NICE** mobile application is for internal use only and not intended to collect data from the public. The public can submit via a posted website link or text/email prompt after their contact information is collected by the call center. The need for a second round of communication may reduce likelihood that citizens will submit additional information. For these reasons, **NICE** was excluded from the condensed matrix (Table A-1 in Appendix A).
CitizenVUE by VUEWorks	**CitizenVUE** is a public-facing mobile application built by VUEWorks to engage communities service requests or reporting issues (not specific to spills). The mobile application is not intended for standalone use; submissions are fed into the primary VUEWorks asset management software. Requests are integrated into the work order module with custom configurations for staff assignments and workflows. The system structure tracks time and costs associated with a report submission, including personnel, crews, contractors, equipment, etc. The VUEWorks system is heavily integrated with GIS and can route requests by geographic boundaries. Washington already has an active regional implementation example. The Washington State County Road Administration Board (CRAB) uses VUEWorks/**CitizenVUE** across multiple (20 plus) counties to address road maintenance requests. The participating counties also have their own separate asset management systems, but the regional system is managed by a central entity. Many municipalities have local asset management systems, each with different vendors. **CitizenVUE** is only compatible with VUEWorks, making it a difficult transition for multi-jurisdictional use. Merging the individual municipalities to manage functional and detailed work orders for service requests into a regional system using **CitizenVUE** is anticipated to be difficult and not cost effective. The system features excessive functionality for spill response (which is not tied to a specific asset). If merged into the regional system, VUEWorks features would likely be underutilized. For these reasons, **CitizenVUE** was excluded from the condensed matrix.

Table B-1 (continued). Additional Evaluated Systems.

System, Vendor, or Product	Description/Notes
Asset Essentials (previously Mobile311) from Dude Solutions	Dude Solutions Mobile311 was originally selected for its promising features that aligned with the Options Matrix. However, Mobile311 is a maintained legacy product that is being replaced with **Asset Essentials**. Preliminary research indicated that **Asset Essentials** does not satisfy the General/Core Criteria that the system emphasizes receiving or collecting data from the public. Rather, **Asset Essentials** emphasizes tracking work orders and assets for the client. The software package would likely be underutilized, while other preferred features for spill reporting are not present. For these reasons, this system was excluded from the condensed matrix and will not be evaluated further.