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Lower Duwamish Waterway Group

Port of Seattle / City of Seattle / King County / The Boeing Company

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:

PRE-DESIGN SURVEYS OF THE LOWER DUWAMISH WATERWAY UPPER REACH

FINAL

Prepared for:

The U.S. Environmental Protection Agency

Region 10

Seattle, WA

June 2021

Prepared by:



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in association
with



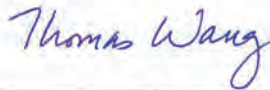
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TITLE AND APPROVAL PAGE

QUALITY ASSURANCE PROJECT PLAN ADDENDUM: PRE-DESIGN SURVEYS OF THE LOWER DUWAMISH WATERWAY UPPER REACH

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EPA Project Manager

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Ellen Hale

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6/28/2021

Date

True North Land Surveying, Inc.,
Project Manager



Name

June 25, 2021

Date

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APPENDICES

Appendix A Updated Health and Safety Plan

ABBREVIATIONS

DER	Data Evaluation Report
DGPS	differential global positioning system
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
GPS	global positioning system
HASP	Health and Safety Plan
LDW	Lower Duwamish Waterway
LiDAR	light detection and ranging
LDWG	Lower Duwamish Waterway Group
MHHW	mean higher high water
MLLW	mean lower low water
NAD	North American Datum
PDI	Pre-Design Investigation
QAPP	quality assurance project plan
QC	quality control
RD	Remedial Design
RAL	Remedial Action Level
ROD	Record of Decision
RM	river mile
RTK	real-time kinematic
True North	True North Land Surveying, Inc.

1 Introduction

This quality assurance project plan (QAPP) addendum describes the methods and quality control (QC) for conducting a topographic survey for selected bank areas of the Lower Duwamish Waterway (LDW) upper reach, between river miles 3.0 and 5.0, consistent with the LDW Fourth Amendment of the Administrative Order on Consent (EPA 2018). The proposed topographic survey will augment data collected from the bathymetric surveying conducted in 2019 and 2020. The data collected from the project-specific surveys will be combined and augmented with publicly available survey data to support the remedy design in the upper reach of LDW.

This Survey QAPP addendum supplements the *Quality Assurance Project Plan: Pre-Design Surveys of the Lower Duwamish Waterway Upper Reach* (Anchor QEA and Windward 2019), which focused on bathymetric surveying methods and associated QC. This addendum is a standalone document that addresses topographic surveying (or land surveying) where needed to inform the Remedial Design (RD). Areas for topographic surveying were selected where Remedial Action Level (RAL) exceedance areas include banks up to the mean higher high water (MHHW). MHHW is equal to +11.3 feet mean lower low water (MLLW).

Prior surveys were unable to provide sufficient coverage for RD. The MHHW elevation represents the lateral boundaries of the LDW upper reach site per the U.S. Environmental Protection Agency's (EPA's) LDW Record of Decision (ROD 2014). Additional information to be collected includes elevations and limits of structures, woody vegetation, bank armoring, surface debris, visible utilities, or other bank features that may affect remedial construction.

EPA guidance for QAPPs was followed in the preparation of this addendum (EPA 2002). This addendum is organized into the following sections:

- Section 2 – Project Management and Data Quality Objectives
- Section 3 – Data Generation and Acquisition
- Section 4 – Assessment and Oversight
- Section 5 – Data Validation and Usability
- Section 6 – References

2 Project Management and Data Quality Objectives

2.1 Project Organization

The topographic survey will be conducted by True North Land Surveying, Inc. (True North), under the direction of Anchor QEA. Anchor QEA will be responsible for overall project coordination and for performing the administrative tasks needed to ensure timely and successful completion of the project. Anchor QEA will also be responsible for communicating with King County, the Lower Duwamish Waterway Group (LDWG), and EPA on schedule, any significant deviations from the QAPP, and administrative details. True North will be responsible for conducting the survey, conducting post-processing of the survey data, and for reporting deviations from the QAPP to the Anchor QEA project manager. Tom Wang will serve as the Anchor QEA project manager:

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2.2 Problem Definition and Background

The bathymetric survey of the upper reach was completed in 2020 (Anchor QEA and Windward 2021). The bathymetric survey was performed at high tide, to the extent practicable, to obtain the greatest coverage of the width of the river bottom. In locations where there are RAL exceedance areas that include banks of the waterway, topographic surveying will provide data that will be used to extend elevation contours up the banks to at

least the top of bank and to define the limits of features that may affect construction. The topographic data will be used to:

- Extend the current waterway bed elevation contours in Phase I PDI RAL exceedance areas to approximately 50 feet landward of the MHHW elevation, where needed to inform RD.
- Complete the development of an accurate base map, representative of current bathymetric and topographic conditions, which is needed to develop engineering drawings and quantity calculations.

2.3 Project Description

Land surveying will be performed on the ground in locations where the RAL exceedance areas include the banks of the waterway¹. These areas are shown in Figures 1 through 8. Elevation data will be obtained to extend contours from the limits obtained by the bathymetric survey to limits required for RD, which at a minimum requires elevation data to the top of the bank; this is typically higher than the MHHW elevation that defines the shoreline boundary of the LDW upper reach.

To obtain the needed survey coverage, the topographic survey will continue approximately 50 feet landward from the MHHW elevation assuming access is provided. The topographic survey will also extend approximately 50 feet upstream and downstream along the bank of the preliminary RAL exceedance area limits. An Anchor QEA engineer will accompany the surveyors to identify bank features of interest for surveying and address questions that may arise in the field. Additional bank features that will be surveyed (if applicable) to document horizontal position and extents include the following:

- Limits of structures
- Limits of bank armoring
- Limits of woody vegetation
- Observed utilities
- Presence of underwater cable crossing terminus points

¹ No topographic survey is needed for the banks within the King County habitat area under the western extent of the South Park Bridge (Area 7) or the three RAL exceedance areas within the Duwamish River People's Park and Shoreline Habitat project (Areas 20, 21, and 25) because these bank areas will not be disturbed as part of any remedial action. Topographic data exist within these areas from as-built drawings or 2016 King County LiDAR data and will be used, if needed, in the upper reach base map development.

- Limits of observed large debris
- Other features that may affect RD and construction of potential remedial actions

To assist the topographic surveyor in defining the limits of its survey coverage work, Anchor QEA obtained publicly available light detection and ranging (LiDAR) data from the 2016 King County survey² that provided elevation data above approximately +4 feet MLLW to better define the MHHW elevation line. The LiDAR data will be useful elevation information to supplement the topographic survey information if the topographic survey is unable to obtain full coverage in RAL exceedance area banks.

The topographic survey will be performed as soon as practical after receiving EPA approval of this QAPP Addendum and after receiving signed site access agreements with property owners. The survey timing will consider factors, such as daytime low tides, to meet the data quality objectives of the topographic survey. The schedule for completing the survey and preparing deliverables is presented in Section 3.2.3.

2.4 Data Quality Objectives and Criteria

The data collection and targeted methods selected for this survey will be implemented using state-of-the-art equipment and technology and will meet the data needs presented in Sections 2.2 and 2.3. The completeness of final data (i.e., areal coverage) will be evaluated in consultation with EPA to determine if there are data gaps requiring further topographic surveying to support RD.

The overall data quality objectives (DQOs) for the topographic surveying build upon the three survey DQOs previously established in the 2019 QAPP. DQOs 1 and 2 were specific to the bathymetric survey. DQO 3 also applies to the topographic survey, and DQO 4 is specific to the topographic survey. The topographic survey DQOs are the following:

1. Complete the base map for RD by providing topographic data of sufficient quality and sufficient areal extent to tie into the bathymetric three-dimensional surface created from prior surveys and extend the surface up the bank to support RD in areas where RAL exceedances indicate the need for remedial action on bank areas.
2. Define the extent of features (including structures, bank armoring, woody vegetation, utilities, and debris) that may have a bearing on RD and construction of potential remedial actions.

² http://pugetsoundlidar.ess.washington.edu/lidardata/restricted/projects/2016king_county.html

The DQOs were developed in conformance with the *Guidance for the Data Quality Objectives Process* (EPA 2000) and are outlined in Table 1.

Table 1
DQO Process for Topographic Survey

DQO Step	DQO No. 3 Complete the Base Map for Remedial Design	DQO No. 4 Obtain Locations of Features that May Affect Design
1. State the Problem	The current site base map contains only bathymetric survey data. In areas where Phase I PDI RAL exceedances indicate the potential need for remedial action on banks, additional survey data are needed to expand the areal extent of the base map for RD.	Physical features (such as structures, bank armoring, woody vegetation, utilities, and debris) above MLLW may affect RD. The extent of such features in areas where RAL exceedances occur is needed to inform RD.
2. Identify the Decision	Current topography between the bathymetry survey coverage and top of bank (above MHHW), mapped to a contour interval of 1.0 foot, will be used in the RD to define extents of remedial construction activities on applicable bank areas and calculate quantities	The location and extent of structures, bank armoring, woody vegetation, utilities, debris, and other features that may be present will be used to evaluate whether construction of the selected remedy will affect the stability of structures or require the removal of armoring or vegetation. If necessary, buffer zones may be established to protect structures or utilities.
3. Identify the Inputs to the Decision	Horizontal and vertical coordinate data are required to define ground surface contours and spatial limits of obstructions and other features that may affect remedial construction. The sources of the data are land surveying techniques and visual observation. Since the topographic survey will be combined with the existing three-dimensional model of the bathymetric surface, the survey methods and equipment will be selected to yield data comparable to those developed from the bathymetric survey.	
4. Define the Boundaries of the Study	The boundaries of the LDW site were defined by the Record of Decision and of the upper reach by the Fourth Amendment to the Administrative Order on Consent. The topographic survey coverage will include the bank areas of Phase I PDI RAL exceedance areas. Within each RAL exceedance area that has a bank ³ , the topographic survey coverage will extend 50 feet landward of the MHHW elevation line, and 50 feet upstream and downstream of the RAL exceedance areas limits.	

³ No topographic survey is needed for the banks within the King County habitat area under the western extent of the South Park Bridge (Area 7) or the three RAL exceedance areas within the Duwamish River People’s Park and Shoreline Habitat project (Areas 20, 21, and 25) because these bank areas will not be disturbed as part of any remedial action. Topographic data exist within these areas from as-built drawings or 2016 King County LiDAR data and will be used, if needed, in the upper reach base map development.

DQO Step	DQO No. 3 Complete the Base Map for Remedial Design	DQO No. 4 Obtain Locations of Features that May Affect Design
5. Develop a Decision Rule	Established techniques for collecting and processing topographic survey data, including QC and quality assurance, will be used to collect data. The techniques are described in Sections 3 through 5.	
6. Specify Tolerable Limits on Decision Errors	The probability of decision errors will be minimized through strategies to minimize statistical sampling errors and measurement errors. "Sampling errors," which in the context of a topographic survey are a failure to account for the variability of the topography, are addressed by the data density in the design of the survey. Several techniques are used to detect and correct for measurement errors. Survey design is described in Section 3.1, QC techniques are described in Section 3.4, and data validation is described in Section 5.	
7. Optimize the Design for Obtaining Data	The topographic survey methods, equipment, and spacing of survey lines were selected to provide data that meet the needs of the RD project. The details of the survey design are described in Section 3.1.	
8. Applicable Survey Method to Meet DQO	Topographic survey and potential use of LiDAR data to fill coverage gaps.	

Parameters used to assess data quality include precision, accuracy, representativeness, comparability, and completeness. These data quality parameters are discussed as follows:

Precision: Refers to how closely repeated measurements or observations come to duplicating measured or observed values. True North will constantly perform check shots throughout the topographic survey to confirm the initial baseline is maintained.

Accuracy: Based on the equipment used to perform the topographic survey. The horizontal and vertical accuracy of work performed with the total station and global positioning system (GPS) are identified in Table 2 (Section 5.2). The stated accuracies are all limited to certain variable conditions, such as solid surfaces to set up the total station or overhead blockages or multipath for GPS.

Representativeness: Horizontally, not more than 10% of the points tested shall be in error by more than 1/30 of an inch. Vertically, not more than 10% of the elevations tested shall be in error by more than one-half the contour interval.

Comparability: The topographic survey is designed to provide results as comparable as possible with the bathymetric survey. The two surveys will be performed using the same horizontal and vertical datums, and the topographic survey will be performed with a level of precision at least as fine as that of the bathymetric survey. Finally, the topographic survey will overlap with the bathymetric survey to the extent necessary (if possible) to provide a basis of comparison for fitting the two surveys together in the final design surface. The topographic survey will be performed at low tide to facilitate collecting the low elevation data.

Completeness: The objective of the topographic survey is to provide topographic data of the selected areas with sufficient coverage to support the RD without gaps. The survey has been designed with the following limits to accomplish this objective:

- The low elevation of the topographic survey is approximately +2 feet MLLW to overlap with data from the bathymetric survey along the complete shoreline if possible. The presence of bulkheads or other structures may obstruct access for land surveying. In such areas, the areal limits of bulkheads or other structures will be recorded.
- The survey will extend 50 feet upstream and 50 feet downstream of the limits of the Phase I PDI RAL exceedance areas wherever possible. In areas where structures or

other obstacles prevent surveying to these extents, the areal limits of such obstacles will be recorded.

- The survey will extend 50 feet landward of MHHW; the MHHW is the limit of the Superfund project area. In areas where structures or other obstacles prevent surveying to this extent, the areal limits of such obstacles will be recorded.

2.5 Special Training and Certification

True North will conduct work under the supervision of a Washington State licensed Professional Land Surveyor.

2.6 Documentation and Records

Prior to mobilization for the topographic survey, the approved survey QAPP addendum will be provided to all field personnel for review. The Anchor QEA project manager or his designee will confirm that all field personnel receive the final survey QAPP addendum, including any addenda and modifications. The True North party chief will be responsible for conducting the survey in conformance with the requirements of the approved survey QAPP addendum, and the True North project manager will be responsible for overall quality assurance of the topographic survey product.

Topographic data will be presented as a series of maps. Drawings will be compiled in AutoCAD at a mutually agreed-upon scale, to be determined during design. The maps will be projected in North American Datum (NAD) 83 through the 1991 adjustment (NAD83/91) Washington State Plane North (feet) and will include 1-foot elevation contours in feet MLLW.

The following information will be provided in the topographic survey data report, which will be submitted as part of the Phase II DER:

- Written report of the topographic survey describing survey methodology, equipment (including the sensitivity of the equipment), and analysis methodology
- Documentation of QC checks and identification of QC issues
- Deviations from this survey QAPP addendum
- Contour maps

- Electronic versions of data products, which will include Portable Document Format (PDF) files for reports, AutoCAD files (DWG format) of contours and imagery, ArcMap shape files of contours, and georeferenced TIFF files of imagery. The electronic versions of data products, including the ArcMap shape files and georeferenced tiff imagery, will include applicable metadata in order for the data to be useful in GIS platforms.
- ASCII files of 1-foot binned data sets

3 Data Generation and Acquisition

3.1 Survey Design

Data will be collected by GPS or total station on a 25-foot grid-like pattern as well as at break lines (tops and toes of slopes) and significant changes in the existing surfaces. Extents of significant surface bank features (such as structures, bank armoring, vegetation, utilities, and debris) will be determined by taking survey shots at corners of rectilinear features or at changes of curvature for curvilinear features. An Anchor QEA engineer will be on site during the survey to identify significant bank features and concur with the data collection relative to such bank features.

The survey will be conducted on an established coordinate system, referenced by monuments established or recovered during a geodetic control survey of the site. The same horizontal and vertical datums will be used for the 2021 topographic survey as those used in the bathymetric surveys performed in 2019 and 2020. The horizontal datum for this survey is NAD83 through the 1991 adjustment (NAD83/91), State Plane Coordinate System, Washington North Zone, measured in U.S. Survey Feet. Vertical datum for this survey will be MLLW.

3.2 Survey Methods

This section describes the methods and equipment that will be used to obtain topographic survey data. Safe working practices for conducting this survey are described in the Health and Safety Plan (HASP; see Appendix A).

3.2.1 Control Network

Prior to the 2019 bathymetric survey, True North established a control network along the LDW. This control network is based on NAD83/91, Washington North Zone horizontal positions, MLLW elevations, and NAVD 88. True North will establish a control point at each RAL exceedance area where topographic surveying is to be performed and where an existing control point has not already been established.

A geodetic control survey was conducted using GPS techniques from monuments with published positions and elevations. A network of observations has been made with redundant comparisons to document the accuracy of the survey. The details of the geodetic control survey will be reported with the results of the topographic survey.

3.2.2 Topographic Data Acquisition

All survey data are acquired by establishing quality control points in areas where the topography is requested. The control points will be set by GPS after thorough checks to existing control have occurred. The topography points will overlap the existing bathymetry to the extent practical. Data will be collected by GPS and/or a total station, on a 25-foot grid-like pattern, as well as at break lines (tops and toes of slopes) and significant changes in the existing surfaces.

3.2.3 Survey Schedule

It is anticipated that the topographic survey will be conducted in summer 2021, and field work is expected to require approximately 40 to 60 days, subject to factors such as tide conditions. Work will be performed during daytime low tide events to obtain access to the greatest extent of the shoreline within the work areas.

3.3 Data Processing Methods

Download and processing of the topography points consist of confirming that the raw data match the field notes and checking that the crew correctly input the instrument heights and the rod heights. This is performed in C3D with Carlson Survey program. This process cancels out horizontal and vertical errors. True North will provide a digital terrain model for each RAL exceedance area included in the topographic survey and a complete coordinate data file.

3.4 Quality Control

Quality control is conducted by the surveyors by confirming that the raw data match the field notes written at the time of the survey field work. Errors in the surface elevation data will be caught and corrected at the time of creating the elevation contours.

3.5 Instrument/Equipment Testing, Inspection, and Maintenance

The equipment to be used for the survey and associated precision of each instrument are as follows:

- Leica TS16 (Total Station), precision is 1 inch horizontally and vertically
- Leica GS16 (GPS RTK Unit), precision is 8 mm +1 ppm horizontally and 15 mm +1 ppm vertically
- Leica LS10 (Digital Level with Bar Code Rod), 0.3 mm vertically

All equipment is routinely inspected by True North and maintained annually by the instrument dealer.

3.6 Instrument/Equipment Calibration and Frequency

The calibration frequency for each instrument is as follows:

- Leica TS16: Annually performed by the instrument dealer during maintenance
- Leica GS16: Smart link worldwide correction every 10 minutes while in use and annual maintenance performed by the instrument dealer
- Leica LS10: Manual "peg" routine performed prior to use. Digital "peg" performed annually

3.7 Inspection/Acceptance of Supplies and Consumables

No significant consumables are required because all data are digitally recorded. The survey equipment has onboard SD card storage.

3.8 Non-Direct Measurements

For the topographic survey, all measurements will be direct. LiDAR data will be used to establish preliminary limits for the topographic survey and as a check for survey measurements. If data gathered during the topographic survey differ from the LiDAR data, the survey measurements will be confirmed. LiDAR data are inherently less precise and accurate than a ground survey, and LiDAR contours will be overwritten with ground data after confirmation.

3.9 Data Management

Data from the survey will be downloaded and backed up to solid-state, cloud-based backup at the end of each survey day. Data will not be removed from the acquisition data collectors until they have been loaded and verified on the cloud-based data server located in the home office.

4 Assessment and Oversight

4.1 Assessments and Response Actions

EPA or its designees may observe the survey, as needed. If situations arise wherein there is a significant inability to follow the QAPP methods precisely, the True North project manager will coordinate with the Anchor QEA project manager to determine the appropriate actions and consult with EPA if the issue is significant. No field audits are proposed for this work. The True North project manager will audit system checks.

4.2 Reports to Management

Primary communications will be through the True North project manager and the Anchor QEA project manager. This correspondence will primarily consist of emails sent every evening during survey operations, which will include coverage images, general overview of survey progress, and any problems encountered during surveying. Anchor QEA will send copies of all communication to the King County project manager and LDWG.

5 Data Validation and Usability

5.1 Data Review, Verification, and Validation

Data will be reviewed and verified by evaluation of the raw data compared to field notes. Data collection will overlap the existing contours and will be compared to each other.

5.2 Reconciliation with Data Quality Objectives

Data quality objectives for accuracy will be achieved by meeting the target horizontal and vertical accuracies at a 95% confidence level for the survey. Methods outlined here and in Section 3 will verify that the target accuracies are being obtained. Final review by the professional land surveyor will include the review of contours and comparison to prior surveys.

Table 2 summarizes the key targets and related datums for the topographic survey. With the real-time kinematic GPS, horizontal and vertical accuracy of the survey is affected by several factors. This includes the positional accuracy of the satellites and factors that can affect these acquisitions, such as overhead power lines, bridges, and multipath interferences.

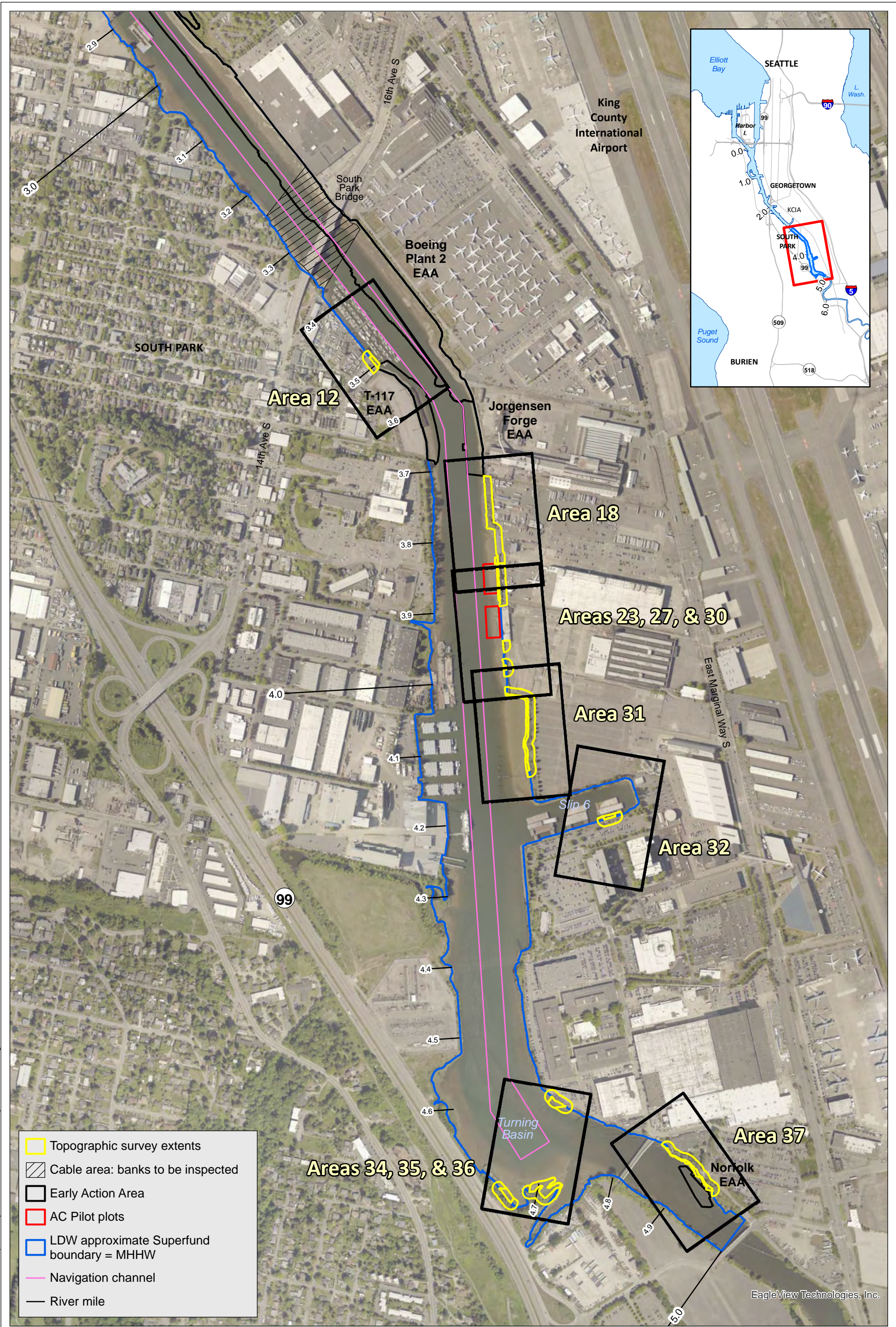
Table 2
Key Targets and Related Datums

Description	Quantity or Datum
GPS Horizontal Positioning Accuracy	+/- 0.3 foot minimum
Total Station Horizontal Survey Accuracy	+/- 0.10 foot minimum
Horizontal Datum	NAD83/91 Washington North Zone
GPS Vertical Survey Accuracy	+/- 0.2 foot minimum
Total Station Vertical Survey Accuracy	+/- 0.02 foot minimum
Vertical Datum	MLLW

6 References

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Figures



Prepared by: craigh, 5/13/21; W:\Projects\Duwamish\AOC\GIS\Maps and Analyses\Phase I\QAPP Addendum\Survey QAPP Addendum\Fig 1 7266 Banks - Overview.mxd

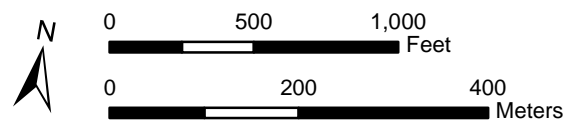
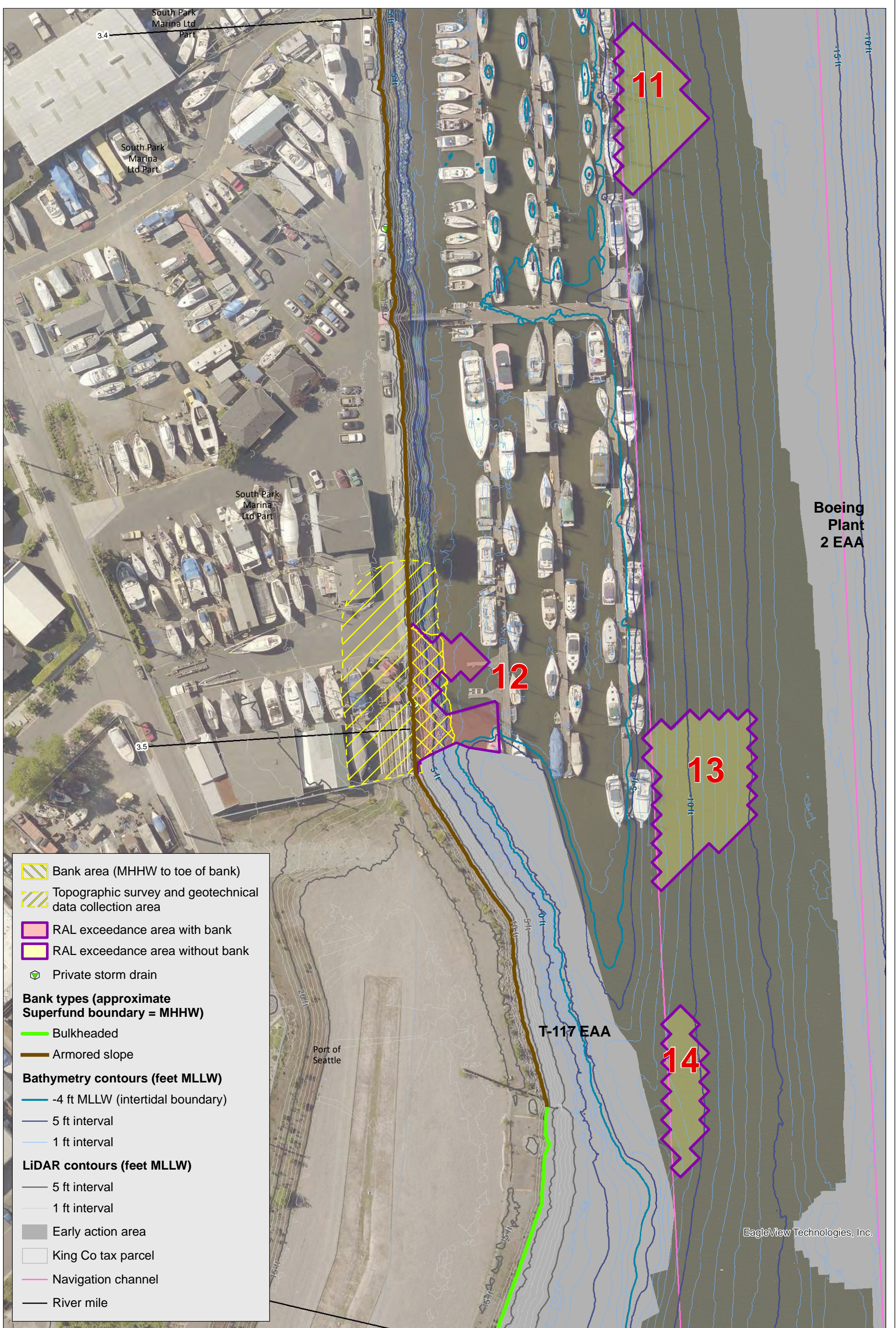


Figure 1. Topographic Surveying Areas

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
PRE-DESIGN SURVEYS OF THE LDW UPPER REACH

EagleView Technologies, Inc.

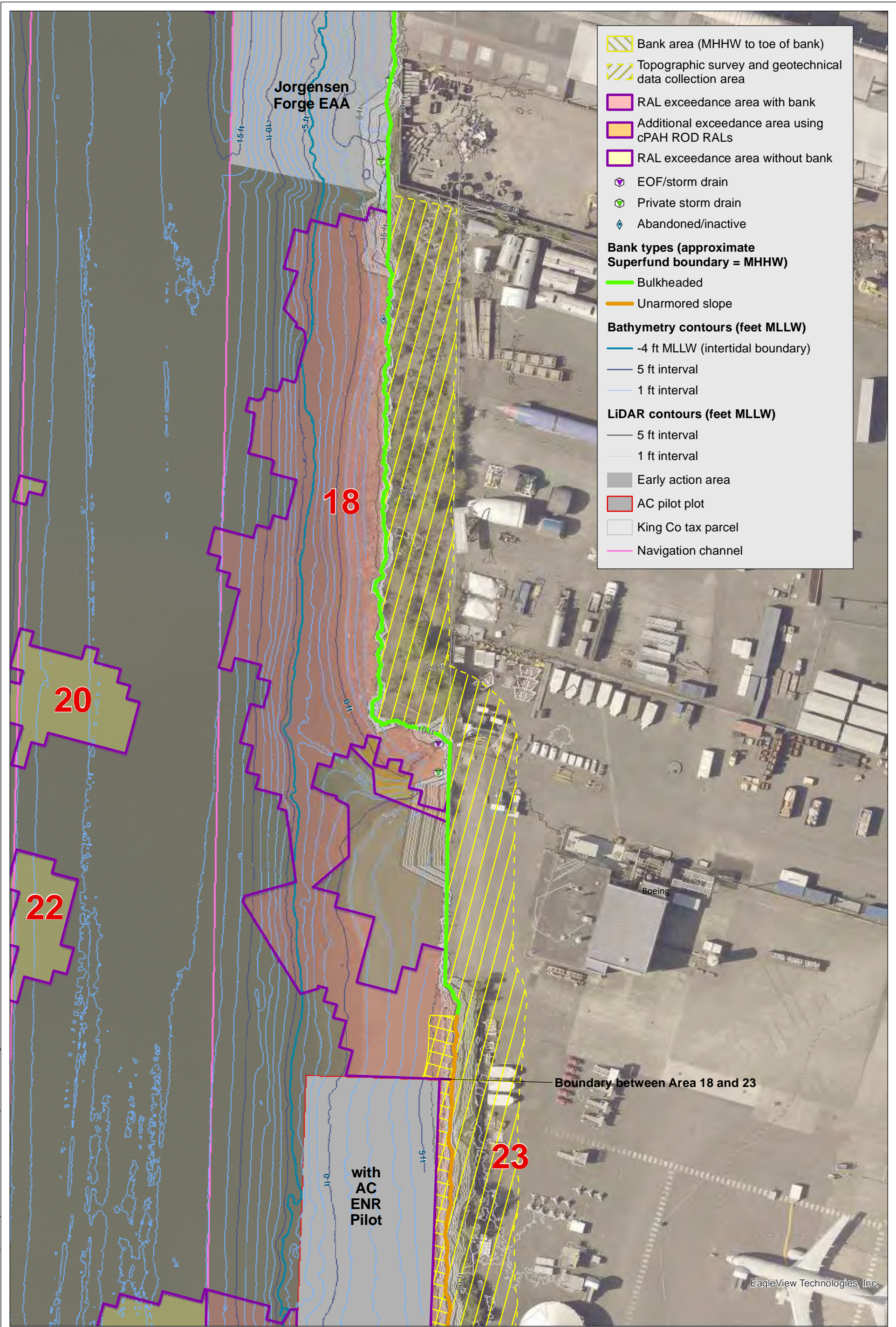


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Figure 2. Topographic Surveying Extents at RAL Exceedance Area 12

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
PRE-DESIGN SURVEYS OF THE LDW UPPER REACH



- Bank area (MHHW to toe of bank)
- Topographic survey and geotechnical data collection area
- RAL exceedance area with bank
- Additional exceedance area using cPAH ROD RALs
- RAL exceedance area without bank
- EOF/storm drain
- Private storm drain
- Abandoned/inactive
- Bank types (approximate Superfund boundary = MHHW)**
- Bulkheaded
- Unarmored slope
- Bathymetry contours (feet MLLW)**
- 4 ft MLLW (intertidal boundary)
- 5 ft interval
- 1 ft interval
- LiDAR contours (feet MLLW)**
- 5 ft interval
- 1 ft interval
- Early action area
- AC pilot plot
- King Co tax parcel
- Navigation channel

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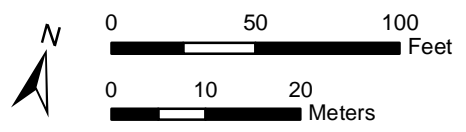


Figure 3. Topographic Surveying Extents at RAL Exceedance Areas 18 and 23

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
PRE-DESIGN SURVEYS OF THE LDW UPPER REACH

Prepared by: craigh, 5/13/21; W:\Projects\Duwamish AOC\GIS\Maps and Analyses\Phase II\OAPP Addendum\Survey_OAPP_Addendum\Fig 4 7266 Banks - 23-27-30.mxd

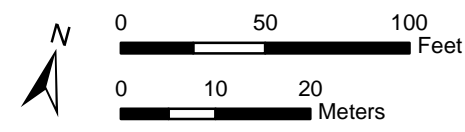
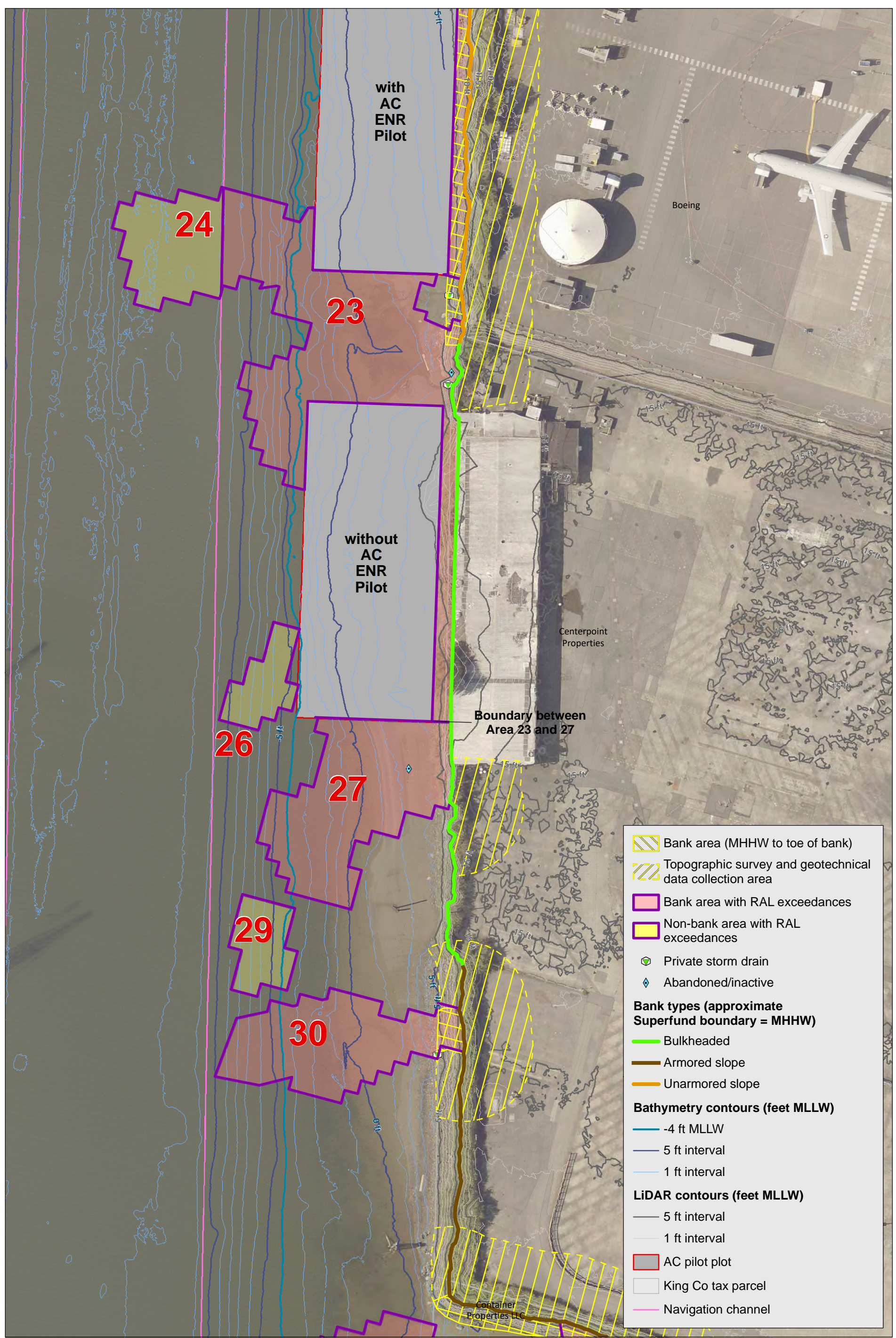
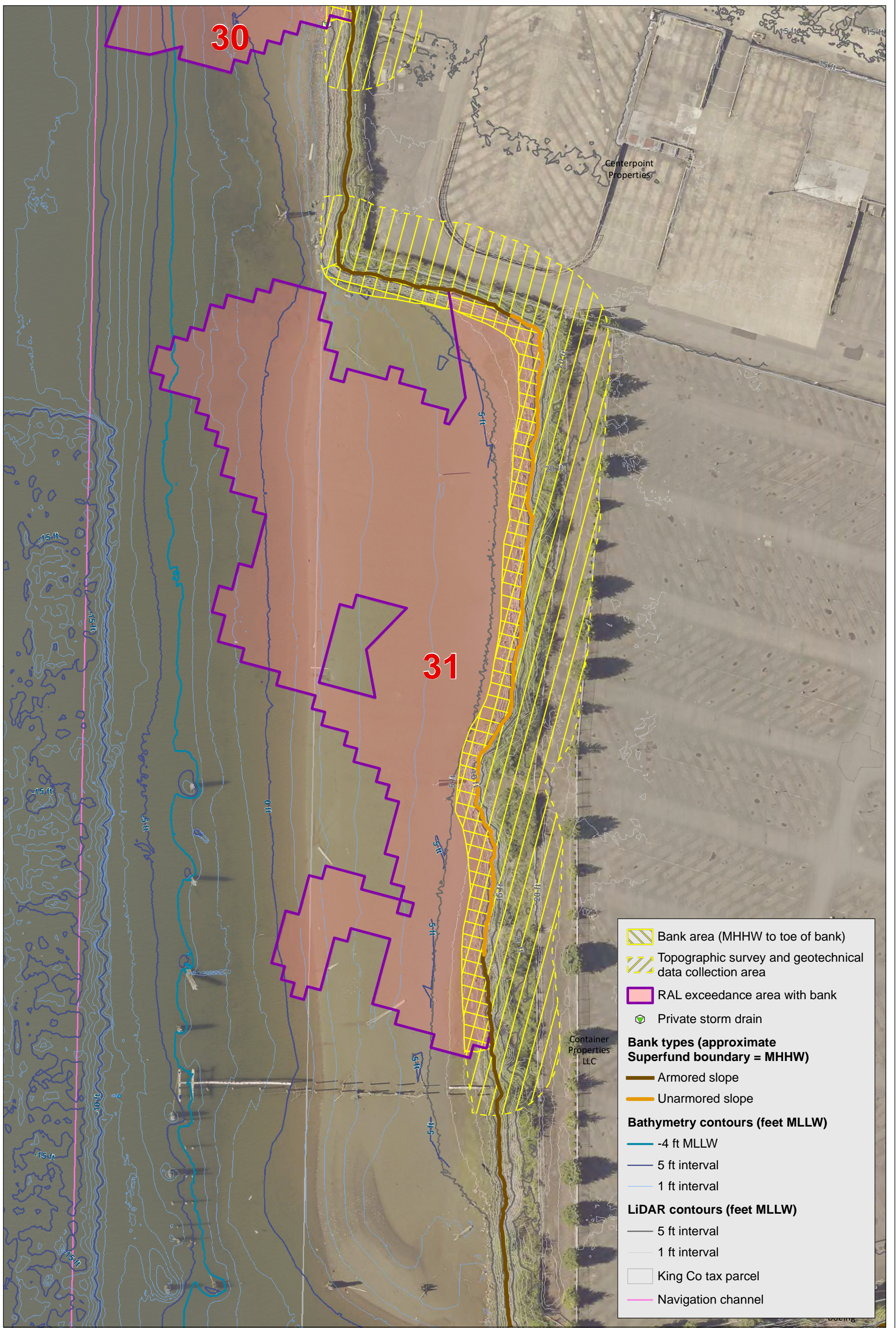


Figure 4. Topographic Surveying Extents at RAL Exceedance Areas 23, 27, and 30

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
PRE-DESIGN SURVEYS OF THE LDW UPPER REACH



- Bank area (MHHW to toe of bank)
- Topographic survey and geotechnical data collection area
- RAL exceedance area with bank
- Private storm drain
- Bank types (approximate Superfund boundary = MHHW)**
 - Armored slope
 - Unarmored slope
- Bathymetry contours (feet MLLW)**
 - 4 ft MLLW
 - 5 ft interval
 - 1 ft interval
- LiDAR contours (feet MLLW)**
 - 5 ft interval
 - 1 ft interval
- King Co tax parcel
- Navigation channel

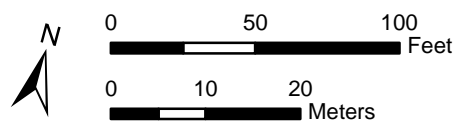
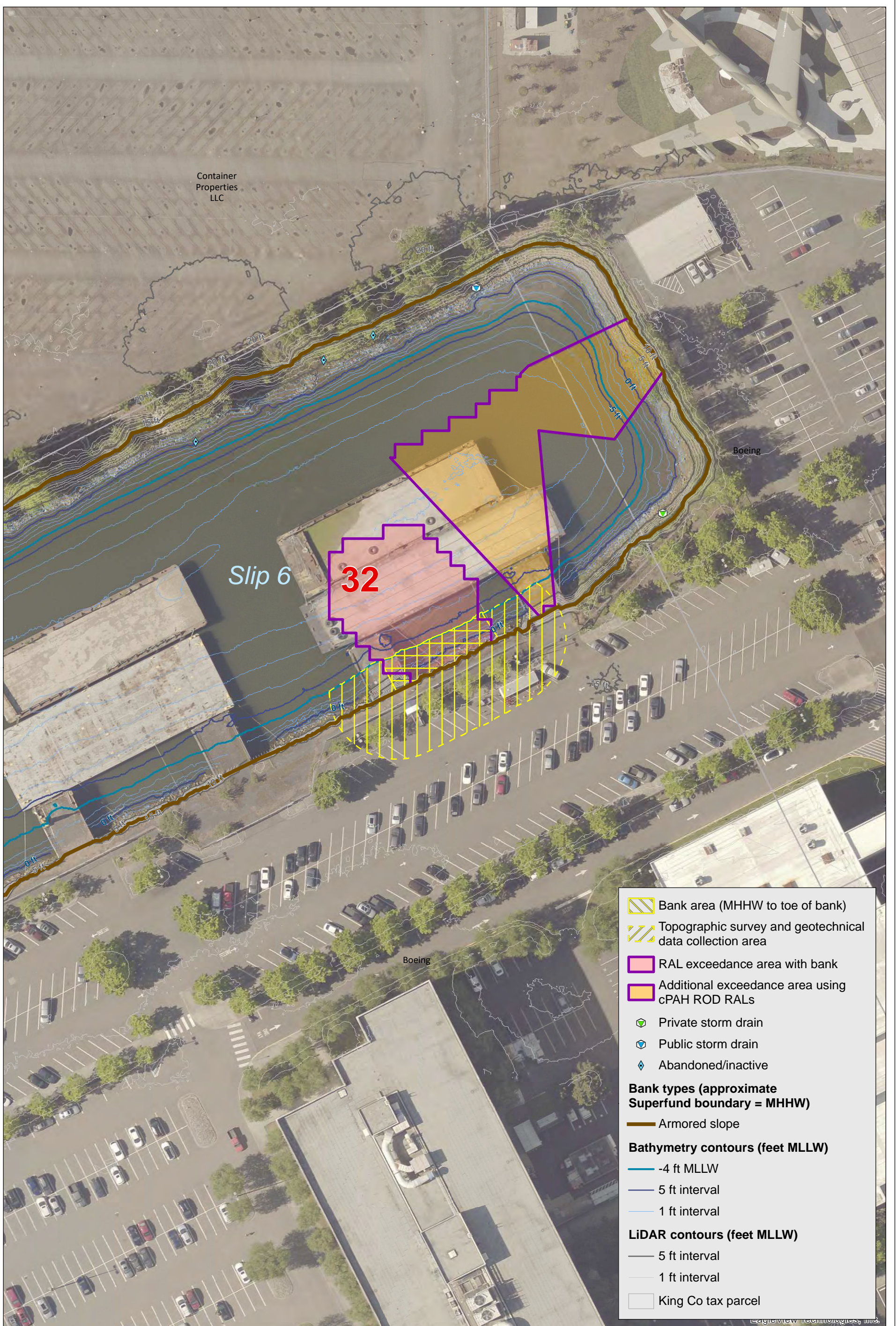


Figure 5. Topographic Surveying Extents at RAL Exceedance Area 31
 QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
 PRE-DESIGN SURVEYS OF THE LDW UPPER REACH



Prepared by: craigh, 5/13/21; W:\Projects\Duwamish AOC\GIS\Maps and Analyses\Phase II\QAPP Addendum\Survey QAPP Addendum\Fig 6 7266 Banks - 32.mxd

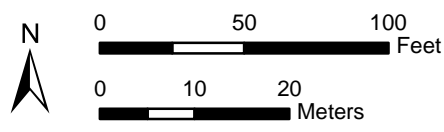
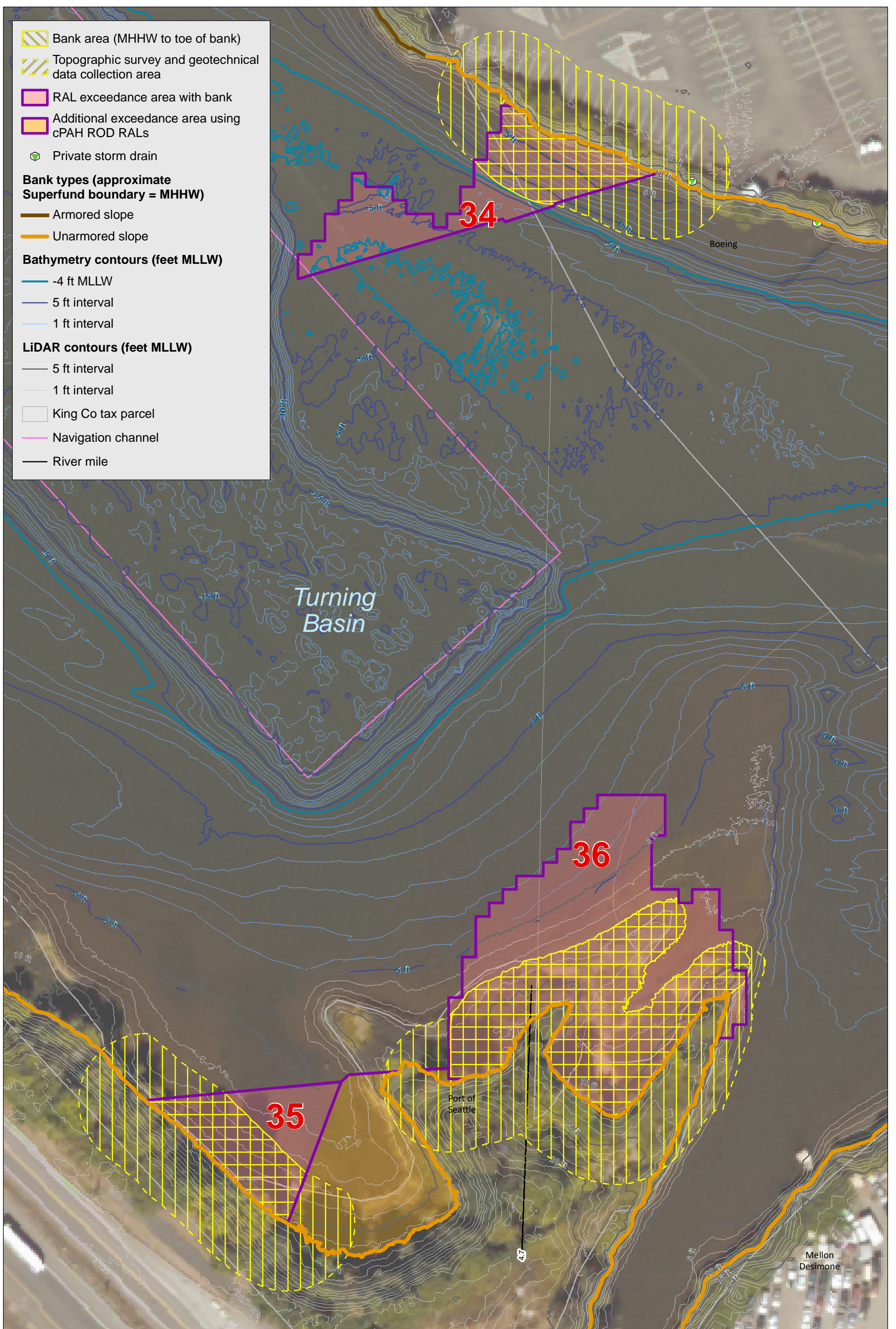


Figure 6. Topographic Surveying Extents at RAL Exceedance Area 32

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
PRE-DESIGN SURVEYS OF THE LDW UPPER REACH



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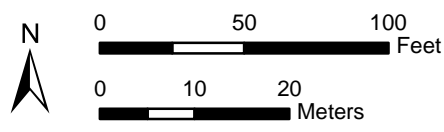
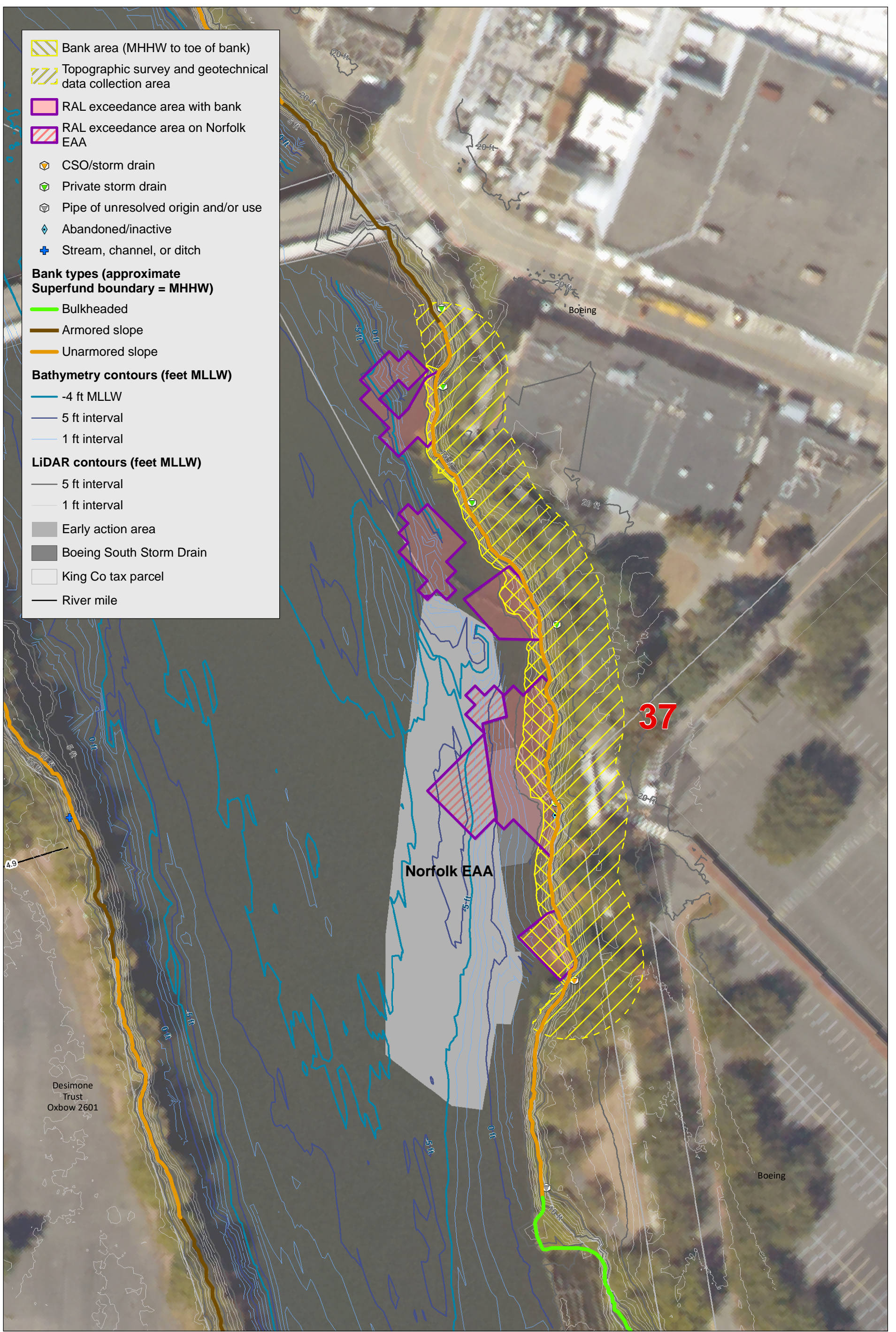


Figure 7. Topographic Surveying Extents at RAL Exceedance Areas 34, 35, and 36

QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
PRE-DESIGN SURVEYS OF THE LDW UPPER REACH

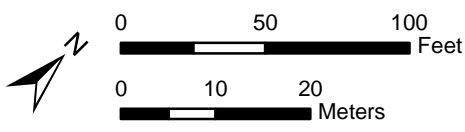


- Bank area (MHHW to toe of bank)
- Topographic survey and geotechnical data collection area
- RAL exceedance area with bank
- RAL exceedance area on Norfolk EAA
- CSO/storm drain
- Private storm drain
- Pipe of unresolved origin and/or use
- Abandoned/inactive
- Stream, channel, or ditch
- Bank types (approximate Superfund boundary = MHHW)**
- Bulkheaded
- Armored slope
- Unarmored slope
- Bathymetry contours (feet MLLW)**
- 4 ft MLLW
- 5 ft interval
- 1 ft interval
- LiDAR contours (feet MLLW)**
- 5 ft interval
- 1 ft interval
- Early action area
- Boeing South Storm Drain
- King Co tax parcel
- River mile

37

Norfolk EAA

Figure 8. Topographic Surveying Extents at RAL Exceedance Area 37
 QUALITY ASSURANCE PROJECT PLAN ADDENDUM:
 PRE-DESIGN SURVEYS OF THE LDW UPPER REACH

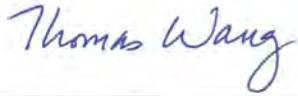


Appendix A

Updated Health and Safety Plan

Updated Health and Safety Plan


By their signature, the undersigned certify that this Health and Safety Plan (HASP) is approved and that it will be used to govern health and safety aspects of fieldwork described in the Quality Assurance Project Plan to which it is attached.



Tom Wang
Anchor QEA, LLC, Project Manager

June 22, 2021

Date



Tim Shaner
Anchor QEA, LLC, Health and Safety Program Lead

June 22, 2021

Date



Jo Miller
True North Land Surveying, Inc., Field Operations
Manager/Health and Safety Officer

June 22, 2021

Date

ACRONYMS

CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
EPA	U.S. Environmental Protection Agency
FOM	Field Operations Manager
HASP	Health and Safety Plan
HAZMAT	hazardous materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
HSO	Health and Safety Officer
HSPL	Health and Safety Program Lead
LDW	Lower Duwamish Waterway
MHHW	mean higher high water
OSHA	Occupational Safety and Health Administration
PFD	personal flotation device
PM	Project Manager
PPE	personal protective equipment
True North	True North Land Surveying, Inc.
USCG	U.S. Coast Guard
VHF	very high frequency

A.1.0 Introduction

This Health and Safety Plan (HASP) presents health and safety requirements and procedures that will be followed by personnel during survey work activities in the Lower Duwamish Waterway (LDW) (the site). This HASP was developed in accordance with Title 29 of the Code of Federal Regulations (CFR), Part 1910.120(b), and will be used in conjunction with applicable Health and Safety Programs. See Section A.1.1 for HASP modification procedures.

The provisions of this HASP are mandatory for all personnel assigned to the project. A copy of this HASP must be always maintained on site and available for employee review. Personnel assigned to work at the project site will be required to read this plan and must sign the HASP Acknowledgement Form (Attachment A.1) to confirm that they understand and agree to abide by the provisions of this HASP. During site work, this HASP will be implemented by the True North Land Surveying, Inc. (True North) Field Operations Manager (FOM), who is also the designated site Health and Safety Officer (HSO), in cooperation with the corporate Health and Safety Manager (HSM).

The objectives of this HASP are to identify potential physical, chemical, and biological hazards associated with field activities; establish safe working conditions and protective measures to control those hazards; define emergency procedures; and describe the responsibilities, training requirements, and medical monitoring requirements for site personnel.

Issuance of this approved HASP documents that the workplace has been evaluated for hazards. A hazard assessment was performed, and the adequacy of the personal protective equipment (PPE) selected was evaluated as required by 29 CFR 1910.132(d)—Personal Protective Equipment, General Requirements (General Industry); 29 CFR 1910.134—Respiratory Protection; 29 CFR 1926.28—Personal Protective Equipment (Construction Industry); and 29 CFR 1926.55—Gases, Vapors, Fumes, Dusts and Mist, and is duly noted by the signature(s) and date appearing on the certification page of this document.

A.1.1 Health and Safety Plan Modifications

This HASP will be modified by amendment, if necessary, to address changing field conditions or additional work tasks not already described in this document. Modifications will be proposed by the FOM/HSO using the Modification to Health and Safety Plan form included as Attachment A.2. Modifications will be reviewed by the HSM or authorized representative and approved by the Project Manager (PM).

The field team has the responsibility to immediately report any potentially unsafe or hazardous conditions to the FOM/HSO, and all members of the field team have STOP WORK AUTHORITY—the authority to stop or suspend work if conditions arise that pose an unacceptable health and safety risk

to the field team or environment, or if conditions arise that warrant modifications to this HASP. It is critical that all field team members proactively communicate with the FOM/HSO to identify potential unsafe conditions.

A.2.0 Site Description and Project Scope

The surveying area is in the LDW (see Figure 1 in the attached QAPP). The area is affected by tidal fluctuations. The QAPP to which this HASP is attached provides details of the topographic survey. The survey will be conducted by personnel walking on and adjacent to the banks of the LDW carrying handheld surveying equipment as described in the QAPP. The duration of the survey is expected to range between 40 and 60 days.

A.3.0 Health and Safety Personnel

Key health and safety personnel and their responsibilities are described below. These individuals are responsible for the implementation of this HASP.

Anchor QEA Project Manager: The PM has overall responsibility for the successful outcome of the project. The PM will ensure that adequate resources and budget are provided for the health and safety staff to carry out their responsibilities during fieldwork. The PM, in consultation with the HSM, makes final decisions concerning implementation of the HASP.

True North Field Operations Manager/Health and Safety Officer: The True North FOM and HSO will be the same person. The FOM/HSO will direct field surveying activities, coordinate the technical components of the field program with health and safety components, and ensure that work is performed according to the Survey QAPP addendum.

The FOM/HSO will implement this HASP at the work location and will be responsible for all health and safety activities and the delegation of duties to a health and safety technician in the field, if appropriate. The FOM/HSO also has stop-work authority, to be used if there is an imminent safety hazard or potentially dangerous situation. The FOM/HSO or her designee shall be present during surveying operations.

Anchor QEA Corporate Health and Safety Program Lead: The HSPL has overall responsibility for preparation, approval, and revisions of this HASP. The HSPL will not necessarily be present during fieldwork, but will be readily available, if required, for consultation regarding health and safety issues during fieldwork.

Field Crew: All field crew members must be familiar with and comply with the information in this HASP. They also have the responsibility to report any potentially unsafe or hazardous conditions to the FOM/HSO immediately.

A.4.0 Hazard Evaluation and Control Measures

This section covers potential physical and chemical hazards that may be associated with the proposed project activities and presents control measures for addressing these hazards. The activity hazard analysis, Section A.4.3, lists the potential hazards associated with each site activity and the recommended site control to be used to minimize each potential hazard.

Confined space entry will not be necessary for this project. Therefore, hazards associated with this activity are not discussed in this HASP.

A.4.1 Physical Hazards

For this project, it is anticipated that physical hazards will present a greater risk of injury than chemical hazards. Physical hazards are identified and discussed below.

A.4.1.1 *Slips, Trips, and Falls*

As with all fieldwork sites, caution should be exercised to prevent slips on slick surfaces. In particular, surveying requires careful attention to minimize the risk of falling down. Topographic surveying work is expected to be performed on the banks, but if a boat or other floating platform is used, care will be taken to minimize the risk of falling overboard. The same care should be used in rainy conditions or on the shoreline where slick rocks are found. Slips will be minimized by wearing boots with good tread, made of material that does not become overly slippery when wet.

Trips are always a hazard on the uneven deck of a boat or uneven surfaces, in a cluttered work area, or in the intertidal zone where uneven substrate is common. Personnel will keep work areas as free as possible from items that interfere with walking.

Falls may be avoided by working as far from exposed edges as possible, by erecting railings, and by using fall protection when working on elevated platforms. For this project, no work is anticipated that would present a fall hazard. Some of the surveying may be performed from a boat. As with any work from a floating platform, there is a chance of falling overboard. Personal flotation devices (PFDs) will be worn while working on deck or working from an open boat. PFDs need not be worn while working inside an enclosed cabin, but must be readily available when going on deck from the cabin area. An individual in the water shall be considered a "person overboard" and appropriate rescue actions shall be taken immediately to prevent hypothermia. PFDs will be worn while working within 10 feet of the water's edge or on banks.

A.4.1.2 *Manual Lifting*

Equipment must be lifted and carried. Back strain can result if lifting is done improperly. During any manual handling tasks, personnel should lift with the load supported by their legs and not their

backs. For heavy loads, an adequate number of people will be used, or if possible, a mechanical lifting/handling device will be used.

A.4.1.3 Heat Stress, Hypothermia, or Frostbite

The work crew and other personnel shall have adequate clothing and foul-weather gear in their possession prior to beginning work. Hypothermia is a potentially hazardous condition.

Hypothermia is characterized by pain in the extremities and loss of manual dexterity, with severe, uncontrollable shivering, and an inability to maintain the level of activity. Symptoms include excessive fatigue, drowsiness, irritability, or euphoria. Severe hypothermia includes clouded consciousness, low blood pressure, pupil dilation, cessation of shivering, unconsciousness, and possible death.

Move the individual to a warm, dry place. If the individual's clothing is wet, remove it and replace it with dry clothing. Keep the individual warm. Rewarming the individual should be gradual to avoid stroke symptoms. Dehydration, or the loss of body fluids, may result in a cold injury due to a significant change in blood flow to the extremities. If the individual is conscious and alert, warm sweet liquids should be provided. Coffee and other caffeinated liquids should be avoided because of diuretic and circulatory effects. Extremities affected by frostbite should be gradually warmed and returned to normal temperature. Moist compresses should be applied; begin with lukewarm compresses and slowly increase the temperature as changes in skin temperature are detected. Keep the individual warm and calm and move to a medical facility as soon as possible.

A.4.1.4 Weather

In general, field team members will be equipped for the normal range of weather conditions. Work shall be preceded by an evaluation of weather reports and conditions by the FOM/HSO and vessel pilot to ascertain that safe working conditions exist and safe refuge of personnel is assured. An alternate safe harbor shall be designated for emergency situations. Field personnel shall maintain monitoring of the local area weather broadcasts or other readily available weather forecasting services. Some conditions that might force work stoppage are electrical storms, high winds, or high waves resulting from winds.

A.4.1.5 Boating Operations

The following precautions shall be taken when conducting boating trailer and launch activities. These procedures are provided as a reference; NWH will follow their own internal boating safety procedures and consider the procedures below.

- Follow the trailer and boat manufacturers' instructions for securing the boat to the trailer.
- Follow the trailer manufacturer's instructions for securing the trailer to the towing vehicle.

- Prohibit site personnel from moving into trailer/vehicle pinch points without advising the vehicle operator.
- Use experienced operators when backing trailers on boat ramps.
- Wear proper work gloves when the possibility of pinching or other injury may be caused by moving or handling large or heavy objects.
- Maintain all equipment in a safe condition.
- Launch boats one at a time to avoid collisions.
- Use a spotter for vehicles backing boats to the launch area.
- Understand and review hand signals.
- Wear boots with non-slip soles when launching boats.
- Wear USCG-approved PFDs when working within 10 feet of the water.
- Keep ropes and lines coiled and stowed to eliminate trip hazards.
- Maintain three-point contact on dock/pier or boat ladders.
- Verify that drain plugs are in place.

The following precautions shall be followed when conducting boating operations:

- Maintain a current boater's license(s) as required.
- Wear USCG-approved PFDs for work activities within 10 feet of the water.
- Obtain and review information regarding dams that may be present in work areas, particularly with regard to "no boating" zones and safety buoys, cables, and warning signage.
- Maintain boat anchorage devices commensurate with anticipated currents, distance to shore, and water depths.
- Provide a floating ring buoy in the immediate boat launch/landing areas with at least 60 feet (18.3 meters) of line for a vessel less than 65 feet (19.8 meters) in length, or 90 feet (27.4 meters) of line for a vessel 65 feet (19.8 meters) or greater in length (see <https://www.law.cornell.edu/cfr/text/46/117.70> for more information).
- Step into the center of the boat.
- Keep your weight low when moving on the boat.
- Move slowly and deliberately.
- Steer directly across other boat wakes at a 90-degree angle to avoid capsizing.
- Steer the boat facing forward.
- Watch for floating objects in the water.
- Right-of-way is yielded to vessels on your boat's right, or starboard, and vessels with limited ability to maneuver such as any wind-propelled vessel.

The following precautions shall be followed when working on a boat:

- Observe proper lifting techniques.
- Wear USCG-approved PFDs for work activities within 10 feet of the water.

The safety-related items listed in Table A-1 shall be available when conducting boating operations.

**Table A-1
Safety equipment specific to in-water work**

Additional Safety Equipment for Sampling Vessel per U.S. Coast Guard Requirements	
<ul style="list-style-type: none"> • Proper vessel registration, numbering, and documentation (registered with state, certificate of vessel registration number displayed, and carrying a valid certificate of number) • USCG-approved personal flotation devices (PFDs; or life jackets) for every person on the sampling vessel (Type I, II, III, or V are required). High-visibility required by Anchor QEA. • Appropriate, non-expired, visual distress devices for day and night use from the following: <ul style="list-style-type: none"> – Three hand-held red flares (day and night), or – One hand-held red flare and two parachute flares (day and night), or – One hand-held orange smoke signal, two floating orange smoke signals (day), and one electric distress light (night only) • Alternate means of propulsion (oars or paddles) • Dewatering device (pump or bailer) • Properly maintained and inspected USCG-approved fire extinguishers (no fixed system = (2) B-1 or (1) B-2 type extinguishers; fixed system = (1) B-1 type extinguisher) • Proper ventilation of gasoline-powered vessels • Sound-producing device (whistle, bell, or horn) • VHF 2-way radio • Proper navigational light display • Throwable life ring with attached line (any vessel larger than 16 feet is required to carry one Type IV [throwable] PFD) 	
Additional USCG Recommended Equipment Includes:	
<ul style="list-style-type: none"> • Extra visual distress signals • Primary and spare anchor • Heaving line • Fenders • First aid kit • Flashlight • Mirror • Searchlight • Sunburn lotion • Tool kit • Spare fuel 	<ul style="list-style-type: none"> • Boat hook • Spare propeller • Mooring line • Food and water • Binoculars • Spare batteries • Sunglasses • Marine hardware • Extra clothing • Spare parts • Pertinent navigational chart(s) and compass

A.4.1.6 Working in a Roadway

These procedures are provided as reference; NWH will follow their own internal safety procedures for working in a roadway and consider the procedures below:

- Plan and conduct work in a manner that traffic may be continuously observed. This may require having a spotter equipped with a noise-making device such as an air horn or a whistle, as appropriate.

- Wear a high-visibility traffic vest and hardhat when a vehicle hazard exists. Include lighted elements when possible in high-hazard environments.
- Use cones, flag-mounted cones, caution tape, and/or barricades.
- Protect the work area with a vehicle or piece of heavy equipment if this does not pose an additional hazard. The vehicle should have a strobe light and operating headlights or running lights (if equipped).

A.4.2 Chemical Hazards

The Record of Decision identified polychlorinated biphenyl compounds, carcinogenic polycyclic aromatic compounds, arsenic, and dioxins/furans are contaminants of concern in sediments below mean higher high water (MHHW). Direct contact with contaminated sediment may occur while working on exposed banks below the MHHW elevation.

A.4.2.1 Exposure Routes

Possible routes of exposure to the chemicals potentially encountered on this project include inhalation, dermal contact, and ingestion of dust, mist, gas, vapor, or liquid. Exposure will be minimized by using safe work practices and by wearing the appropriate PPE. A further discussion of PPE requirements is presented in Section A.7.0.

Inhalation

Inhalation of particulates, dust, mist, gas, or vapor during field activities is possible. Chemicals of concern at this site are not volatile and strongly adsorb to sediment, so the principal route of inhalation exposure is through contaminated particulate or dust. Wet sediment should generate little dust, but dried sediment may present a hazard of inhalation. Care should be taken when working in areas with contaminated sediment, generally below MHHW in the work areas, and when decontaminating personal protective equipment and survey equipment that has been in contact with sediment.

Dermal Contact

Dermal contact with potentially contaminated soil, sediment, or groundwater during field activities is possible. Direct contact will be minimized by using appropriate PPE and decontamination procedures.

Ingestion

Direct ingestion of contaminants can occur by inhaling airborne dust, mist, or vapors, or by swallowing contaminants trapped in the upper respiratory tract. Indirect ingestion can occur by introducing the contaminants into the mouth by way of food, tobacco, fingers, or other carriers.

Although ingestion of contaminants can occur, proper hygiene, decontamination, and contamination reduction procedures should reduce the probability of this route of exposure.

Chemicals of Concern Profile

Table A-2 provides a summary profile for the chemicals of concern for this project. This profile is based on recent site history and site characterization information. For more detailed and specific information, always refer to the Safety Data Sheet.

**Table A-2
Chemicals of Concern**

Chemical	Exposure Routes	Symptoms	Target Organs	OEL (STEL)	Odor Threshold (ppm)	LEL (%)	Ionization Energy (eV)
PCBs (Chlorodiphenyls) (42% CI / 53469-21-9) (54% CI / 11097-69-1)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects Potential occupational carcinogen	Skin, eyes, liver, reproductive system	0.001 mg/m ³ TWA8 Skin IDLH / Ca – 5 mg/m ³	N/A	N/A	N/A
Polycyclic aromatic hydrocarbons (PAHs) – as coal tar pitch volatiles. (Includes benzo(a)pyrene, chrysene, phenanthrene, fluoranthene, pyrene, acenaphthene, methylnaphthalenes, and anthracene)	Skin, eye, inhalation, and ingestion hazard	Direct contact or exposure to the vapors may be irritating to the eyes. Direct contact can be highly irritating to the skin and can cause dermatitis. Exposure to high vapor concentrations may cause headaches, nausea, vomiting, and other symptoms. Includes human carcinogens. Exposure to all routes should be carefully controlled to levels as low as possible. Confirmed animal carcinogen.	Respiratory system, skin, bladder, kidneys	0.2 mg/m ³ TWA8 0.1 mg/m ³ TWA8 (Cyclohexane-extractable fraction) IDLH / Ca – 80 mg/m ³	Varies	N/A	N/A
Dioxins/Furans (as 2,3,7,8-Tetrachloro-dibenzo-p-dioxin) - TCDD	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; allergic dermatitis, chloracne; porphyria; gastrointestinal disturbance; possible reproductive, teratogenic effects; In Animals: liver, kidney damage; hemorrhage Potential occupational carcinogen	Eyes, skin, liver, kidneys, reproductive system	Lowest Feasible Concentration (LFC) Proposed OEL of 0.2 ng/m ³ Skin IDLH / Ca - LFC	N/A	N/A	N/A
Hydrogen Sulfide (H2S) (7783-06-04) 1 ppm = 1.40 mg/m ³	Inhalation, skin and/or eye contact	Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	Eyes, respiratory system, central nervous system	1 ppm TWA8 (5 ppm) C – 10 ppm (10-min over an 8-hr shift) IDLH - 100 ppm	0.03 ppm	4.0	10.46
Arsenic, and inorganic compounds as (7440-38-2)	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin Potential occupational carcinogen	Liver, kidneys, skin, lungs, lymphatic system	Ceiling limit of 0.002 mg/m ³ [15-Minute] IDLH / Ca – 5 mg/m ³	N/A	N/A	N/A
Barium and soluble compounds, as Ba, including Barium chloride (7440-39-3) (10361-37-2)	Inhalation, skin and/or eye contact	irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles (heart contractions); hypokalemia (deficiency of potassium in the bloodstream).	Eyes, skin, respiratory system, heart, central nervous system	0.5 mg/m ³ TWA8 IDLH – 50 mg/m ³	N/A	N/A	N/A
Cadmium and compounds, as Cd (7440-43-9)	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia Potential occupational carcinogen	respiratory system, kidneys, prostate, blood, prostatic & lung cancer	0.005 mg/m ³ TWA8 IDLH / Ca – 9 mg/m ³	N/A	N/A	N/A

Chemical	Exposure Routes	Symptoms	Target Organs	OEL (STEL)	Odor Threshold (ppm)	LEL (%)	Ionization Energy (eV)
Chromium (II) inorganic compounds, as Cr	Inhalation, ingestion, skin and/or eye contact	Irritation eyes; sensitization dermatitis	Eyes, skin	0.5 mg/m ³ TWA ₈ IDLH – 250 mg/m ³	N/A	N/A	N/A
Chromium (III) inorganic compounds, as Cr (7440-47-3)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes; sensitization dermatitis	Eyes, skin	0.5 mg/m ³ TWA ₈ (total dust) 0.003 mg/m ³ TWA ₈ (inhalable fraction) IDLH – 25 mg/m ³	N/A	N/A	N/A
Chromium (VI) inorganic compounds, as Cr (18540-29-9) (1333-82-0 as CrO ₃)	Inhalation, ingestion, skin and/or eye contact	Irritation respiratory system; nasal septum perforation; liver, kidney damage; leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia; eye injury, conjunctivitis; skin ulcer, sensitization dermatitis Potential occupational carcinogen	Blood, respiratory system, liver, kidneys, eyes, skin, lung cancer	0.0002 mg/m ³ TWA ₈ IDLH / Ca – 15 mg/m ³	N/A	N/A	N/A
Lead and inorganic compounds, as Pb (7439-92-1)	Inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival (gum) tissue	0.05 mg/m ³ TWA ₈ IDLH – 100 mg/m ³	N/A	N/A	N/A
Mercury, elemental and inorganic compounds, as Hg (7439-97-6)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis (inflammation of mucous membranes of the mouth), salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria (abnormal quantities of protein in the urine)	Eyes, skin, respiratory system, central nervous system, kidneys	0.025 mg/m ³ TWA ₈ C – 0.1 mg/m ³ Skin IDLH – 10 mg/m ³	N/A	N/A	N/A
Selenium compounds, as Se (7782-49-2)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	0.2 mg/m ³ TWA ₈ IDLH – 1 mg/m ³	N/A	N/A	N/A
Silver metal, and soluble compounds, as Ag (7440-22-4)	Inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	0.01 mg/m ³ TWA ₈ IDLH – 10 mg/m ³	N/A	N/A	N/A

TWA₈ – 8-hour time weighted average
 Skin – OEL based primarily on skin exposure hazard
 C – Ceiling Limit
 Ca – potential or confirmed human carcinogen
 IDLH – Immediately Dangerous to Life or Health
 LFC – Lowest Feasible Concentration
 OEL – Occupational Exposure Limit
 STEL – Short Term Exposure Limit
 LEL – Lower Explosive Limit

A.4.3 Activity Hazard Analysis

The activity hazard analysis summarizes the field activities to be performed during the project, outlines the hazards associated with each activity, and presents controls that can reduce or eliminate the risk of the hazard occurring. Table A-3 presents the activity hazard analysis for conducting the topographic survey.

Table A-3
Activity Hazard Analysis

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water’s edge on banks. ¹			
Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying	Slips, trips, and falls	<ul style="list-style-type: none"> • Avoid walking while writing or texting—maintain a heads-up posture. • Be aware of potentially slippery surfaces and tripping hazards. Use handrails where available. Wear footwear that has sufficient traction. • Maintain good housekeeping practices. Clean up all spills immediately. • Be aware of weather effects on the work area, including wet and/or frozen ground. • Jumping, running, and horseplay are prohibited. • Keep all areas clean and free of debris to prevent any trips and falls. • Be aware of and limit loose clothing or untied shoelaces that may contribute to slips, trip, and falls. • Notify the field team members of any unsafe conditions. 	<ul style="list-style-type: none"> • Routinely inspect work area for unsafe conditions.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water’s edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying (continued)	Heat stress	<ul style="list-style-type: none"> • Adjust work schedules, as necessary, to avoid the hottest part of the day. • Take rest breaks as warranted. • Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • Maintain body fluids at normal levels. • Train workers to recognize the symptoms of heat-related illness. 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Monitor workers’ physical conditions. • Monitor outside temperature versus worker activity.
	Cold stress	<ul style="list-style-type: none"> • Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • Educate workers to recognize the symptoms of frostbite and hypothermia. • Use appropriate cold-weather gear, up to and including Mustang-type bib coveralls or jacket/bib combinations. • Consider additional precautions if working near water in cold weather. • Have a dry change of clothing available. • Train workers to recognize the symptoms of cold-related illness. 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Monitor workers’ physical conditions and PPE. • Monitor outside and water temperature versus worker activity and PPE.
	Rain or snow	<ul style="list-style-type: none"> • Wear appropriate PPE (rain gear). 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Inspect PPE daily prior to use.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water’s edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying (continued)		<ul style="list-style-type: none"> • Be aware of slip hazards, puddles, and electrical hazards when working in wet conditions. • If extremely cold conditions are forecast, consider additional precautions or postponing work activity. 	<ul style="list-style-type: none"> • Routinely inspect work area for deteriorating conditions.
	Sunshine	<ul style="list-style-type: none"> • Have sunscreen available for ultraviolet protection. • Have abundant water available to prevent dehydration. • Consider wearing wide-brimmed headwear and light-colored, lightweight, sun-blocking clothing. 	<ul style="list-style-type: none"> • Ensure that sunscreen and water are available.
	Lightning	<ul style="list-style-type: none"> • Do not begin or continue work until lightning subsides for at least 30 minutes. Disconnect and do not use or touch electronic equipment. • Immediately head for shore if on the water and lightning is observed. If not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	<ul style="list-style-type: none"> • Obtain weather forecast and updates as needed.
	High winds	<ul style="list-style-type: none"> • Wear goggles or safety glasses if dust or debris are visible. 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Ensure that goggles or safety glasses are available.
	Biological hazards (flora [e.g., poison ivy and poison oak])	<ul style="list-style-type: none"> • Be aware of likely biological hazards in the work area. 	<ul style="list-style-type: none"> • Ensure that insect repellent is available.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water’s edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying (continued)	and fauna [e.g., ticks, bees, spiders, mosquitoes, and snakes])	<ul style="list-style-type: none"> • Wear appropriate clothing (i.e., hat, long-sleeve shirt, long pants, leather gloves, boots, and Tyvek coveralls, as appropriate), and apply insect repellent. • Wear hand and arm protection when clearing plants or debris from the work area. • Be aware of potential wildlife and defensive behavior (e.g., nesting birds, or animals with young). 	<ul style="list-style-type: none"> • Inspect clothing and skin for insects (e.g., ticks) after working in insect-prone areas.
	Noise exposure	<ul style="list-style-type: none"> • Wear hearing protection in high noise environments or when working around heavy machinery or equipment (action level of 85 decibels averaged over an 8-hour day). 	<ul style="list-style-type: none"> • Ensure that hearing protection is available.
	SARS-CoV-2 virus (COVID-19)	All basic program elements in the General Coronavirus Prevention Under Stay at Home - Stay Healthy Guidelines (L&I 2020a) will be met, except for distancing more than 6 ft at all times (distances of less than 6 ft may occur at times on boats). Therefore, per L&I guidance referenced below, a hazard assessment was done to determine that this work site is a medium transmission risk. Based on this risk, the required PPE was identified and included in the alternative strategies in addition to basic program	<ul style="list-style-type: none"> • Confirm by observation that work conforms to preventive measures.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water's edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
		<p>elements. In total, the following control actions will be taken.</p> <ul style="list-style-type: none"> • Stay at home if sick or exhibiting COVID-19 symptoms. • Avoid group meetings in enclosed spaces. • Drive separately to/from work site. Monitor workers' temperatures for signs of fever. • Maintain social distancing (i.e., minimum 6-ft distance) to extent possible from other people. • Follow proper coughing and sneezing etiquette and personal hygiene (e.g., frequent and thorough handwashing or using sanitizer with at least 60% alcohol). • Avoid sharing tools and equipment and decontaminate/disinfect all tools, equipment, and supplies frequently. • Wear modified Level D PPE, including gloves and protective face coverings with safety glasses or face shields. • Limit number of personnel to minimum needed to complete the work and modify work spaces to allow greater distancing. 	

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water’s edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
		<ul style="list-style-type: none"> Refer to Attachment A.3 for additional details. 	
	Physical injury from moving heavy equipment	Follow procedures outlined in Section A.4.1.5 for safely launching a boat from a trailer.	<ul style="list-style-type: none"> Confirm by observation that work conforms to preventive measures.
	Falling overboard	Use care in boarding/departing from vessel. Wear PFD when on deck. Follow safe work practices related to vessel operations specified in Section A.6.0.	<ul style="list-style-type: none"> Confirm by observation that work conforms to preventive measures.

Note:

- https://pdhonline.com/courses/1101/02_surveys.pdf

A.5.0 Work Zones and Shipboard Access Control

Direct contact with contaminated media may occur below MHHW; however, no physical sample collection or processing will occur. The only designated contaminated work zone is below MHHW and will require minimal decontamination upon exit. Any security or access control problems will be reported to the property owner or appropriate authorities. When accessing other property through access agreements, HASP requirements will be coordinated with those owners and any other HASPs that may be applicable on that site.

Security and control of access to the boat will be the responsibility of the FOM/HSO and boat captain. Boat access will be granted only to necessary project personnel and authorized visitors. Visitors will be provided a copy of the HASP, a briefing on the project and related health and safety requirements, and an opportunity to ask questions about the HASP, and they will be required to sign the acknowledgement in Attachment A.1.

A.6.0 Safe Work Practices

Due to the nature of the topographic survey, safe work practices are primarily related to slips, trips, and falls. Some operations may be performed from a boat or other floating platform, which would introduce additional potential hazards. All employees actively working on projects involving vessel operations will be thoroughly trained in the applicable safety, underway, docking, fueling, and various necessary operational procedures. The minimum responsibilities of the field crew members are as follows:

1. Do not climb over or under obstacles of questionable stability.
2. Work only in well-lighted spaces.
3. Make eye contact with equipment operators when moving within the range of their equipment.
4. Be aware of the movements of equipment when not in the operator's range of vision.
5. Get immediate first aid for all cuts, scratches, abrasions, or other minor injuries.
6. Always use the buddy system.
7. Be alert to your own and other workers' physical condition.
8. Have contact information for the client or owner while on site. If unauthorized personnel or a homeless encampment is encountered during work, the individuals should not be disturbed, the field crew should leave the area, contact the client or owner, and notify the PM or field lead.
9. Report all accidents, no matter how minor, to the FOM/HSO.
10. Do not do anything dangerous or unwise even if ordered by a supervisor.

The following safety rules are specific to on-water operations:

1. During all vessel operations the boat captain is in charge and takes full responsibility for safe operation of the vessel.
2. All vessel operators shall have adequate knowledge of the US Coast Guard (USCG) regulations, "Rules of The Road" and shall be approved for vessel operation by the FOM.
3. Vessels over 20 feet shall be inspected annually by a qualified marine surveyor to ensure structural integrity and safe operating conditions exist. Records of inspections shall be maintained on the vessel for vessels over 20 feet and shall be available to the designated authority.
4. When the vessel is brought onto a job site, it shall be inspected and tested by the vessel crew and determined to be in safe operating condition prior to the initiation of prescribed work.
5. Any vessel found to be in an unsafe condition shall be taken out of service and its use prohibited until the specified unsafe conditions have been corrected.
6. Prior to vessel departure from the dock, all onboard personnel shall be familiar with their duties and responsibilities in the event of an emergency, and the location of the vessel's emergency first-aid and firefighting equipment, as verbally communicated by a qualified member of the vessel crew.
7. All vessels shall be equipped with a PFD for each person onboard, a VHF marine radio and all USCG required safety equipment.
8. Navigation lights, radar systems, radios, depth sounders, and other navigational equipment shall be operated, inspected, and recorded each week and prior to each job by qualified personnel to ensure their proper operation.
9. A detailed daily work schedule that includes the approximate times, site locations, access points and other pertinent information necessary to locate crew members in the event of emergency, will be filed with the local field office or appropriate shore-side personnel.
10. Prior to departure from the dock, the vessel's fuel capacity will be checked to ensure adequate fuel is available to complete the day's work and maintain sufficient fuel reserves to allow for a reasonable margin of safety.
11. Fuel used on the outbound trip to assigned work areas shall not exceed one-third of the total fuel reserves. The pilot shall monitor fuel consumption throughout the work day and begin the inbound transit when remaining fuel reserves approach 150% of the fuel quantity used during the outbound transit.
12. Coast Guard approved PFDs shall be worn by all personnel when on deck or in an open vessel, regardless of other safety devices utilized. All safety devices must be inspected for defects prior to each use and those found to be defective replaced immediately. PFDs need not be worn while working inside an enclosed cabin, but must be readily available when going on deck from the cabin area.

13. Additional emergency/rescue equipment onboard vessels will include, but not be limited to, throw rings, throw ropes, dye markers, strobes, flares, boat hooks, and other safety equipment required by the USCG.
14. Vessel fuel valves shall be in the closed position when shutting down boat operations for the night or more than 8 hours.
15. Smoking shall be prohibited on the boat at all times and/or within 20 feet of fuel tanks.
16. A minimum of one 10-pound A-B-C fire extinguisher will be properly certified, maintained, and located conspicuously onboard all motor-driven vessels.
17. Work areas and access-ways shall be kept clean and clear of obstructions at all times.
18. A proper watch shall be maintained in order to avoid other vessels, floating debris, deadheads, and other obstructions.
19. When conducting night operations or working in reduced visibility, proper navigation lights shall be displayed, a safe speed (as warranted by the conditions) shall not be exceeded, and a proper watch shall be posted.

A.7.0 Personal Protective Equipment and Safety Equipment

Appropriate PPE will be worn as protection against potential hazards. Specific PPE is outlined in the activity hazard analysis. In addition to PPE that will be worn by personnel, basic emergency and first aid equipment will also be provided. Equipment for the field team will include the following:

1. A copy of this HASP
2. First aid kit adequate for the number of personnel

The FOM/HSO will ensure that the safety equipment is utilized. Equipment will be checked daily to ensure its readiness for use.

A.8.0 Monitoring Procedures for Site Activities

For this project, the monitoring program will consist of all workers monitoring themselves and their co-workers for signs that might indicate physical stress or illness. All personnel will be instructed to look for and inform each other of any deleterious changes in their physical or mental condition during the performance of all field activities. Examples of such changes are as follows:

1. Headaches
2. Dizziness
3. Nausea
4. Symptoms of heat stress
5. Blurred vision
6. Cramps
7. Irritation of eyes, skin, or respiratory system

8. Changes in complexion or skin color
9. Changes in apparent motor coordination
10. Increased frequency of minor mistakes
11. Excessive salivation or changes in papillary response
12. Changes in speech ability or speech pattern
13. Shivering
14. Blue lips or fingernails

If any of these conditions develop, work shall be halted immediately and the affected person(s) evaluated. If further assistance is needed, personnel at the local hospital will be notified, and an ambulance will be summoned if the condition is thought to be serious. If the condition is the direct result of sample collection or handling activities, procedures will be modified to address the problem.

A.9.0 Decontamination

Surveyors will work in potentially contaminated areas below MHHW. At a minimum, boots and equipment that contact contaminated sediment will require decontamination before leaving contaminated areas. Decontamination stations will be set up at top of bank (if access is from land) or adjacent to the boat (if access is from water) to clean boots, equipment, and any other contaminated gear and avoid tracking contamination into clean areas. The following measures will be observed to prevent or minimize exposure to potentially contaminated materials:

- Do not walk through spilled materials.
- Do not handle, touch, or smell environmental media directly.
- Make sure PPE has no cuts or tears prior to use.
- Protect and cover any skin injuries.
- Stay upwind of airborne dusts and vapors.
- Do not eat, drink, chew tobacco, or smoke in the work zones.

A.9.1 Decontamination Equipment

All equipment taken into potentially contaminated areas will be visually inspected and, if necessary, decontaminated prior to leaving the area. Rinsate from all decontamination activities will be collected for proper disposal. Decontamination of equipment and tools will take place within the contamination reduction zone.

The following supplies will be available to perform decontamination activities:

- Wash and rinse buckets
- Tap water and phosphate-free detergent
- Scrub brushes

- Distilled/deionized water
- Pressure washer/steam cleaner, if appropriate
- Paper towels and plastic garbage bags

A.9.2 Personnel Decontamination

The FOM will verify that all site personnel are familiar with personnel decontamination procedures as listed below. All personnel wearing PPE in a contaminated work area must undergo decontamination, as appropriate, prior to entering the Safe Zone. Personnel will perform the following decontamination procedures:

- Wash and rinse outer gloves and boots in portable buckets to remove gross contamination.
- If suit is heavily soiled, rinse it off.
- Remove outer gloves; inspect and discard if damaged. Leave inner gloves on. Personnel will remove their outer garment and gloves, dispose of them, and properly label container or drum. Personnel will then decontaminate, as appropriate, their hard hats and boots with an aqueous solution of detergent or other appropriate cleaning solution. These items then will be hand-carried to the next station. Remove inner gloves.
- Thoroughly wash hands and face if they came into contact with sediment before leaving an area with contamination.

A.9.3 Non-Disposable Personal Protective Equipment

Non-disposable PPE may include boots and gloves. When decontaminating boots and gloves, observe the following practices and procedures:

- Decontaminate the boots or gloves outside with a solution of detergent and water; rinse with water prior to leaving the site.
- Protect the boots or gloves from exposure by covering with disposable covers such as plastic to minimize required decontamination activities.

A.9.4 Emergency Personnel Decontamination

Personnel with medical problems or injuries may also require decontamination. There is the possibility that the decontamination may aggravate or cause more serious health effects. If prompt lifesaving, first aid, and medical treatment are required, decontamination procedures will be omitted. In either case, a member of the site management team will accompany contaminated personnel to the medical facility to advise on matters involving decontamination.

A.10.0 Disposal of Contaminated Materials

Contaminated materials must be contained and characterized for proper disposal. Anchor QEA will provide decontamination equipment and remove residue from decontamination.

A.11.0 Training Requirements

Project-specific training is described in Section 2.5 of the QAPP. Because of the potential contact with contaminated media when working below MHHW elevation, HAZWOPER training is required for surveying personnel. At least one member of the field team must have first-aid and cardiopulmonary resuscitation (CPR) training. Documentation of which individuals possess first-aid and CPR training will be kept in the project health and safety files.

A.12.0 Medical Surveillance

A medical surveillance program conforming to the provisions of 29 CFR 1910.120(f) is not necessary for field team members because they do not meet any of the four criteria outlined in the regulations for implementation of a medical surveillance program:

- Employees who are or may be exposed to hazardous substances or health hazards at or above permissible exposure levels for 30 days or more per year (1910.120(f)(2)(I))
- Employees who must wear a respirator for 30 days or more per year (1910.120(f)(2)(ii))
- Employees who are injured or become ill due to possible overexposures involving hazardous substances or health hazards from an emergency response or hazardous waste operation (1910.120(f)(2)(iii))
- Employees who are members of HAZMAT teams (1910.120(f)(2)(iv))

As described in Section A.8, employees will monitor themselves and each other of any deleterious changes in their physical or mental condition during the performance of all field activities.

Specific attention will be given to the requirement to screen all workers at the beginning of their shifts by taking their temperatures and asking them if they have a fever, cough, shortness of breath, fatigue, muscle aches, or new loss of taste or smell. Thermometers used shall be 'no touch' or 'no contact' models to the greatest extent possible. If a 'no touch' or 'no contact' thermometer is not available, the thermometer will be properly sanitized between each use. Any worker with a temperature of 100.4°F or higher will be considered to have a fever and will be sent home.

As described in Section A.8, employees will monitor themselves and each other for any deleterious changes in their physical or mental conditions during the performance of all field activities.

Regarding monitoring exposures to the SARS-CoV-2 (COVID-19) virus, there are three possible scenarios:

- Primary exposure: When an employee has tested positive for the virus
- Secondary exposure: When an employee has had direct contact with someone diagnosed with COVID-19 within the last 14 days

- Tertiary exposure: When an employee has had direct contact with someone who has been quarantined due to close contact with someone else who has been diagnosed with or is being screened for COVID-19 within the last 14 days

The FC/HSO (or designee) will also act as the on-site COVID-19 Supervisor, and shall monitor the health of employees and enforce the measures established to minimize exposure to the SARS-CoV-2 virus. Workers are expected to inform the FC/HSO if they develop symptoms of or have been exposed to anyone with COVID-19.

A12.1 COVID-19 Primary Exposure

If an employee has tested positive for COVID-19, the FC/HSO will immediately take the following actions:

- The employee will be immediately sent away for isolation (i.e., 14-day self quarantine, until cleared by a healthcare professional) if they are at the site.
- The employee's steps will be traced to identify work areas with which the individual may have been in contact.
- All identified areas will be quarantined and marked as off limits to all site personnel, until a decontamination/disinfection process following CDC guidelines has been implemented.
- Employees who have been in direct/close contact (within 6 feet for 15 minutes or greater during a 24-hour period) with the infected individual will be asked to quarantine for 14 days or until released by a healthcare professional and may be asked to seek medical testing.

A12.2 COVID-19 Secondary Exposure

If an employee has had direct/close contact with someone who has been diagnosed with COVID-19 within the last 14 days, the FC/HSO will immediately take the following actions:

- Immediately send the employee home for medical testing or 14-day self-quarantine or until released by a healthcare professional.
- Consult with the Washington State Department of Health for additional guidance if the employee is diagnosed with COVID-19 and has been instructed to self-quarantine.
- Inform the CHSMs and PMs immediately.
- Follow up with the field team after test results for the potentially exposed employee have been received.
- Continue cleaning common touch areas with recommended disinfectants.
- Follow primary exposure scenario (Section A.12.1) if an employee is confirmed as positive for COVID-19.

A12.3 COVID-19 Tertiary Exposure

It is more difficult to manage tertiary exposure because there is innately less control in a situation wherein an employee may have had direct contact with an acquaintance who has been quarantined due to close contact with someone else who has been diagnosed with or is being screened for COVID-19 within the last 14 days. The FC/HSO will request that all site workers provide any relevant exposure information. If an employee is believed to have been subject to tertiary exposure, take the following actions:

- Consult with the Washington State Department of Health for additional guidance if the acquaintance who is diagnosed with or screened for COVID 19 has been instructed to self-quarantine.
- Inform the CHSMs and PMs immediately.
- Follow up with the field team after test results for the potentially exposed employee have been received.
- Continue cleaning common touch areas with recommended disinfectants.
- Follow secondary exposure scenario (Section A.12.2) if the acquaintance is confirmed as positive for COVID-19.

A.13.0 Reporting and Record Keeping

Each member of the field crew will sign the HASP review form (see Attachment A.1). If necessary, accident/incident report forms will be completed by the FOM/HSO.

The FOM/HSO or a designee will note health- and safety-related details of the project in the field logbook and record. The logbook must be bound, and the pages must be numbered consecutively. Entries will be made with indelible ink. At a minimum, each day's entries must include the following information:

1. Project name or location
2. Names of all personnel onboard
3. Weather conditions
4. Type of fieldwork being performed

The person maintaining the entries will initial and date the bottom of each completed page. Blank space at the bottom of an incompletely filled page will be lined out. Each day's entries will begin on the first blank page after the previous work day's entries.

A.14.0 Emergency Response Plan

As a result of the hazards and the conditions under which operations will be conducted, the potential exists for an emergency situation to occur. Emergencies may include personal injury, fire, or

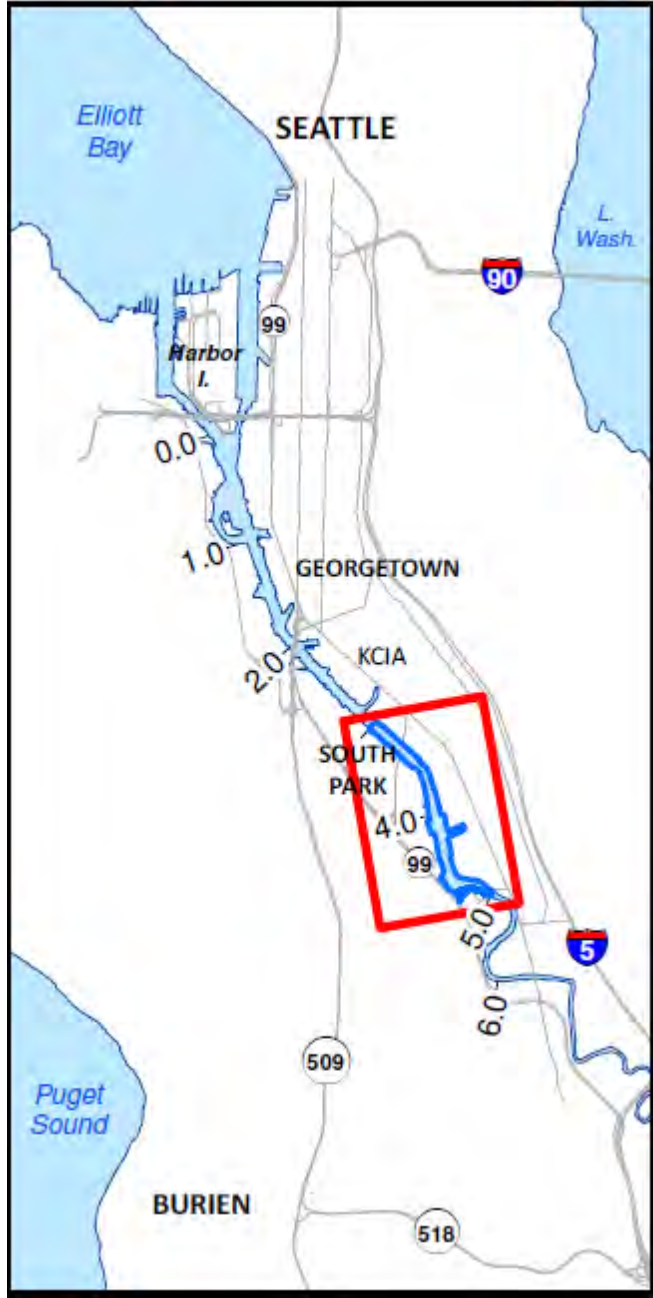
explosion. Occupational Safety and Health Administration (OSHA) regulations require that an emergency response plan be available for use to guide actions in emergency situations.

The local fire department and ambulance service can provide timely response. Field personnel will be responsible for identifying an emergency situation, providing first aid if applicable, notifying the appropriate personnel or agency, and evacuating any hazardous area.

The following sections identify the onboard individual(s) who should be notified in case of emergency, provide a list of emergency telephone numbers, offer guidance for particular types of emergencies, and provide directions and a map for getting from any surveying location to a hospital.

Site Map

Figure A
General Site Location Overview



Category	Information
Possible Chemicals of Concern	Polychlorinated biphenyl compounds, carcinogenic polycyclic aromatic hydrocarbons, arsenic, dioxins/furans in sediment below MHHW
Minimum Level of Protection	Level D
Site Location	Lower Duwamish Waterway upper reach (between river miles 3.0 and 5.0)

A.14.1 Pre-Emergency Preparation

Before the start of field activities, the FOM/HSO will ensure that preparation has been made in anticipation of emergencies. Preparatory actions include the following:

1. Meeting with the FOM/HSO and equipment handlers concerning the emergency procedures in the event that a person is injured
2. A training session given by the FOM/HSO informing all field personnel of emergency procedures, locations of emergency equipment and their use, and proper evacuation procedures
3. A training session given by senior staff operating field equipment, to apprise field personnel of operating procedures and specific risks associated with that equipment
4. Ensuring that field personnel are aware of the existence of the emergency response plan in the HASP and ensuring that a copy of the HASP accompanies the field team

A.14.2 Project Emergency Coordinator

The FOM/HSO will serve as the Project Emergency Coordinator in the event of an emergency. He will designate his replacement for times when he is not onboard or is not serving as the Project Emergency Coordinator. The designation will be noted in the logbook. The Project Emergency Coordinator will be notified immediately when an emergency is recognized. The Project Emergency Coordinator will be responsible for evaluating the emergency situation, notifying the appropriate emergency response units, coordinating access with those units, and directing interim actions onboard before the arrival of emergency response units. The Project Emergency Coordinator will notify the HSM and the PM as soon as possible after initiating an emergency response action. The PM will have responsibility for notifying the client.

A.14.3 Emergency Response Contacts

All onboard personnel must know whom to notify in the event of an emergency situation, even though the FOM/HSO has primary responsibility for notification. Table A-4 lists the names and phone numbers for emergency response services and individuals.

**Table A-4
Emergency Response Contacts**

Contact	Telephone Number
Emergency Numbers	
Ambulance	911
Police	911
Fire	911
Harborview Medical Center	(206) 323-3074
Emergency Responders	
U.S. Coast Guard	
Emergency General information	(206) 286-5400 (206) 442-5295 UHF Channel 16
National Response Center	(800) 424-8802
EPA	(908) 321-6660
Washington State Department of Ecology – Northwest Region Spill Response (24-hour emergency line)	(206) 649-7000
Emergency Contacts	
<i>King County Project Representative</i>	
Bryahna Davis	(206) 263-2540 (office)
<i>Project Manager</i>	
Tom Wang	(206) 903-3314 (office) (206) 465-0900 (cell)
<i>Corporate Health and Safety Director</i>	
David Templeton	(206) 903-3312 (office) (206) 910-4279 (cell)
<i>Health and Safety Program Lead</i>	
Tim Shaner	(251) 375-5282 (Office) (251) 281-3386 (Cell)
<i>Field Operations Manager/Field Health and Safety Officer</i>	Site cellular telephone:
Jo Miller	(206) 332-0800 (Office) (253) 344-9069 (Cell)

A.14.4 Recognition of Emergency Situations

Emergency situations will generally be recognizable by observation. An injury or illness will be considered an emergency if it requires treatment by a medical professional and cannot be treated with simple first-aid techniques.

A.14.5 Emergency Procedures Related to Vessel Operations

In deteriorating weather/sea conditions, radio the field office or U.S. Coast Guard (USCG) with your location, direction of travel, and approximate speed before a dangerous situation can develop. In an emergency, contact the USCG on VHF channel 16. Emergency VHF radio broadcasts should be preceded by “Pan-Pan, Pan-Pan, Pan-Pan” for non-life-threatening emergencies and “Mayday, Mayday, Mayday” for life-threatening situations. Be prepared to provide your vessel name, location, and the nature of the emergency. Don life jackets and/or survival suits, take necessary measures to prevent hypothermia, and wait for the search and rescue.

A.14.6 Fire

Field personnel will attempt to control only small fires, should they occur. If an explosion appears likely, personnel will follow evacuation procedures specified during the training session. If a fire cannot be controlled with a fire extinguisher on board that is part of the required safety equipment, personnel will either withdraw from the vicinity of the fire or evacuate the boat as specified in the training session.

A.14.7 Personal Injury

In the event of serious personal injury, including unconsciousness, possibility of broken bones, severe bleeding or blood loss, burns, shock, or trauma, the first responder will immediately do the following:

1. Administer first aid, if qualified.
2. If not qualified, seek out an individual who is qualified to administer first aid, if time and conditions permit.
3. Notify the Project Emergency Coordinator of the incident, the name of the individual, the location, and the nature of the injury.
4. The Project Emergency Coordinator will immediately do the following:
 - a. Notify the boat captain and the appropriate emergency response organization.
 - b. Assist the injured individual.
 - c. Follow the emergency procedures for retrieving or disposing equipment reviewed in the training session and leave the site en route to the predetermined land-based emergency pick-up.
 - d. Designate someone to accompany the injured individual to the hospital.

- e. If a life-threatening emergency occurs, i.e., injury where death is imminent without immediate treatment, the FOM/HSO or boat captain will call 911 and arrange to meet the Medic One unit at the nearest accessible dock. Otherwise, for emergency injuries that are not life threatening (i.e., sprains, minor lacerations, etc.) the Project Emergency Coordinator will follow the procedures outlined above and proceed to the Harbor Island Marina or to an alternative location of his choice if that would be more expedient.
- f. Notify the HSM and the PM.

If the Project Emergency Coordinator determines that emergency response is not necessary, he or she may direct someone to transport the individual by vehicle to the nearest hospital. Directions and a map showing the route to the hospital are in Section A.14.10.

If a worker leaves the boat to seek medical attention, another worker should accompany them to the hospital. When in doubt about the severity of an injury or exposure, always seek medical attention as a conservative approach, and notify the Project Emergency Coordinator.

The Project Emergency Coordinator will have responsibility for completing all accident/incident field reports, OSHA Form 200s, and other required follow-up forms.

A.14.8 Overt Personal Exposure or Injury

No overt exposure to toxic materials is expected to occur. Accordingly, no emergency procedures related to such exposure are required for this project.

A.14.9 Spills and Spill Containment

No bulk chemicals or other materials subject to spillage are expected to be used during this project. Accordingly, no spill containment procedure is required for this project.

A.14.10 Emergency Route to the Hospital

The name, address, and telephone number of the hospital that will be used to provide medical care is as follows:

Harborview Medical Center
325 - 9th Ave.
Seattle, WA
(206) 323-3074

From Areas 7 or 12, directions to Harborview Medical Center (Figure B) are as follows:

1. Drive north on 14th Avenue S across the South Park Bridge.
2. Turn left on E Marginal Way S.
3. Turn right on S Michigan Street.
4. Look for entrance ramps to I-5 Northbound (left turn).
5. Head north on I-5.
6. Take the James Street exit.
7. Turn right on James Street to 9th Avenue.
8. Turn right on 9th Avenue.
9. Emergency entrance will be two blocks south on the right.

From Areas 18, 23, 27, 30, 31, 32, 34, or 37, directions to Harborview Medical Center (Figure B) are as follows:

1. Exit property and turn left on E Marginal Way S.
2. Turn right on Corson Avenue S.
3. Turn right on S Bailey St (get into one of the two left turn lanes).
4. Turn left onto Carleton Avenue S (get in one of the two left lanes for I-5 Northbound).
5. Look for entrance ramps to I-5 Northbound (left turn).
6. Head north on I-5.
7. Take the James Street exit.
8. Turn right on James Street to 9th Avenue.
9. Turn right on 9th Avenue.
10. Emergency entrance will be two blocks south on the right.

From Areas 35 or 36, directions to Harborview Medical Center (Figure C) are as follows:

1. Drive north on W Marginal Way S.
2. Turn right onto 14 Avenue S.
3. Turn left on E Marginal Way S.
4. Turn right on S Michigan Street.
5. Look for entrance ramps to I-5 Northbound (left turn).
6. Head north on I-5.
7. Take the James Street exit.
8. Turn right on James Street to 9th Avenue.
9. Turn right on 9th Avenue.
10. Emergency entrance will be two blocks south on the right.

If working from a boat, directions from the Duwamish River Boat Ramp to Harborview Medical Center (Figure D) are as follows:

1. Dock the vessel at the 1st Avenue S boat launch (Duwamish River Boat Ramp).
2. Drive east on S River Street.
3. Turn left on 4th Avenue S.
4. Turn left on E Marginal Way S.
5. Turn right on S Michigan Street.
6. Look for entrance ramps to I-5 Northbound (left turn).
7. Head north on I-5.
8. Take the James Street exit.
9. Turn right on James Street to 9th Avenue.
10. Turn right on 9th Avenue.
11. Emergency entrance will be two blocks south on the right.

Figure B
Hospital Route Map if Working from Land in all Areas Except 35 and 36

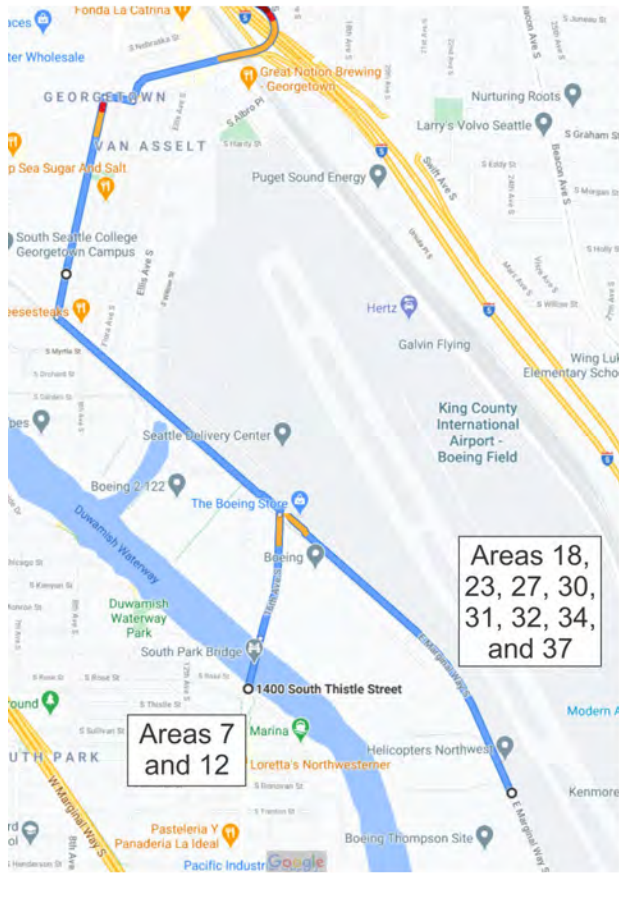
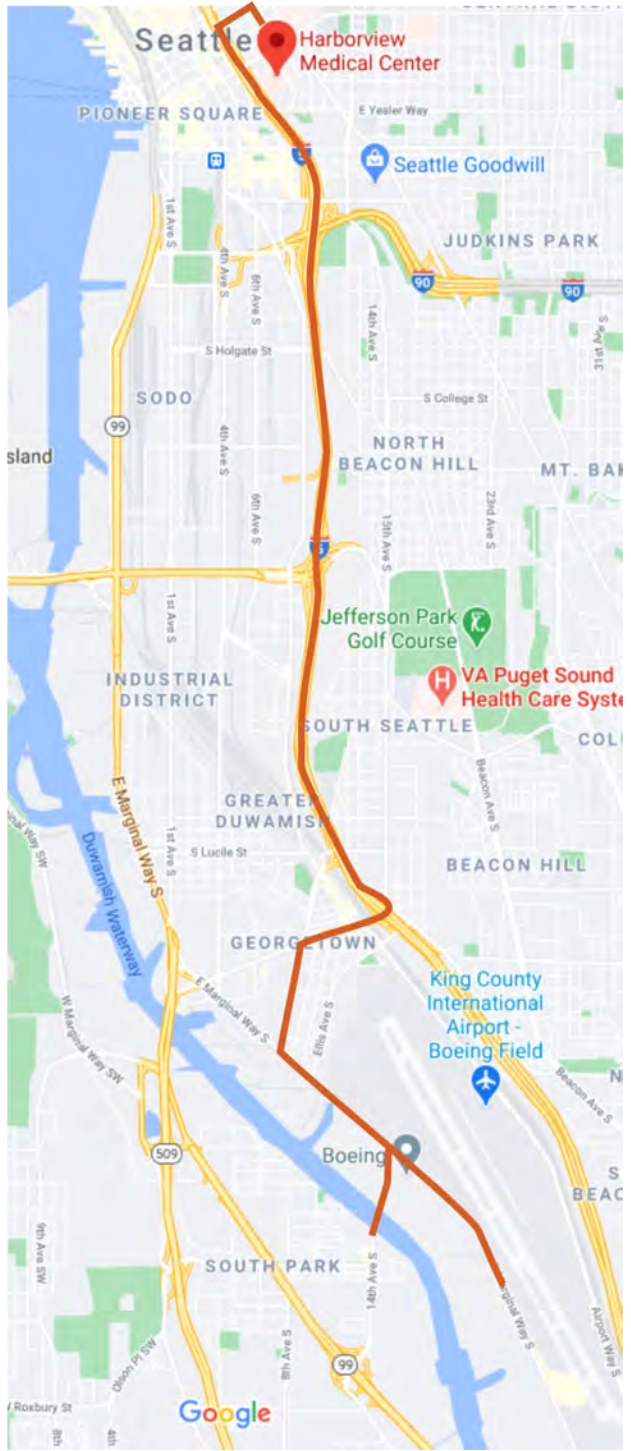
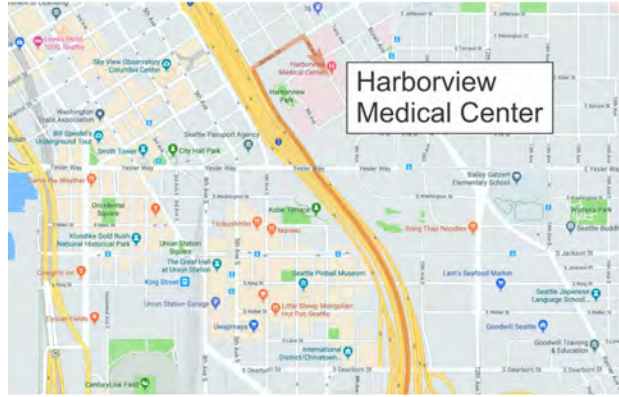


Figure C
Hospital Route Map if Working from Land in Areas 35 or 36

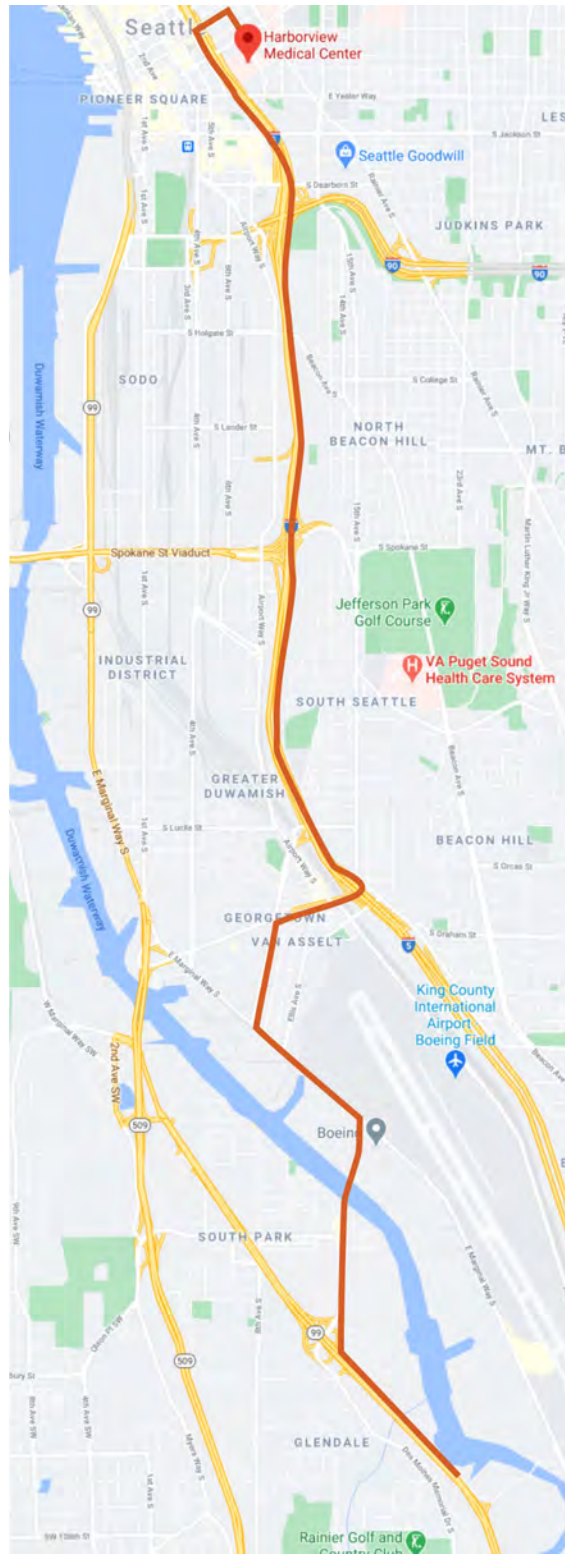
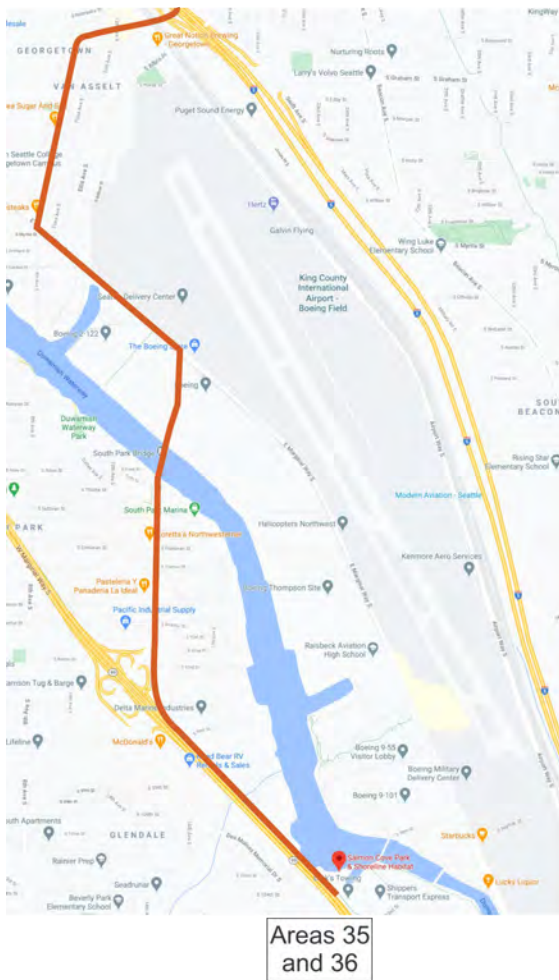
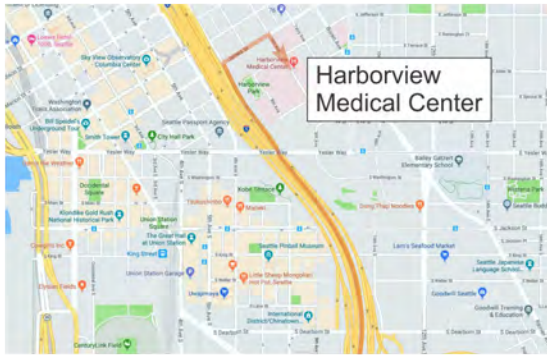
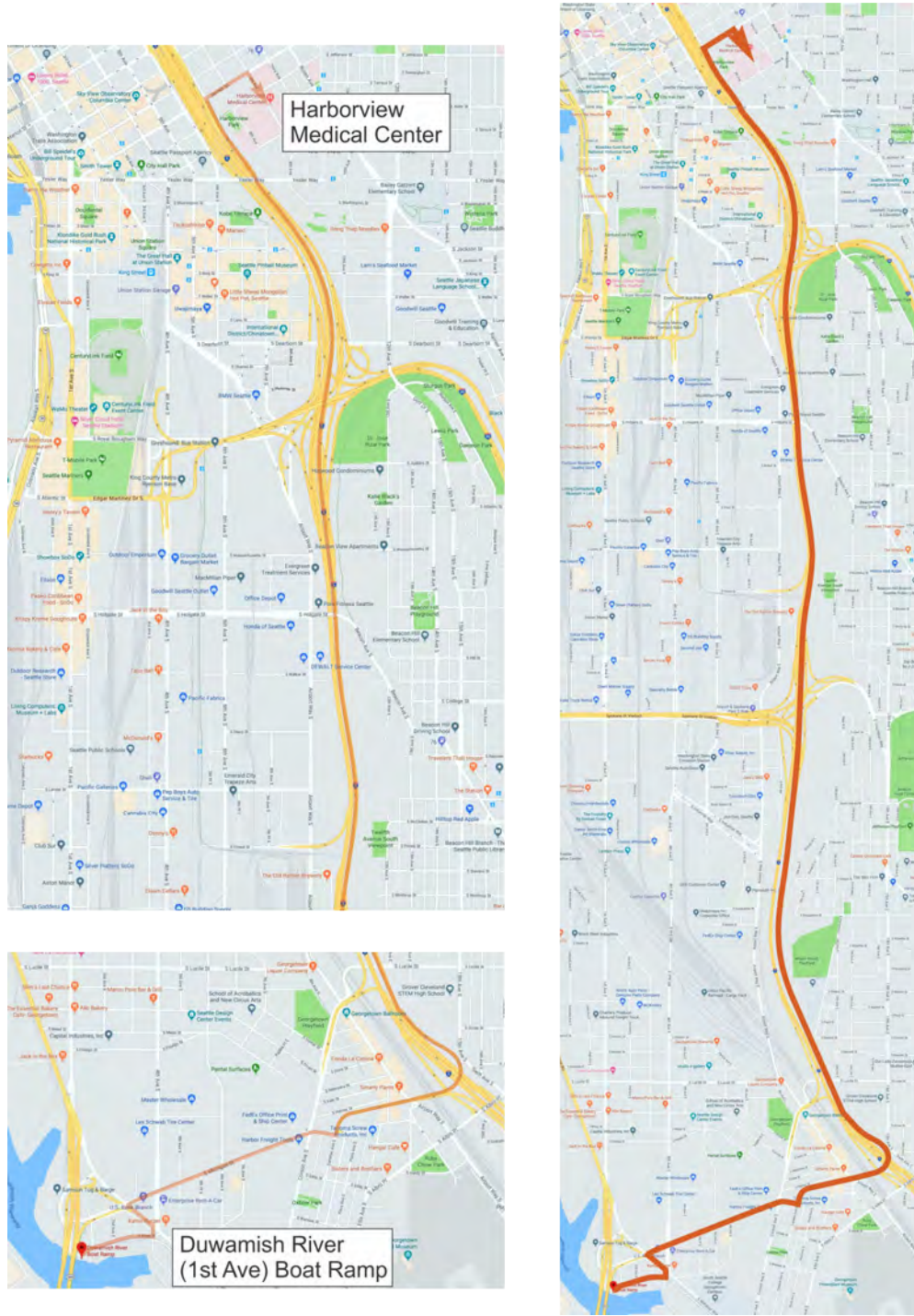


Figure D
Hospital Route Map if Working from Boat



Modifications to Health and Safety Plan

Modification to Health and Safety Plan

Date: June 23, 2021
Project No: 180067-02.02
Project Name: Lower Duwamish Waterway Upper Reach Phase II Investigation

Modification: The following amendments and updates are being made to the Health and Safety Plan (HASP) as currently referenced in the HASP document, Exhibit 3, and JSAs.

Masks and Vaccinations – Allow for fully vaccinated staff to not wear masks (if they choose to do so and provided the crews whom they work with are also comfortable with it). Each firm (prime and subconsultants) involved in the work is responsible to follow Washington State Labor and Industries (L&I) Guidance. Key updates can be found in Publication F414-179-000 [06-2021] at <https://lni.wa.gov/forms-publications/F414-179-000.pdf>. Individuals will have to sign a formal attestation of their vaccination or provide proof of vaccination to their employer in accordance with these requirements. Employers must be able to demonstrate they have verified vaccination status for workers who are not masked or physically distanced. Verification methods may include:

- Creating a log of workers who have verified they've been vaccinated and the date of verification,
- Checking vaccination status each day as workers enter a jobsite, or
- Other methods demonstrating an employer has verified worker vaccination status may also meet the standard.

This is not a mandatory process and individuals can elect to not sign a form or provide information if they prefer to do so. Everyone will still need to have a mask/face covering with them in the event crews find themselves in a situation where wearing a mask would be appropriate, such as being in close contact with others, when requested. These processes will be implemented in accordance with current state and county allowances and L&I requirements.

Short Sleeve Shirts – Field staff will be allowed to wear short sleeve shirts while completing various field sampling/handling/processing activities. We will maintain the goal of preventing dermal contact with contaminated sediments, and ask that individuals who elect to wear short sleeve shirts also wear a longer glove to help prevent contact from occurring. We'll also be asking individuals to maintain good cleaning practices, washing arms/exposed skin at any time sediment may come in contact with someone's skin. If it is found that dermal contact is unavoidable in these situations, other protective measures will need to be implemented. The goal is to prevent dermal contact with contaminated sediment.

Responsibility is taken, not given. Take responsibility for safety.

Modification to Health and Safety Plan

Reason for Modification:



Masks and Vaccinations – State of Washington and King County guidance has recent changes to Covid guidance to allow for fully vaccinated individuals to not wear face coverings in work settings if they choose to do so, as long as the employer approves and has verified vaccination status. This change to the HASP requirements is being made to provide consistency with Washington State and King County guidance and also with L&I requirements.

Short Sleeve Shirts – due to forecasted high temperatures, this change to the HAPS is being implemented to reduce the potential for field staff to develop heat stress or other heat related issues during implementation of the field work.

Site Personnel Briefed

Name: <u>Windward Environmental</u>	Date: <u>June 25, 2021</u>
Name: <u>SEE</u>	Date: <u>June 25, 2021</u>
Name: <u>Gravity Marine</u>	Date: <u>June 25, 2021</u>
Name: <u>Holocene Drilling</u>	Date: <u>June 25, 2021</u>
Name: <u>ConeTec</u>	Date: <u>June 25, 2021</u>
Name: <u>Northern Marine</u>	Date: <u>June 25, 2021</u>
Name: <u>Bright Engineering</u>	Date: <u>June 25, 2021</u>
Name: <u>True North Land Surveying</u>	Date: <u>June 25, 2021</u>
Name: <u>Stell</u>	Date: <u>June 25, 2021</u>
Name: _____	Date: _____
Name: _____	Date: _____

Approvals

Field Lead: <u>Matt Woltman</u>		<u>June 25, 2021</u>
Printed Name	Signature	Date
Project Manager: <u>Tom Wang</u>		<u>June 25, 2021</u>
Printed Name	Signature	Date

Responsibility is taken, not given. Take responsibility for safety.

Attachment A.1

HASP Acknowledgement Form

Attachment A.1. HASP Acknowledgement Form

I have read a copy of the Health and Safety Plan, which covers field activities that will be conducted to investigate potentially contaminated areas in the LDW. I understand the health and safety requirements of the project, which are detailed in this Health and Safety Plan.

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

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Signature

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Signature

Date

Attachment A.2

Modification to Health and Safety Plan
Form

Modification to Health and Safety Plan

Date: _____

Project No: _____

Project Name: _____

Modification: _____

Reason for Modification: _____

Site Personnel Briefed

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Approvals

Field Lead: _____

Printed Name

Signature

Date

Project
Manager:

Printed Name

Signature

Date

Attachment A.3

Phase I Construction Restart COVID-19

Job Site Requirements

Field Program COVID-19 Management Plan

Date: _____
Project No: _____
Project Name: _____

In response to the global situation regarding Coronavirus Disease 2019 (COVID-19), Anchor QEA, LLC, has compiled the following guidance to support our ongoing field efforts, whether sediment sampling efforts, wetland delineations, groundwater evaluation, site visits, or construction management. This Field Program COVID-19 Management Plan (Plan) is an addendum to the existing project-specific Health and Safety Plan (HASP) for field activities and shall remain a portion of the HASP until superseded by other notification. All personnel who have previously signed acknowledging the HASP must sign off acknowledging this Plan. Acknowledgement of this Plan will be included with future acknowledgements of the overall HASP.

We must keep in mind that our underlying social distancing requirements and responsibilities are the foundation of all our activities. Do not come to work if you are feeling sick and contact your manager immediately if you have symptoms consistent with COVID-19, have tested positive for COVID-19, and/or suspect you have been exposed. We also need to be cognizant of changing state and local orders and directives (or removal of restrictions) associated with COVID-19. Specific field efforts will require discussions between the Project Manager, field staff, and client to address availability, travel, and other considerations. If necessary specific state, local, or project-specific orders and directives can be included with this management plan after review by Health and Safety. In summary:

1. Field programs will follow this Field Program COVID-19 Management Plan.
2. Updated information can be found at the U.S. Centers for Disease Control and Prevention (CDC) website (<https://www.cdc.gov/>), as well as state and local health agency websites.
3. Travel will be reviewed on a case-by-case basis with the preferred method being individual vehicles. All forms of travel must still follow social distancing, applicable face covering, and other relative guidance. If it is believed that travel by plane, bus, or train is necessary for field efforts, the following evaluation process must be followed:
 - a. Is there a reasonable alternative? (other staff that could drive, subcontractor, delay work, etc.)
 - b. Are there travel restrictions in place for where the travel would be from or to? (not allowed in, self-isolation period, etc.)
 - c. Are there remote options? (FaceTime, WebEx, Zoom, subcontractor, etc.)
 - d. Collaborate with the regional lead and H&S for review and consideration.
4. Nationwide, our community defense is to slow the spread of COVID-19, which may include not traveling between impacted areas and less impacted areas. Therefore, we will evaluate limiting travel for field work on a case-by-case basis consistent with this community defense approach and following appropriate national, state, and local guidance. We expect that this situation will be fluid as conditions change in the country.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

5. Field project schedules, modifications, and regulatory requirements will be discussed with the client representatives.
6. Human Resources is coordinating options for staff who have workload limited by travel restrictions.

The objective of this Plan is to provide additional operational guidelines to the team that address the challenges presented by COVID-19 and ensure consistency in our response actions across the project team. These guidelines are consistent with and based on recommendations from the CDC, with multiple links provided throughout. All personnel have Stop Work Authority. If you should have questions or concerns, please direct those to your Field Lead, Staff Manager, or Project Manager.

Some site owners or prime contractors may conduct temperature screening prior to entering a site, which is in accordance with some current guidance. Some site owners or prime contractors may want to record actual temperature readings, test results, or information other than general yes or no questions related to travel, symptoms, etc. If you choose not to participate in the recording of screening information, the site owner or prime contractor may not allow you to access the site. You should immediately contact your Field Lead, Staff Manager, or your Project Manager to discuss alternative work and available options.

The following describes minimum measures to be followed by the project team:

Prior to Coming to the Site

- Understand the community exposure and travel history of all employees. If an employee has traveled to an affected country outside the United States or has had exposure to infected individuals within the United States, we require a self-isolation period or testing as determined in coordination with WorkCare.
 - The following link provides the CDC list of countries to avoid non-essential travel:
<https://wwwnc.cdc.gov/travel/notices>
 - The following link provides CDC information on cases within the United States:
<https://www.cdc.gov/coronavirus/2019-ncov/cases-in-us.html>
- Some projects may require procedures to document a 14-day look-back period that is absent of symptoms consistent with COVID-19.
- Staff should be self-isolated, as necessary, prior to coming to the site in accordance with current federal, state, and local orders. Any staff member who has been exposed to any household member (including healthcare professionals) exhibiting COVID-19 symptoms or has tested positive for COVID-19 will not report to the site for work unless they have met the guidelines contained in this Plan.

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Field Program COVID-19 Management Plan

- Travel will be reviewed on a case-by-case basis with the preferred method being individual vehicles. Wear cloth face coverings in public settings, in addition to social distancing measures, including travel to the site, grocery stores, and picking up to-go food.
- A significant percentage of people with COVID-19 are asymptomatic; therefore, the use of masks or cloth face coverings is required when social distancing cannot be maintained. If masks (i.e., N 95) are used, they should be used in accordance with OSHA 1910.120, stating, in part, that the user must be fit-tested and in a surveillance program.
- Prior to departing for the site, the Site Safety Officer should obtain enough supply of U.S. Environmental Protection Agency (EPA)-registered disinfectants, wipes, hand sanitizers, and gloves.
- If employees feel that they are sick or showing symptoms, they are required to stay home and not report to work. They should call their manager and Project Manager immediately and notify them that they are sick. Showing up to work with symptoms will result in the employee being asked to leave to avoid potentially exposing others to the virus.
- If employees are showing symptoms, it is recommended that they contact their healthcare provider for medical advice. This could include an examination and testing as recommended by their healthcare provider. If you feel the need to visit a medical professional, it is recommended that you contact their office first to determine when you should visit.
- If employees show any symptoms, they will be asked to leave and not return until they have been released by WorkCare to return. It is requested that they submit a physician's note releasing them back to work. The exception to this would be if their primary physician recommends more restrictive measures.
 - https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Fguidance-business-response.html
- Some projects may require temperature readings prior to entry to a project site. Anchor QEA supports privacy concerns, and if a temperature reading is recorded (vs. a green light/red light approach based on a temperature threshold) we will take steps to document the confidentiality of that information. However, in some cases Anchor QEA cannot control the procedure nor document confidentiality. In these situations, Anchor QEA staff will need to acknowledge that if they choose to not comply in the future that is their right. If a staff member chooses to not comply, the Project Manager, Regional Lead, and Human Resources should be consulted.
- For projects that do not have an established daily screening, the WorkCare screening portal is to be used.
- Exposure to, or close contact with, means being within 6 feet of an individual for 15 minutes or greater in a 24-hour period or being exposed to their cough or sneeze.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

- Symptoms include cough, difficulty breathing, fever, losing sense of taste or smell, or common cold or flu symptoms.
- If you meet the criteria listed for Primary or Secondary exposure, listed below, do not report to work; contact your manager, contact the Health and Safety representatives, and stay home until the appropriate return to work criteria are met.

On-Site Preventative Measures and Cleaning Requirements

- All employees who work on the site will be required to undergo a site safety orientation (tailgate meeting), which will include information on specific measures to be followed to address efforts to prevent the spread of COVID-19. All field staff are required to vocalize concerns and ensure that protective measures that will slow the spread of COVID-19 are employed.
- Follow the site-specific HASP Personal Protective Equipment (PPE) requirements.
- The first step to control spread of the virus at the project job site is focused on hygiene. All employees and management staff will follow CDC guidance regarding hand washing.
 - <https://www.cdc.gov/handwashing/index.html>
 - Hand wash stations and/or sanitizing wipes/sanitizing gel will be made readily available around the job site and within project office trailers. If these supplies are insufficient, work should be stopped until additional supplies are procured.
- Office trailers will also be cleaned at least twice a day using disinfectant to wipe all surfaces that may be touched by hand including desk and table surfaces. In addition, office trailer personnel (as directed by the field lead) will be responsible for multiple daily cleaning of the various field offices and related workspaces.
- Smart phones and radios should be wiped down frequently throughout the day and should not be shared to the greatest extent possible. If these items are shared, they are to be wiped down prior to handing off to another individual or placing in storage for the day.
- Field support areas, boats/vessels, and equipment cabs will be cleaned throughout the day and at every shift change. All “touch” surfaces will be thoroughly wiped clean using a disinfectant.
- Employees should follow published guidance to limit transmission at home and outside of work: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-prevent-spread.html>
- The following links provide a list of U.S. Environmental Protection Agency recommended cleaning products able to kill the virus, as well as some initial guidance with alternatives if supplies run out. **“Note: Inclusion on this list does not constitute an endorsement by EPA. Additional disinfectants may meet the criteria for use against SARS-CoV-2. EPA will update this list with additional products as needed.”**
 - <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

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Field Program COVID-19 Management Plan

- If these products are not available, then either a diluted bleach solution or 70% alcohol solution will work.
- <https://www.cdc.gov/coronavirus/2019-ncov/community/home/cleaning-disinfection.html>
- If an employee becomes ill while on site, they should return to their hotel room or local home, contact their healthcare provider, and follow their guidance. The employee's manager should be contacted immediately. Our Health and Safety representatives will follow up with the employee. If the employee has a confirmed or presumed case as determined by a healthcare provider, we will follow our procedures as outlined in this document. If the employee is not able to transport themselves, local emergency responders will be called as per company protocol.

Case Response and Equipment & Facility Decontamination

According to the CDC, symptoms can appear 2 to 14 days after exposure. Symptoms or combinations of symptoms that may be consistent with COVID-19 include cough, shortness of breath, difficulty breathing, fever (100.4°F [37.8°C] or greater), chills, repeated shaking with chills, muscle pain, sore throat, or new loss of taste or smell. Some of the less common symptoms that have been reported are gastrointestinal symptoms like nausea, vomiting, or diarrhea.

If you have symptoms that are consistent with COVID-19 but have not tested positive, regardless of what your primary physician concludes, you are to self-isolate until you have been released to return to work by WorkCare. Immediately contact your Regional Lead and Project Manager. It is requested that you submit a physician's note releasing you back to work. The exception to this would be if your primary physician recommends more restrictive measures. In this case there is no need to alert or self-isolate any other employees.

Regarding COVID-19 exposures, there are three general scenarios:

- **Primary Exposure:** These are employees who have tested positive for the virus. If you have tested positive for COVID-19, you must be in self-isolation and an effort will be made to contact those people you had direct contact with in the last 14 days. You must not return to the work site until you have been released to return by WorkCare. The exception to this would be if your primary physician recommends more restrictive measures.
- **Secondary Exposure:** These are employees who, within the last 14 days, have had direct contact with someone who has tested positive for COVID-19. You must self-isolate until released by WorkCare to return. You are encouraged to seek medical care. If you start to have symptoms or test positive, follow the appropriate guidance for Primary Exposure noted above.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

- **Tertiary Exposure:** These are employees who have had direct contact with someone that meets Secondary Exposure criteria. In this scenario, there is no requirement to isolate; however, the employee should self-monitor for the development of symptoms.

In the event there is a documented case of an employee becoming infected with COVID-19 (Primary Exposure) the field management team will take immediate action as follows:

- The employee should immediately self-isolate until they have been released to return by WorkCare.
- Notify the Project Manager, Human Resources, and Regional Lead immediately.
- The employee's work steps will be traced back 14 days to identify work areas the individual may have contacted. All identified areas will be isolated and marked off limits to all site personnel, until a decontamination process can be implemented.
- All identified areas will be disinfected by qualified individuals following CDC guidelines.
- Employees who came in direct contact with the individual will be notified. The Regional Lead will work with the Project Manager and Human Resources to notify the Anchor QEA employees who were identified.
- The Project Manager, in coordination with the client, will notify subcontractors and vendors on the site who had direct contact with the individual.
- The Project Manager should notify the client immediately and inform them of our backup staffing plan as well as our notification plan.
- Confidentiality for the employee should be maintained.

If an employee, within the last 14 days, has had direct contact with someone diagnosed with COVID-19 (Secondary Exposure), the field management team will take immediate action as follows:

- Send employee home immediately and have them coordinate with WorkCare for their return.
- Determine if the diagnosed individual has been instructed to self-isolate by the local Health Department and, if so, consult with the Health Department for guidance.
- Let the Regional Lead and Project Manager know immediately.
- Continue cleaning of common touch areas with recommended disinfectants.
- If employee tests positive, this becomes a Primary Exposure scenario and that guidance should then be followed.

Situations where an employee may have had Tertiary Exposure are more difficult to manage. This involves having direct contact with someone who has had Secondary Exposure. In the event of Tertiary Exposure, the field management team will take immediate action as follows:

- Determine if the diagnosed or screened individual has been instructed to self-isolate by the local Health Department and, if so, consult with the Health Department for guidance.
- Let the Regional Lead and Project Manager know immediately.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

- No further notifications are necessary with this scenario.
- Continue cleaning of common touch areas with recommended disinfectants.
- This becomes a Secondary Exposure scenario if the acquaintance is confirmed to be infected, and that guidance should then be followed.

When employees are in self-isolation, their manager or designee will follow up with them two times per week.

General Measures / Guidance

- Employees must follow the same prevention guidelines off site, which includes travel, hotel, and other activities, in order to address potential exposures outside the workplace.
- Travel, whether by train or plane, will be reviewed on a case-by-case basis with the preferred method being individual vehicles. Mass transit should be avoided where social distancing is difficult.
- Wear cloth face coverings to cover the nose and mouth in public settings.
- Diligent application of underlying social distancing requirements and responsibilities (they are and will be the foundation of all our activities):
 - Cloth face coverings will be used in site settings where social distancing measures are difficult to maintain, including travel to and from the site
 - Maintaining at least 6 feet of distance and social distancing as a foundation of all our activities
- The virus may live on a variety of surfaces for many days; closely follow the cleaner/disinfectant contact time. Avoid combining products that are incompatible and may create toxic byproducts.
- Avoid restaurants if open; use drive-in or take-out services.
- When at hotels, disinfect your own room with EPA-registered cleaners or alternatives, and use the NO HOUSEKEEPING sign to minimize the people coming into your room.
- Catch coughs and sneezes with a disposable tissue, etc. and throw away, then wash hands. If tissues are not available, direct coughs and sneezes into elbow.
- Employees should avoid close contact with other employees and practice social distancing (i.e., maintain more than 6 feet distance from others).
- Handshaking will be avoided, and only non-contact greetings should be used.
- Avoid touching your own mouth, nose, or eyes.
- Hand washing stations with soap and water will be available at all restroom facilities. Frequent hand washing is recommended throughout the day. Washing hands thoroughly for a minimum of 20 seconds with soap and water is one of the most effective ways to prevent the spread of germs. Personnel should wash their hands regularly, before and after going to the bathroom, before and after eating, and after coughing, sneezing, or blowing their nose.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

- If soap and water are not available, use hand sanitizer with a minimum of 60% alcohol content.
- The CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g., grocery stores and pharmacies) especially in areas of significant community-based transmission. Cloth face coverings fashioned from household items or made at home from common materials can be used as a voluntary public health measure. The cloth face coverings recommended are not surgical masks or N-95 respirators, which are critical supplies that must continue to be reserved for healthcare workers and other medical first responders, as recommended by CDC guidance.
- Anchor QEA will provide staff with face coverings that can be used for field projects and staff may also use their own face covering if they choose.
- Some projects, municipalities, counties, and states may implement additional requirements for the use of face coverings, gloves, or other items. Those requirements should be followed.
- Time spent in large groups in enclosed spaces will be avoided. Potential alternatives could include phone conferences or holding meetings outside (i.e., field crew safety meetings). Field activities, whether inside or outside, should be planned to minimize employee density in that location.
- Avoid use of shared beverage containers (e.g., coffee pots, water coolers) or food setups (e.g., pizza, buffets). For instance, bring an individual water bottle.
- Work requiring several or more staff will need to be evaluated and a determination will need to be made on how the work can be done safely with a few staff, if at all. If the work cannot be conducted safely, then it may have to be re-scheduled for a later time.
- Disinfecting wipes will be located throughout the site for wiping down hard surfaces as required. Alternatives, such as bleach/water solutions, may be used in addition to or in place of disinfecting wipes.
- The frequency and scope of the cleaning program for project facilities (office trailers, bathrooms, other buildings, and work areas) will be reviewed and increased, as necessary.
- Areas where employees eat should be a focus of cleaning efforts.
- Field team equipment operators, vessel operators, and vehicle drivers (whether Anchor QEA equipment or subconsultant equipment) will be provided with disinfecting wipes to clean the enclosed spaces daily. Emphasis should be on hard surfaces that are commonly touched (steering wheel, door handles, levers, buttons).
- Alternates for critical job functions should be available.
- All employees will have their own PPE and will not share with others. Respirators and PPE will be cleaned/disinfected when doffing, along with a thorough arm, hand, and face washing when exiting.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

- All employees need to be vigilant regarding potential exposure and transmission of COVID-19. Avoiding any complications related to this outbreak will be a team effort as much as any safety or production concerns related to the project.

Fully Vaccinated Staff

In accordance with public health recommendations for fully vaccinated people as issued by CDC, this guidance is based on the level of community spread of SARS-CoV-2, the proportion of the population that is fully vaccinated, and the rapidly evolving science on COVID-19 vaccines.

For the purposes of this document and in accordance with CDC, people are considered fully vaccinated for COVID-19 ≥ 2 weeks after they have received the second dose in a two-dose series, or ≥ 2 weeks after they have received a single-dose vaccine.

Fully vaccinated staff are to continue to follow all guidance in this document except for testing and quarantining following a known exposure if they are asymptomatic. If fully vaccinated staff begin to experience COVID-19 symptoms, the above guidance in Case Response and Equipment & Facility Decontamination will be followed.

Staff are encouraged to get vaccinated when they are eligible in the location where they reside. They are also encouraged, while not required, to upload record of their vaccination into the WorkCare screening portal.

Responsibility is taken, not given. Take responsibility for safety.

Field Program COVID-19 Management Plan

COVID-19 Management Plan Acknowledgement

Project Number: _____

Project Name: _____

My signature below certifies that I have read and understand the policies and procedures specified in this Field Program COVID-19 Management Plan.

Date	Name (print)	Signature	Company

Responsibility is taken, not given. Take responsibility for safety.

Phase 1 Construction Restart COVID-19 Job Site Requirements

Phase 1: Low-risk construction work resumes.

Any existing construction projects complying with the points below may resume only those work activities that do not require workers to be closer than six-feet together. If a work activity requires workers to be closer than six-feet, it is not considered low-risk and is not authorized. Adherence to the physical distancing requirement and the health and safety points below will be strictly enforced.

Prior to recommencing work all contractors are required to develop and post at each job site a comprehensive COVID-19 exposure control, mitigation, and recovery plan. The plan must include policies regarding the following control measures: PPE utilization; on-site social distancing; hygiene; sanitation; symptom monitoring; incident reporting; site decontamination procedures; COVID-19 safety training; exposure response procedures; and a post-exposure incident project wide recovery plan. A copy of the plan must be available on each job site during any construction activities and available for inspection by state and local authorities. Failure to meet posting requirements will result in sanctions, including the job being shut down.

All Contractors are required to post at each job site written notice to employees, subcontractors and government officials the Phase 1 work that will be performed at that job site and signed commitment to adhere to the requirements listed in this document.

All contractors have a general obligation to keep a safe and healthy worksite in accordance with state and federal law. Failure to follow these requirements will be considered a violation of these duties and be penalized accordingly. Under RCW 49.17.060, “each employer shall furnish to each of their employees a place of employment free from recognized hazards that are causing or likely to cause serious injury or death to his or her employees and shall comply with the rules, regulations, and orders promulgated under this chapter.” The Washington State Department of Labor & Industries’ Division of Occupational Safety and Health (DOSH) is responsible for workplace safety and health, including inspections and enforcement, consultation, technical assistance, training, education and grants.

All contractors are also required to comply with the following COVID-19 worksite-specific safety practices, as outlined in Gov. Jay Inslee’s “Stay Home, Stay Healthy” Proclamation 20-25, and in accordance with the Washington State Department of Labor & Industries General Coronavirus Prevention Under Stay Home-Stay Healthy Order (DOSH Directive 1.70: <https://www.lni.wa.gov/safety-health/safety-rules/enforcement-policies/DD170.pdf>) and the Washington State Department of Health Workplace and Employer Resources & Recommendations at <https://www.doh.wa.gov/Coronavirus/workplace>:

COVID-19 Site Supervisor

1. A site-specific COVID-19 Supervisor shall be designated by the contractor at every job site to monitor the health of employees and enforce the COVID-19 job site safety plan. A designated COVID-19 Supervisor must be present at all times during construction activities, except on single-family residential job sites with 6 or fewer people on the site.

COVID-19 Safety Training

2. A Safety Stand-Down/toolbox talk/tailgate training must be conducted on all job sites on the first day of returning to work, and weekly thereafter, to explain the protective measures in place for all workers. Social distancing must be maintained at all gatherings.
3. Attendance will be communicated verbally and the trainer will sign in each attendee.
4. COVID-19 safety requirements shall be visibly posted on each jobsite.

Social Distancing

5. Social distancing of at least 6 feet of separation must be maintained by every person on the worksite at all times.
6. Gatherings of any size must be precluded by taking breaks and lunch in shifts. Any time two or more persons must meet, ensure minimum 6 feet of separation.
7. Identify “choke points” and “high-risk areas” on job sites where workers typically congregate and control them so social distancing is always maintained.
8. Minimize interactions when picking up or delivering equipment or materials, ensure minimum 6-foot separation.
9. To the extent practical allow only one trade/subcontractor at a time on a jobsite and maintain 6-foot separation social distancing for each member of that trade. If more than one trade/subcontractor must be on the job to complete the job then at a minimum all trades and subcontractors must maintain social distancing policies in accordance with this guidance.

Personal Protective Equipment (PPE) – Employer Provided

10. Provide personal protective equipment (PPE) such as gloves, goggles, face shields and face masks as appropriate, or required, for the activity being performed.
11. Masks, in accordance with Washington Department of Health guidelines, or as required by Washington Department of Labor & Industries (L&I) safety rules, must be worn at all times by every employee on the worksite.
12. Eye protection must be worn at all times by every employee while on worksite.
13. Gloves must be worn at all times by every employee while on worksite. The type of glove worn should be appropriate to the task. If gloves are not typically required for the task, then any type of glove is acceptable, including latex gloves.
14. If appropriate PPE cannot be provided, the worksite must be shut down.

Sanitation and Cleanliness

15. Soap and running water shall be abundantly provided on all job sites for frequent handwashing. Workers should be encouraged to leave their workstations to wash their hands regularly, before and after going to the bathroom, before and after eating and after coughing, sneezing or blowing their nose.
16. When running water is not available, portable washing stations, with soap, are required, per WAC 296-155-140 2(a) – (f). Alcohol-based hand sanitizers with greater than 60% ethanol or 70% isopropanol can also be used, but are not a replacement for the water requirement.
17. Post, in areas visible to all workers, required hygienic practices, including not to touch face with unwashed hands or with gloves; washing hands often with soap and water for at least 20 seconds; use hand sanitizer with at least 60% alcohol; cleaning and disinfecting frequently touched objects and surfaces such as workstations, keyboards, telephones, handrails, machines, shared tools, elevator control buttons, and doorknobs; covering the mouth and nose when coughing or sneezing as well as other hygienic recommendations by the U.S. Centers for Disease Control (CDC).
18. Make disinfectants available to workers throughout the worksite and ensure cleaning supplies are frequently replenished.
19. Frequently clean and disinfect high-touch surfaces on job sites and in offices, such as shared tools, machines, vehicles and other equipment, handrails, doorknobs, and portable toilets. If these areas cannot be cleaned and disinfected frequently, the jobsite shall be shut down until such measures can be achieved and maintained.
20. When the worksite is an occupied home, workers should sanitize work areas upon arrival, throughout the workday and immediately before they leave, and occupants should keep a personal distance of at least 10 feet.
21. If an employee reports feeling sick and goes home, the area where that person worked should be immediately disinfected.

Employee Health/Symptoms

22. Create policies which encourage workers to stay home or leave the worksite when feeling sick or when they have been in close contact with a confirmed positive case. If they develop symptoms of acute respiratory illness, they must seek medical attention and inform their employer.
23. Have employees inform their supervisors if they have a sick family member at home with COVID-19. If an employee has a family member sick with COVID-19, that employee must follow the isolation/quarantine requirements as established by the State Department of Health.
24. Screen all workers at the beginning of their shift by taking their temperature and asking them if they have a fever, cough, shortness of breath, fatigue, muscle aches, or new loss of taste or smell. Thermometers used shall be 'no touch' or 'no contact' to the greatest extent possible. If a 'no touch' or 'no contact' thermometer is not available, the thermometer must be properly sanitized between each use. Any worker with a temperature of 100.4°F or higher is considered to have a fever and must be sent home.

25. Instruct workers to report to their supervisor if they develop symptoms of COVID-19 (e.g., fever, cough, shortness of breath, fatigue, muscle aches, or new loss of taste or smell). If symptoms develop during a shift, the worker should be immediately sent home. If symptoms develop while the worker is not working, the worker should not return to work until they have been evaluated by a healthcare provider.
26. Failure of employees to comply will result in employees being sent home during the emergency actions.
27. Employees who do not believe it is safe to work shall be allowed to remove themselves from the worksite and employers must follow the expanded family and medical leave requirements included in the Families First Coronavirus Response Act or allow the worker to use unemployment benefits, paid time off, or any other available form of paid leave available to the worker at the workers discretion.
28. Any worker coming to work on a construction site in Washington from any state that is not contiguous to Washington must self-quarantine for 14 days to become eligible to work on a job site in Washington.
29. If an employee is confirmed to have COVID-19 infection, employers should inform fellow employees of their possible exposure to COVID-19 in the workplace but maintain confidentiality as required by the Americans with Disabilities Act (ADA). The employer should instruct fellow employees about how to proceed based on the CDC [Public Health Recommendations for Community-Related Exposure](#).

Job Site Visitors

30. A daily attendance log of all workers and visitors must be kept and retained for at least four weeks. The log must include the name, phone number, and email address of all workers and visitors.

No jobsite may operate until the contractor can meet and maintain all requirements, including providing materials, schedules and equipment required to comply.

These Phase 1 COVID-19 job site safety practices are required as long as the “Stay Home, Stay Healthy” Gubernatorial Proclamation 20-25 is in effect or if adopted as rules by a federal, state or local regulatory agency. **All items minus numbers 28 and 30 are subject to enforcement action under L&I’s Division of Occupational Safety and Health (DOSH).**

Workplace safety and health complaints may be submitted to the L&I Call Center: (1-800-423-7233) or via e-mail to adag235@lni.wa.gov. **General questions about how to comply with construction safety practices** can be submitted to the state’s Business Response Center at <https://app.smartsheet.com/b/form/2562f1caf5814c46a6bf163762263aa5>. **All other violations related to Proclamation 20-25** can be submitted via at: <https://bit.ly/covid-compliance>.

DOSH DIRECTIVE

Department of Labor and Industries
Division of Occupational Safety and Health

Keeping Washington Safe and Working

1.70 General Coronavirus Prevention Under Stay Safe - Stay Healthy Order Updated: December 22, 2020

I. Purpose

This Directive provides enforcement policy when evaluating workplace implementation of social distancing, facial coverings and respiratory protection, sanitation and sick employee practices as required under the Governor's Stay Home – Stay Healthy Order. On December 10, 2020, the Governor amended this order to “Stay Safe-Stay Healthy” ([Proclamation 20-25.9](#)).

Under the Order, people are required to stay home except where the Governor has authorized regional or industry specific permission to restart operations or operate essential businesses. Employers who continue operations under the Order are required to maintain coronavirus prevention practices consistent with DOSH, OSHA and Department of Health guidance. **Coronavirus is recognized as a very serious workplace hazard.**

II. Scope and Application

- A. Under the WISH Act and existing DOSH rules, employers are required to protect workers from hazards and implement programs to address known hazards in the workplace.
- B. DOSH staff will limit actions related to infectious disease only when there is an aspect of exposure that is specific to the relationship between employers and workers. DOSH will do so in a manner consistent with public health orders and issued guidance.
- C. There are extensive recommendations for healthcare workplaces with specific guidance related to treatment of COVID-19 patients and the related infectious disease control measures. This Directive will not normally be used by DOSH staff in specific healthcare delivery work task settings for hospital and clinic workers who are delivering care directly with COVID-19 patients. All other hospital and clinic work, such as maintenance, food preparation and delivery, administrative support, and supplies, are covered by this Directive.
- D. This Directive does cover workers providing healthcare services for people not known or suspected of having COVID-19. This work must follow procedures for Universal or Standard Precautions, or equivalent programs, as recommended by the CDC. This includes current recommendations to address COVID-19 as a community transmission hazard and potential for transmission by asymptomatic people in specific healthcare specialties.
- E. DOSH has updated this Directive to be consistent with current CDC guidance regarding quarantine and isolation. The guidance on workplace safety practices remains consistent with the Governor's Executive Orders regarding COVID-19. This updated Directive supersedes DD 1.70, dated September 25, 2020.

III. References

- Chapter 296-800 WAC, Safety and Health Core Rules
 - WAC 296-800-11005, Provide a workplace free from recognized hazards
 - WAC 296-800-140, Accident Prevention Program
 - WAC 296-800-22005, Keep your workplace clean
 - WAC 296-800-23025, Provide convenient and clean washing facilities
- Chapter 296-842 WAC, Respirators
- WAC 296-155-040, Safe Place Standards
- WAC 296-307-045, What are the requirements of the safe place standard?
- WAC 296-307-16102, Additional requirements to protect occupants in temporary worker housing from 2019 novel coronavirus (COVID-19) exposure.
- Annual Fit-Testing, Respiratory Protection and Face Coverings during COVID-19 Pandemic (DOSH Directive 11.80, issued 5/22/2020)
- Governor's Proclamation "Stay Safe-Stay Healthy" Order, issued December 10, 2020
- Governor's COVID-19 Reopening Guidance for Businesses and Workers
- CDC Guidance: Infection Control in Healthcare Personnel
- CDC Coronavirus (COVID-19) Page
- Washington State Coronavirus Response (COVID-19) Page
- OSHA Publication 3990: Guidance on Preparing Workplaces for COVID-19.pdf (English)
- OSHA Publication 3992: Guidance on Preparing Workplaces for COVID-19.pdf (Spanish)
- Washington State Department of Health Recommendations for Temporary Worker Housing Facilities
- COVID-19 Guidance for Legionella and Building Water System Closures
- BOMA Guide "Getting Back to Work: Preparing Buildings for Re-Entry Amid COVID-19"
- COVID-19 Critical Infrastructure Sector Response Planning

IV. Background

Staff shall learn and consider the baseline expectations for employers to provide workers a safe workplace during the coronavirus (COVID-19) virus outbreak. Overt workplace specific practices by the employer must be continued in accordance with the [Governor's Executive Order](#).

There are four basic categories of prevention elements that must be addressed during the inspection/investigation. Employers must:

1. Educate workers about coronavirus and how to prevent transmission in the language they understand best;
2. Maintain social distancing (at least 6 feet of distance) or effective engineering/administrative controls;
3. Increased regular cleaning and sanitization of common-touch surfaces;
4. Ensure frequent and adequate employee handwashing and facilities; and

5. Make sure sick employees stay home (or are isolated) or go home and have procedures for workers to report a suspected or confirmed case of COVID-19.

Employers must also provide basic workplace hazard education about coronavirus and how to prevent transmission in the language best understood by the employee. DOSH staff will need to be thoughtful on how these four elements are addressed based on the challenges that the specific worksite tasks present, but all four elements must be addressed in each operating workplace.

DOSH Staff shall ensure that employers and employees are made aware that it is against the law for any employer to take any adverse action (such as firing, demotion, or otherwise retaliate) against a worker they suspect for exercising safety and health rights such as raising safety and health concerns to their employer, participating in union activities concerning safety and health matters, filing a safety and health complaint or participating in a DOSH investigation. DOSH Staff will ensure workers are informed they have 30 days to file their complaint with L&I DOSH and/or with Federal OSHA.

Employers must institute these prevention program elements or equivalent protections to limit the spread of the disease within the workplace under DOSH rules and in connection to the Governor's Order. These procedures are specific to COVID-19 prevention and the related virus. If a workplace has a concern about exposures to another pathogen, Technical Services must be consulted on procedures specific to that pathogen.

A. Basic Program Elements.

The following **bold program elements are essential** to the program whenever applicable. Employers who can establish work rules consistent with this section are not required to have further active monitoring or ongoing assessment of their workplace unless required by a separate requirement. (See applicable Safe Start guidelines and Chapter 296-307 WAC, Part L, *Temporary Worker Housing (TWH)*.)

1. **Educate workers (and customers) about COVID-19 and how to prevent virus spread.**
 - a. Post posters/information from the local health department, state Department of Health, Center for Disease Control and Prevention, and other authorities.
 - b. Inform workers about the steps being taken in the workplace to establish social distancing, increased handwashing, and to prevent the spread of the virus.
 - c. Make information for workers available in the language they understand best.
2. **Maintain at least 6 feet of spacing at all times.**
 - a. Occupied workstations are separated by 6 feet or have physical barriers between human breathing zones.
 - b. Only infrequent intermittent passing within 6 feet is allowed between employees without wearing coverings, masks or respiratory protection in accordance with DOSH Directive 11.80, *Annual Fit-Testing, Respiratory Protection and Face Coverings during COVID-19 Pandemic*.
 - c. Provide personal protective equipment (PPE) such as gloves, goggles, face shields and face masks as appropriate or required, to employees for the activity being performed.
 - d. Materials, product, or work items are transported between workers by mechanical means or by using staging points.

- Workers may be along a conveyor or production system carrying product.
- Workers may go to a central point one-at-a-time to drop off or pick up items that transfer between workers.
- Workers may have mailboxes, bins, or other surfaces at the periphery of their workspace where materials are left for them by other workers.
- Provisions must be made to clean objects handled by more than one worker when the items are transferred. Physically wiping the object with a disinfectant wipe or soap and water so it is visibly clean (no obvious soiling, smearing, or streaks) is sufficient.
- Social distancing must be maintained during breaks and at shift start and end, while workers are at the employer's worksite.
- Meetings with workers are limited by the maximum occupancy specified by the Safe Start guidelines for the business and phase the county is currently in, and are to maintain 6 foot spacing of all in attendance. If there are no Safe Start guidelines applicable to an establishment, the limits are: 10% occupancy for Phase 1; 30% occupancy for Phase 2; 50% occupancy for Phase 3; and limited by social distancing for Phase 4.

3. Regular cleaning of area, frequent cleaning of common-touch surfaces.

- a. A cleaning schedule must be kept to maintain general housekeeping to prevent buildup of dirt and clutter.
- b. The first step in cleaning is to remove buildups of dirt and other materials on surfaces. Water and soap or other cleaning fluids are used with wipes, clothes, brushes or other physical means of removing these materials so that there is no visible build-up, smears, or streaks on the surface. Disinfecting is the second step and is primarily needed for high touch surfaces. Effective diluted bleach solutions or an EPA approved disinfectant **must be used** to make sure this is effective. (See the list of approved disinfectants at <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>).

Surfaces that are commonly touched with the hands but difficult to clean (fabric, rough surfaces, and so forth) may need to be covered to make sure the environment is hygienic.

- c. Cleaning supplies need to be available to workers to do spot cleaning when necessary.
- d. Surfaces that are regularly touched by workers must be cleaned regularly to maintain a visibly clean state (no obvious soiling, smearing, or streaks).
 - For surfaces touched by multiple workers, this can be on a frequent schedule, or between workers.
 - For surfaces touched by a single worker, this needs to be done periodically, at least once per shift or when unclean, as a minimum.

4. **Workers must have facilities for frequent handwashing readily available,** including hot and cold (or tepid) running water and soap.
 - a. DOSH staff must pay particular attention to transient outdoor work, delivery workers and non-fixed worksites where there are no exceptions being granted. Portable wash stations are readily available.
 - b. To facilitate more frequent cleaning, secondary handwashing or sanitizing stations can be provided with either hand sanitizer, or wipes/towelettes.
 - c. Gloves may be used to enhance hand hygiene and reduce spread of the COVID-19 virus, but must also be changed or cleaned frequently to be effective for this purpose. (Bare hand contact with the virus is not the concern. The concern is transferring the virus to the face or other surfaces with the hands. Gloved hands will transfer the virus as effectively as bare hands.)
 - d. Workers must be able to wash their hands after touching any surface/tool suspected of being contaminated, before and after eating and using the restroom, and before touching their face.

5. **Sick employee and post- employee illness procedures.**

DOSH staff will ensure employers have a program to prevent sick employees from entering the workplace and when recognized, that ill employees are sent home.

- a. Ensure a system for preventing sick employees to be present at work.
- b. Establish a process for deep cleaning after any worker leaves the workplace reporting a suspected or confirmed case of COVID-19.
- c. Thoroughly clean areas where the worker worked or would have stayed more than 10 minutes.
 - Wipe all accessible surfaces.
 - Clean up any visible soiling including any smears or streaks.
 - Sanitize common touch surfaces in the vicinity.
- d. Do not allow other workers into these areas until the cleaning is complete.

6. **Reopening closed facilities.**

- a. The COVID-19 virus is not persistent, so cleaning is only recommended prior to re-occupancy if there were confirmed cases at the time of closure, or if occasional visits by people were made without provisions for cleaning. Enhanced cleaning per this Directive must commence at the time of re-occupancy.
- b. Additional information on procedures for opening buildings can be found in the Department of Health and BOMA guidelines in the reference section.

B. Consider Possible Alternate Strategies.

Some industries may have challenges with basic elements, so one or more of the following alternatives may be used to provide protection for workers.

1. Engineering controls can be established and maintained to provide an effective distancing of employees when it is not feasible to fully separate them.
 - a. Barriers must block direct pathways from face to face between individuals, and make it so any indirect air pathways are greater than 6 feet. Sneezes and coughs should not be directed into the air above someone within 6 feet.
 - b. Covers can be used on common touch surfaces that cannot be easily cleaned. The covers may create a cleanable surface, or be something that can be changed out between individuals.
 - c. Ventilation that provides a cleaned air supply to a worker's breathing zone.
2. Job modifications may be necessary to facilitate appropriate social distancing. Although an operation may be overall part of an essential industry or service, there may be portions of the work which can be deferred until a later time. In some cases, reorganizing the work may be necessary to break up tasks in a manner that facilitates social distancing or other protective measures.
3. Health surveillance can be done to identify early signs of infection, and separate workers who may present a risk to others.
 - a. There will usually be an initial screening and then periodic review (probably daily with COVID-19).
 - b. Initial screening will involve some review of the worker's history that may be relevant to their risk of contracting the disease. This may also include review of the worker's susceptibility to the disease and an education element on the disease and prevention.
 - c. Periodic screening will involve tracking symptoms and ongoing risks for contracting the disease.
 - d. The employer should set up surveillance in consultation with a physician or occupational health nurse and consider having ongoing participation or review by the healthcare professional.
 - e. The employer needs to consult with health professionals and determine whether the program relies on self-reporting by workers or if someone will be actively reviewing worker health on a regular basis.
4. Personal protective equipment is helpful to prevent transmission of the disease.
5. Face shields can prevent direct exposure to expelled droplets and provide protection from disinfectants, in addition to coverings, masks and respirators.
6. Respirators require care in use and management under a program covered by the Respirator rule, Chapter 296-842 WAC. Respirators are not to be used in lieu of social distancing, but may be appropriate where workers must have close proximity to others for extended periods to accomplish work tasks that can be done no other way.

7. Surgical face masks (loose fitting cloth covers over the mouth and nose) do not prevent respiration of fine aerosols and are not protective in close proximity. The primary purpose for these devices are to prevent exposures to others and may have a use when individuals enter the workplace with a cough or sneeze.

C. Evaluate Special Circumstances.

There are situations where strict social distancing may not be generally feasible for employer provided housing and businesses with extensive public interaction. There are also **exceptional** situations where an essential activity worker may be permitted to continue work following potential exposure to COVID-19, to ensure continuity of operations of essential functions, such as when cessation of operation of a facility may cause serious harm or danger to public health or safety. The following sections provide additional considerations which are applicable in these **specific** situations.

1. **Employer provided worker housing** is provided by the employer in some circumstances such as **agricultural workers, firefighters, and remote work areas.** (An **emergency rule for temporary worker housing in agriculture** has been adopted in WAC 296-307-16102.)
 - a. Workers may have limited control over their environment in some worker housing situations and to the extent that the employer controls conditions, the basic program elements should be maintained as feasible during non-working time.
 - b. Social distancing **must be supported** for occupants during the time workers are housed, which may require additional resources. This includes accommodation of social distancing during cooking, sleeping, and in transportation.
 - c. If strict social distancing is not feasible (including options for dedicated individual or family rooms or offsite accommodations) then health surveillance should be instituted (see above) prior to and during the housing period.
 - d. Housing occupants **must be provided** cleaners and equipment to maintain a hygienic living space.
 - e. **Plans for ill employees must be in place.** If a housing occupant becomes sick:
 - **Employers must provide them with accommodations that are separate from others.**
 - A separate building or room if available, or use barriers or distance to separate them from others.
 - Separate food and bathroom access is also necessary.
 - **Arrangement for medical access.**
 - Telemedicine resources should be utilized first to determine appropriate care.
 - **Provide for transportation**, if necessary in a manner that does not expose others.
 - The employer needs to consult with a physician or public health authority to monitor the situation and provide guidance on treatment and continued housing of all workers.

2. **Frequent customer/public interaction** may be necessary in some places of employment.
 - a. To the extent feasible, establish social distancing with physical systems.
 - Set up tables that position people away from workers.
 - Place pay stations at a safe distance.
 - Install barriers between people.
 - Place markers and lane dividers to encourage appropriate distancing.
 - b. Have managers or floor leads observing individuals in the workplace and prepared to address behaviors that may put workers at risk.
 - c. Provide supplemental washing facilities to allow additional handwashing when workers handle objects after others, such as:
 - Hand sanitizer stations
 - Wipes or towelettes
 - Tepid water and soap in portable containers.

NOTE: Gloves may be provided, but also must be washed regularly to prevent the spread of the virus. This may help for workers whose hands are bothered by frequent washing.

3. **Quarantine and isolation.** The requirements for people to quarantine or isolate are set by local health jurisdictions and apply to the individual. DOSH does not enforce these orders for individuals, but does expect employers to set rules to prevent people with known or potential COVID-19 virus infection, from entering the workplace. (Note that healthcare facilities may follow the CDC guidance specific to these settings--[Interim U.S. Guidance for Risk Assessment and Work Restrictions for Healthcare Personnel with Potential Exposure to COVID-19.](#))

Definitions

- **Quarantine** refers to sequestering after contact with a suspected or known COVID-19 case. The safest quarantine period ends 14 days after the last close contact with someone who has COVID-19.
- **Isolation** refers to sequestering when the individual is believed to be infected with SARS-CoV-2 (the virus that causes COVID-19) such as when someone has symptoms of COVID-19, or when someone tests positive for infection with SARS-CoV-2.

CDC guidance on quarantine and isolation, including specifics of contact requiring quarantine and ending the quarantine or isolation are given here:

<https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html>

Essential activities workers with potential exposure to a suspected or confirmed COVID-19 case, coming to common workplaces.

These workers may have an infection, but not be symptomatic. There is a risk that they could spread the infection to other workers

- a. No worker who should be in isolation may be allowed into a common workplace with other workers.

- b. People who have been in close contact with someone else with COVID-19 must not be allowed into the common workplace with other workers within 14 days of their last contact, except under the following circumstances.
- When allowed by the local health jurisdiction, quarantine may be reduced to:
 - 10 days, **or**
 - No less than 7 days if the quarantined individual has a negative test result taken no more than 48 hours before ending quarantine.
 - When a worker is vital for continuation of a critical infrastructure operation. **This option should be used as a last resort and only in limited circumstances, such as when cessation of operation of a facility may cause serious harm or danger to public health or safety.** Employers must determine whether it is appropriate for the worker to come to the workplace. Other alternatives, such as teleworking or reassigning duties should be considered. If the worker returns to the workplace during quarantine, there is a potential for exposing other workers in the critical operation. When no alternatives exist, employers must work with public health officials to manage the continuation of the work in a way that best protects the health of their workers and the general public, including the determination of quarantine options.
- c. Employers of workers who have had contact but come to the workplace within 14 days of exposure must adhere to the following practices prior to and during each work shift:
- Pre-Screen: Determine the employee's temperature and assess symptoms prior to their starting work. Workers should be asked to pre-screen at home before travelling to work (including measuring temperature), and should not be permitted to enter the workplace if they have symptoms of COVID-19; temperature equal to or higher than 100.4 degrees Fahrenheit; or are waiting for the results of a viral test ordered because they are symptomatic or had close contact to a person known or suspected to have COVID-19 symptoms. Temperature checks must happen before the individual enters the facility.
 - Screen at the workplace: Employers should conduct an on-site symptom assessment, including temperature screening, prior to each work shift. Screening should happen before the employee enters the facility.
 - Regular Monitoring: As long as the employee doesn't have a temperature or symptoms, they should self-monitor. The employer's occupational health program or workplace COVID-19 coordinator or team must supervise self-monitoring. **Employers must consult with an occupational health provider and state and/or local health officials to ensure the medical monitoring is conducted appropriately.**

- **Wear a Mask:** The worker must wear a face mask while in the workplace unless there is a medical reason prohibiting its use. Employers can issue facemasks or can approve worker supplied cloth face coverings in the event of shortages. **If required, respirators must still be used according to the requirements of Chapter 296-842 WAC.**
 - **Social Distance:** The worker must maintain 6 foot separation and practice social distancing as work duties permit in the workplace. Where duties do not permit social distancing, the employer must institute other controls as practicable to protect other workers. Barriers or fans may be effective in many circumstances.
 - **Disinfect and Clean Work Spaces:** Clean and disinfect all areas such as offices, bathrooms, common areas, and shared electronic equipment routinely.
- d. If the worker becomes sick during the shift, they should be sent home immediately. Surfaces in their workspace should be cleaned and disinfected. Information on persons who had contact with the ill employee during the time the employee had symptoms, and 2 days prior to symptoms, should be compiled. Others at the facility with close contact within 6 feet of the employee during this time would be considered exposed.
- e. **Employers considering allowing potentially exposed workers to remain at the workplace during quarantine should consider the following preparatory actions. (For further information consult the CDC guideline document [COVID-19 Critical Infrastructure Sector Response Planning](#))**
- **Workers must not share headsets or other objects that are near the mouth or nose.**
 - **Employers must increase the frequency of cleaning commonly touched surfaces.**
 - **Employers should work with facility maintenance staff to increase air exchanges in room.**
 - **Workers must physically distance themselves when they take breaks together. Stagger breaks and don't congregate in the break room, and don't share food or utensils.**
4. **Working with people in non-healthcare (human) settings who have suspect or confirmed COVID-19.** Generally, this situation should be avoided, using remote services or delaying work until the COVID-19 case is resolved. However, some cases such as emergency repairs in the residence of the patient, emergency pet veterinary services, or delivery of essential goods to the residence may require workers to be in the presence of an ill individual.
- a. Workers must be informed of the individual's health status.
 - b. When practicable, the ill individual must wear a medical procedure mask.
 - c. Workers must be provided and required to wear a respirator. A half-face elastomeric respirator with N-95 cartridges, or other respirator with the same or higher protection must be used. Fit-testing and other respirator program elements must be complied with. See chapter 296-842 WAC, *Respirators*.

- d. Other personal protective equipment such as gloves, aprons, gowns, and head coverings should be considered to prevent contamination of the worker's body or street clothes. Handwashing and other hygiene resources must be available to the worker as needed during the work and at the conclusion.

D. Evaluation of respiratory protection for COVID-19 protection in healthcare when not treating suspect or known COVID-19 patients.

Healthcare facilities must follow social distancing guidelines including general provisions and any specific requirements set by the Governor. It is expected that all healthcare practitioners will follow Universal or Standard Precautions, or equivalent protocols to address infection control for all infectious diseases. The following specific requirements may be evaluated by DOSH staff when considering COVID-19 hazards:

1. Patient rules and masking.

- a. Evaluate patients at the time appointments are made and when arriving for signs and symptoms of COVID-19. If a patient is determined to have suspected or confirmed COVID-19, they should be asked to postpone medical treatment when appropriate and referred to healthcare providers for evaluation and treatment of their COVID-19.
- b. Patients and visitors to the medical facility must be required to wear cloth face coverings or other appropriate masks in the facility as practicable. Exceptions may be allowed for patients with conditions that may be aggravated by mask use or patients who have difficulty remaining masked due to mental acuity or youth.
- c. Masks may be removed briefly to facilitate specific examination elements for which they interfere. The procedures for the exam must minimize the period without the mask and time the medical workers must be in close proximity of the patient without a mask. In particular, face-to-face positioning of the patient and medical worker must be limited as practicable.

2. Worker masking and respiratory protection.

- a. Workers must wear, at minimum, cloth face coverings or procedure masks whenever working with others.
- b. Workers within 3 feet of a patient or equipment during an aerosol generating procedure must wear a fit-tested N95 filtering facepiece respirator or more protective respirator. (Particulate filters with any N, R, or P and 95, 99, or 100 rating are protective against the COVID-19 virus.) Examples of aerosol generating procedures include:
 - Dental work with an ultrasonic scaler, air/water syringe, or hand piece
 - Administering medicines with a nebulizer
 - Spirometry
 - Deep or forced breathing exercises

- c. Employers must evaluate other procedures workers conduct involving close proximity to the patient breathing zone. Where workers have limited time of exposure (less than half hour per day), and patients are effectively masked during the procedures, and room conditions include effective ventilation and hygiene, then respirators may not be required. A surgical mask must be used when a respirator is not required. Examples of procedures that must be evaluated include:
 - Tonometry during eye exams
 - Visual examination of the oral and nasal cavities
 - Visual examination of the eyes
 - Swab sampling in the mouth or nose

3. Evaluation of PPE other than respirators.

- a. Other personal protective equipment, such as gloves, gowns, face shields, and head covers, generally will be determined based on general clinical guidelines.
- b. When there is a procedure which could predictably result in coughing or sneezing by the patient which could directly expose the worker, DOSH staff will review PPE to ensure it covers the workers body and street clothes and prevent soaking through. Scrubs may be worn as PPE if the employer allows workers to change out at the end of shift and launders the clothing.
- c. Medical establishments may be required to meet health department or FDA standards for PPE. Compliance with these standards is not addressed by DOSH staff.

V. Enforcement Policy

Inspection findings will be reviewed on a case by case basis. Conditions related to COVID-19 and the virus are still emerging. Public health recommendations and orders are being regularly revised, and so any compliance action must take into consideration current understanding of the situation and current rules and guides. The following sections identify codes from chapter 296-800 WAC (Core Rules). When working in chapters 296-155 WAC (Construction) and 296-307 WAC (Agriculture), please use the comparable codes from those vertical standards.

A. Accident Prevention Programs.

1. Employers are not expected to have comprehensive COVID-19 prevention programs at this point. In conducting program reviews, DOSH staff must look at all documents used by the employer to communicate with workers to determine their overall program.
2. Where the employer is clearly implementing recommendations of the public health authorities, they do not need additional documentation of their program, except for program documentation specified in public health orders or the Governor's "Safe Start" phased guidelines for industries or general requirements. Any variation from strict social distancing, the Governor's programs, or health department guidelines must be clearly communicated in a written program. (Note that participating in early phases of the restart may be dependent on strictly following the industry specific requirements and guidance. Activities that cannot do so, must wait for a later phase to resume.)

3. Violations of the sections of WAC 296-800-140, *Accident Prevention Program*, should be considered where the employer does not communicate workplace specific expectations to workers or is not effective in implementing those expectations.
4. Serious violations should specifically be considered in cases where the employer adopts practices or policies that clearly contradict the goals of coronavirus prevention practices published by DOSH, OSHA or public health recommendations.
5. Accident prevention program violations must follow instructions in the Compliance Manual.

B. Housekeeping.

Where a workplace is not being cleaned and kept sanitary per public health guidance, a violation of WAC 296-800-22005, *Keep your workplace clean*, may be considered. A serious classification should be strongly considered.

C. Handwashing.

1. There is a requirement for handwashing facilities that applies to all workplaces at all times. A serious and potential willful violation of WAC 296-800-23025, *Provide convenient and clean washing facilities*, will be considered whenever workers do not have basic handwashing facilities available at all, or they are grossly inadequate in either number or maintenance.
2. Where employers cannot provide unlimited access to full handwashing facilities at all times, they **must provide alternate means** for frequent hand cleaning. A serious classification should be strongly considered if not adequate to achieve prevention. This is specifically necessary where workers regularly handle or touch objects or surfaces touched by others. Alternate hand cleaning may include:
 - a. Portable wash stations with tepid water and soap.
 - b. Wipes or towelettes with water and soap.
 - c. Hand sanitizer stations.

D. Safe Place Violations.

1. Workplace conditions which have a direct potential for worker exposure to the COVID-19 virus may be cited under WAC 296-800-11005, *Provide a workplace free from recognized hazards*. This is the primary code to use for social distancing practice violations. This may include situations such as ineffective barrier or ventilation systems, or specifically allowing workers to be in close proximity, but where there is no written record of a policy or management decision. Masking violations requiring devices not normally considered respirators may be cited under this section (cloth face coverings or medical procedure masks).
2. Violations of this section are safe place violations in that they must be serious in classification and must follow the Compliance Manual instructions for safe place.
3. For construction inspections, use WAC 296-155-040 (1). For agriculture inspections, use WAC 296 307-045 (1).

E. Respirator Violations.

Violations involving proper use of respirators, including N95 filtering facepieces, PAPRs, and elastomeric facepiece respirators will normally be cited from chapter 296-842 WAC, *Respirators*. When these devices are used in place of a cloth face covering or medical procedure mask due to social distancing rules from public health authorities or the governor, the use will be considered voluntary use for compliance purposes. Protection from contaminated aerosols is required use.

F. Temporary Farmworker Housing.

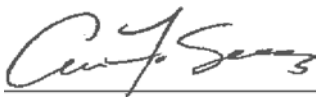
Temporary worker housing in agriculture is covered under Chapter 296-307 WAC, Part L, *Temporary Worker Housing and Cherry Harvest Camps*. This rule has specific requirements for hygiene facilities and housekeeping. Employers must in general achieve adequate social distancing; frequent handwashing during work; sanitation practices during work; sufficient disinfection supplies in housing; and sick employee practices outlined above. Consult with Technical Services and Compliance Operations on application of these rules when there is a COVID-19 concern.

VI. Point of Contact

DOSH staff should contact Compliance Operations if there are questions about applicability of WISHA rules to an infectious disease in the workplace. Technical Services may be contacted with technical questions about workplace practices.

VII. Review and Expiration

DOSH will review this Directive, and it will remain effective until superseded or canceled.

Approved: 

Anne F. Soiza, L&I Assistant Director
Division of Occupational Safety and Health