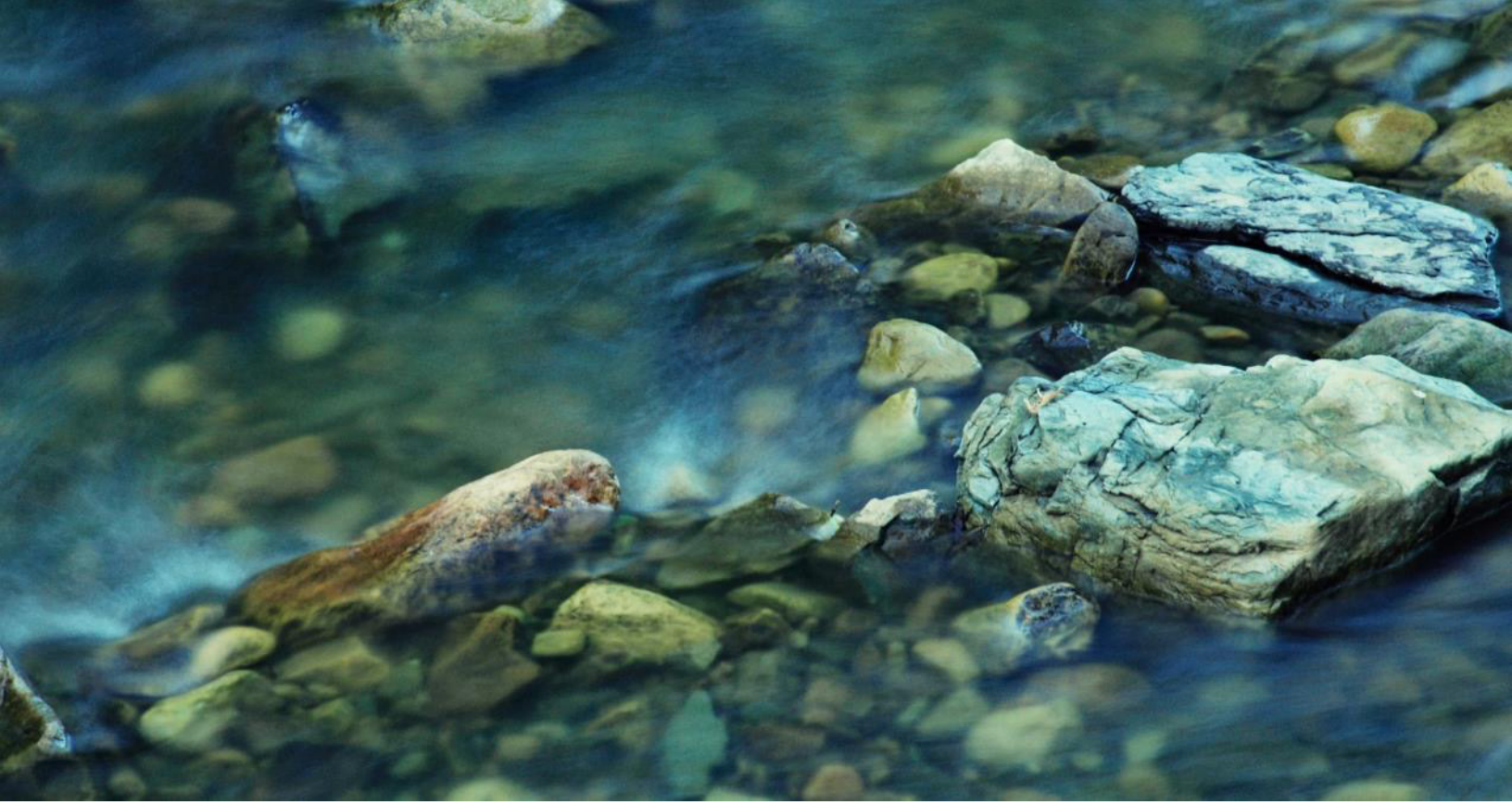

March 2024
Glacier Northwest, Inc. (dba CalPortland)
Kenmore Berth Maintenance Dredging Project

ANCHOR QEA

# Water Quality Monitoring Plan

Prepared for Glacier Northwest, Inc. (dba CalPortland)

March 2024
Kenmore Berth Maintenance Dredging Project

# Water Quality Monitoring Plan

**Prepared for**
Glacier Northwest, Inc. (dba CalPortland)
3450 South 344th Way
Federal Way, Washington 98001

**Prepared by**
Anchor QEA
1201 3rd Avenue, Suite 2600
Seattle, Washington 98101

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## APPENDICES

# ABBREVIATIONS

| | |
|---|---|
| BMP | best management practices |
| Ecology | Washington State Department of Ecology |
| Glacier | Glacier Northwest, Inc. |
| NTU | nephelometric turbidity unit |
| Project | Kenmore Berth Maintenance Dredging Project |
| USACE | U.S. Army Corps of Engineers |
| WAC | Washington Administrative Code |
| WQMP | Water Quality Monitoring Plan |

# 1 Introduction

Glacier Northwest, Inc. (Glacier; dba CalPortland) is proposing a Kenmore Berth Maintenance Dredging Project (Project) at their ready-mix plant and aggregate yard located near the north end of Lake Washington at 6423 Northeast 175th Street in Kenmore, Washington (Figure 1). The Project includes maintenance dredging proposed to provide safe access for vessels and barges to the terminal by removing sand, gravel, and minor amounts of sediment from the berth area through maintenance dredging. The sand and gravel proposed for removal is clean construction aggregate that was historically released during offloading of barges at the facility. Nearly all of the material was deposited after maintenance dredging was last completed in 2004 and prior to 2010 when the hopper and conveyor used to offload barges were replaced with a system designed to minimize material spillage. In addition to the changes to the offloading equipment, CalPortland has implemented a variety of operational best management practices (BMPs) to minimize spillage including equipment maintenance, employee training, barge housekeeping programs, and a spill inspection and reporting program. These BMPs are effective at avoiding or minimizing spillage of aggregate material during operations. This document presents the Water Quality Monitoring Plan (WQMP) for the Project in compliance with the Washington State Department of Ecology (Ecology) 401 Water Quality Certification.

The proposed dredging will provide safe navigation for vessel ingress and egress by removing approximately 800 cubic yards of sand, gravel, and sediment material within the berth area. Maintenance dredging will target a depth of +4.47 feet (USACE Kenmore Datum) to the top of the existing toe protection surface. Waterward of the existing toe protection surface, dredging will occur to +3.5 feet and will be backfilled with a clean sand layer to a minimum thickness of 1 foot (totaling 215 cubic yards).

Loaded barges typically draft 15 feet of water. Water levels in Lake Washington vary by approximately 2 feet, ranging from approximately +20 feet (U.S. Army Corps of Engineers [USACE] Kenmore Datum) in winter to approximately +22 feet (USACE Kenmore Datum) in summer. Therefore, maintenance dredging is proposed to a depth of +4.47 feet (USACE Kenmore Datum) to allow berthing of loaded barges under normal conditions. Maintenance dredging activities will occur entirely within the existing berth area and will be designed to avoid damaging the existing toe protection armoring, which is composed of quarry spall material that extends up to +4.47 feet (USACE Kenmore Datum). The toe protection feature was installed in the late 1990s to protect the adjacent bulkhead. A similar maintenance dredging action was permitted and occurred in 2004 (under USACE Reference No. 200300781).

Maintenance dredging and the clean sand layer placement activities will be performed within the existing berth area. A clamshell dredge deployed from a derrick (barge-mounted crane) will be used

to remove the material. Dredged material will be placed directly into a bunker used to retain aggregate material at the upland portion of the plant and used as aggregate material. Water from the dredged material will flow through a clean sand berm placed around the bunker before being processed with other water on the site and prior to being discharged to the County sewer system under discharge authorization No. DA 7740-05. The clean layer of sand will be placed using a derrick (barge-mounted crane) or similar equipment.

This WQMP has been prepared to support compliance with the requirements of Washington State's Water Quality Standards for Surface Water (Washington Administrative Code [WAC] 173-201A). The water quality monitoring program described herein is designed to provide constant visual water quality monitoring throughout the duration of construction and in situ water quality monitoring for at least half of the time that active maintenance dredging activities are occurring. This WQMP includes the following information:

- Water quality monitoring program (Section 2)
- Contingency measures (Section 3)
- Reporting (Section 4)

# 2 Water Quality Monitoring Program

This section describes the proposed water quality monitoring program, including field methods for conducting water quality monitoring during maintenance dredging and the clean sand layer placement activities. This WQMP will be implemented in compliance with the water quality standards in WAC 173-201A as described below.

A Health and Safety Plan will be adhered to during monitoring activities. If unsafe conditions are present that would put the field team or contractor at risk, water quality monitoring activities may be temporarily discontinued. Any deviations due to health and safety concerns will be documented during reporting procedures (Section 4).

## 2.1 Water Quality Standards

The area of mixing point of compliance for turbidity during maintenance dredging and clean sand layer placement activities will be 300 feet (Figure 2). At the point of compliance, turbidity shall not exceed 5 nephelometric turbidity units (NTU) more than background turbidity when the background turbidity is 50 NTU or less, or there shall not be more than a 10% increase in turbidity when the background turbidity is more than 50 NTU. Turbidity measurements will be collected in real time and will not be averaged over time or depth.

## 2.2 Monitoring Locations and Depths

### *2.2.1 Background Monitoring Locations*

The background station will be located a minimum of 600 feet from active in-water work in an area unaffected by the active work (Figure 2). Measurements collected at this station will be used as baseline data for determining the appropriate exceedance criteria and for comparison purposes.

### *2.2.2 Monitoring Locations*

There are two monitoring locations: the early warning station and the compliance station. The monitoring distances for water quality measurements are on 150- and 300-foot radii from the activity site. One station will be measured on each radius (Figure 2). Monitoring locations may be adjusted based on the location of active in-water work. The early warning station will be located on a point along the radius 150 feet from the construction activity unless safety concerns require additional offset from the work. If the early warning station location is modified to accommodate safety concerns it will be documented during reporting procedures (Section 4).

Measurements at the early warning station will serve as an interim indicator of water quality closer to the site work activity. Elevated measurements indicate the potential for a subsequent exceedance at

the compliance station, and this early warning would allow modification of the operation of the activity to potentially avoid exceedances.

The compliance station will be located at a point along the 300-foot radius from the construction activity. Measurements from the compliance station will be used to determine if water quality conditions meet water quality standards for the Project.

### *2.2.3 Monitoring Depth*

Water depth will be determined using a lead line at the monitoring location and will be recorded on the Water Quality Monitoring Form (Appendix A). At each station, water quality parameters will be measured at 3 feet below the water surface, the mid-point of the water column, and 3 feet above the sediment bed. If the water column is 10 feet or less, no mid-point sample will be collected.

## 2.3 Field Monitoring Frequency and Schedule

Maintenance dredging and the clean sand layer placement activities are anticipated to take up to 3 working days to complete and will be performed during the in-water work window, or approved extension. Monitoring frequency will be coordinated to ensure that in situ water quality monitoring is occurring for at least half of the time that active construction activities are occurring. Any changes to the monitoring plan, based on contractor schedule, field conditions, or progress, shall be submitted to Ecology for review and approval.

### *2.3.1 Monitoring Frequency*

Two frequencies of in situ water quality monitoring are anticipated: intensive and routine monitoring.

**Intensive monitoring** will include 2 full days of monitoring for maintenance dredging and clean sand layer placement activities, with water quality measurements being collected at least twice per day. Intensive monitoring will begin at the onset of the first potentially turbidity-generating activity. If no changes in turbidity (considering background station measurements and waterway vessel activity) are noted during the first day of maintenance dredging or clean sand layer placement activities, or if the contractor is successfully able to modify operations and/or implement additional BMPs to mitigate the elevated turbidity conditions, then water quality monitoring activities will switch to routine monitoring.

A change in activities (e.g., new dredge bucket or other change in equipment) will restart the intensive monitoring cycle.

**Routine monitoring** will occur every other day that the potentially turbidity-generating activity occurs, through completion of the Project, commencing the day after intensive monitoring is

completed. Routine monitoring activities will similarly include twice daily water quality measurements at minimum.

### *2.3.2 Daily Monitoring Routine*

The first round of monitoring will be conducted approximately 1 hour after the start of maintenance dredging or clean sand layer placement activities. An additional round will be conducted prior to sunset. Background stations will be measured prior to early warning and compliance stations, for each round of water quality monitoring. Additional samples at background stations may be collected if field conditions change (e.g., extreme weather shifts) or if lateral inputs are suspected to be causing increased turbidity. Monitoring data collected in the field will be recorded on the Water Quality Monitoring Form (Appendix A).

### *2.3.3 Visual Monitoring*

Visual monitoring (e.g., identification of visible turbidity plume) will be performed by the water quality monitor during intensive and routine monitoring at each monitoring station and while moving between stations throughout the workday. Visual monitoring will also be conducted during construction by the contractor and/or other construction oversight staff or consultants.

During visual monitoring, if a visual monitor identifies potential turbidity elevated above the criterion at the compliance stations as a result of construction activities, then contingency measures will be implemented to reduce turbidity to the extent practicable as described in Section 3.

Any turbidity events resulting from construction activities that lead to a confirmed turbidity exceedance will be recorded in the Water Quality Monitoring Form (Appendix A).

## 2.4 Field Monitoring Methods and Equipment

This section includes information regarding monitoring location determination, water quality monitoring methods, and quality assurance/quality control.

### *2.4.1 Monitoring Location Determinations and Documentation*

A range finder will be used to determine station locations at target monitoring distances in relation to dredging and the clean sand layer placement activities. Once the vessel is on station, the vessel operator will maintain the position while monitoring occurs. GPS coordinates and the monitoring station name will be recorded on the Water Quality Monitoring Form (Appendix A). In each round of monitoring, the background station will be monitored first, followed by the early warning station and then the compliance station.

### *2.4.2 Turbidity Measurements*

Monitoring will be performed using a calibrated multi-probe meter (e.g., Hydrolab, YSI probe, or similar) and/or a Hach turbidity meter. The depth at each station will be measured, and turbidity measurements will be collected at three depths at each of the three monitoring stations.

### *2.4.3 Quality Assurance/Quality Control*

All field staff will be experienced in water quality monitoring. Staff will be trained in standardized field monitoring and data collection procedures, requirements, data management protocol, and quality assurance/quality control.

Instruments and equipment will be inspected before each monitoring event. Any field equipment that is faulty or not functioning properly will not be used for monitoring or sample collection. Each day and prior to use, a calibration check will be performed on the water quality meter using certified calibration standards. If water quality meter results are not consistent with standards, manufacturer's guidelines will be used to recalibrate the instrument. Standard instrument operating procedures will be used for all field instruments.

# 3 Contingency Measures

This section describes response actions to an elevated measurement at the early warning and compliance stations for maintenance dredging and the clean sand layer placement activities. BMPs are also outlined in this section.

## 3.1 Maintenance Dredging Contingency Measures

During maintenance dredging and clean sand layer placement activities, if turbidity is elevated above the criterion at the 150-foot early warning station, the water quality monitor will notify the contractor to begin assessing BMPs and sample the 300-foot compliance station. If turbidity is elevated above the criterion at the 300-foot compliance station, the following sequence of responses will be initiated:

1. If comparison indicates that turbidity is potentially due to maintenance dredging or clean sand layer placement activities, then the water quality monitor will notify the contractor and Glacier representative of the situation. The contractor will be required to pause work, assess BMPs, and determine if new BMPs should be made to reduce turbidity.

2. Field measurements will be retaken approximately 15 minutes after the initial measurements at the compliance station and compared against rechecked background measurements. Stormwater outfalls located in the vicinity of the Project area will also be checked to confirm they are not exacerbating turbidity conditions.

3. If the elevated turbidity condition is confirmed and attributed to maintenance dredging or clean sand layer placement activities (and not ambient background conditions), the water quality monitor will immediately notify the contractor and Glacier representative of the situation. The contractor will be directed to immediately modify operations and/or implement additional BMPs to mitigate the elevated turbidity condition.

4. The water quality monitor will retake field measurements at the compliance station and compare them against background measurements hourly after the contractor has implemented the additional BMPs and/or operational modifications until it has been determined that the new BMPs are sufficient to reduce turbidity to compliant levels. If BMPs do not result in decreasing turbidity, work should stop until compliance is met, and restart with more intensive BMPs to address the situation.

5. Upon retaking field measurements in Step 2, Glacier or an assigned representative will notify Ecology of the elevated turbidity condition, and describe the actions taken to mitigate the condition and the results of the follow-up measurements. If an exceedance is confirmed at the point of compliance at any time during construction, an intensive monitoring cycle will be restarted as described in Section 2.3.1.

## 3.2 Best Management Practices

BMPs have been incorporated into the Project design to avoid or minimize environmental effects and the exposure of sensitive species to potential effects from maintenance dredging. The following BMPs will be implemented to avoid or minimize environmental impacts during the Project:

- Work will be completed during regulatory approved work windows. The work windows for northern Lake Washington are July 16 to July 31 and November 16 to February 1 of each year.
- Turbidity and other water quality parameters will be monitored to ensure that construction activities are in compliance with Washington State Surface Water Quality Standards per WAC 173-201A.
- Appropriate BMPs will be employed to minimize sediment loss and turbidity generation during dredging and clean sand layer placement activities. BMPs may include, but are not limited to, the following:
  - Eliminating multiple bites while the bucket is on the bottom
  - No stockpiling of dredged material on the lakebed
  - No lakebed leveling
  - Clean sand layer placement activities may be slowed to reduce turbid conditions.
- No free water from the dredged sediment will be directly discharged back into the surface waters without passing through the filter media to minimize the release of suspended sediments.
- The dredging contractor will inspect fuel hoses, oil or fuel transfer valves, and fittings on a regular basis for drips or leaks in order to prevent spills into the surface water.
- The contractor shall be responsible for the preparation of a spill plan to be used for the duration of the Project to safeguard against an unintentional release of fuel, lubricants, or hydraulic fluid from construction equipment.

# 4 Reporting

At the end of each monitoring day, a brief summary of water quality monitoring activities, field datasheets, and results of the monitoring will be provided to Glacier.

In the event that a water quality turbidity exceedance is confirmed, or a visual turbidity plume associated with dredging or clean sand layer placement is observed at the point of compliance, Glacier or an assigned representative will report the exceedance to the Ecology representative listed in the water quality certification within 24 hours of the exceedance.

In the event of a discharge of oil, fuel, or chemicals into surface waters of the state as defined in WAC 173-201A-020, or onto land with a potential for entry into surface waters of the state, containment and cleanup efforts will begin immediately per the contractor-prepared spill plan. Glacier or an assigned representative will immediately report the event to the Ecology representative listed in the water quality certification and Ecology's Northwest Regional 24-hour Spill Response Office at (206) 594-0000. If the spill occurs outside of normal business hours, it will be reported to the Washington Emergency Management Division 24-hour Office at 1-800-OILS-911.

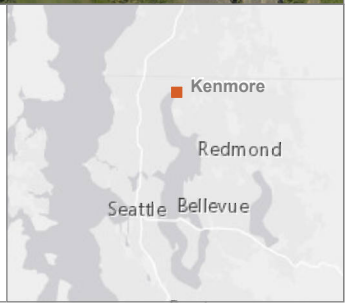
# Figures


**LEGEND:**

Project Area

0 400

Feet

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ANCHOR QEA

**Figure 1**
**Vicinity Map**
Water Quality Monitoring Plan
Kenmore Berth Maintenance Dredging Project

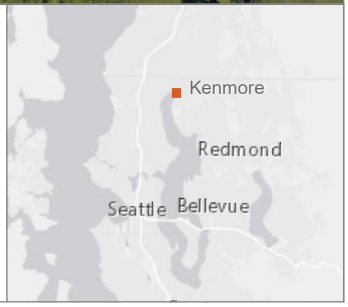

**LEGEND:**

- Project Area
- Water Quality Monitoring Zones

**Water Quality Monitoring Station**

- 150-foot Early Warning
- 300-foot Compliance
- 600-foot Background

0 300
Feet

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ANCHOR QEA

**Figure 2**
**Water Quality Monitoring Locations**
Water Quality Monitoring Plan
Kenmore Berth Maintenance Dredging Project

# Appendix A
# Water Quality Monitoring Form

# Maintenance Dredging Water Quality Monitoring Form

1201 3rd Avenue, Suite 2600
Seattle, Washington 98101
Phone 206.287.9130
www.anchorqea.com

| Date: | Monitoring Start Time: | Monitoring Personnel: |
|---|---|---|
| Maintenance Dredging Start Time: | | Weather Observations: |

| Station ID | Time | Water Depth (feet) | Coordinates | | Turbidity Reading (NTU) | | | Exceed | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | Northing Latitude | Easting Longitude | Surface | Middle | Bottom | Yes/No* | |
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**Notes:**

***Water Quality Standard: Turbidity shall be < 5.0 NTU above BG when BG < 50 NTU, and less than 10% over BG when BG is > 50 NTU.**

**150EW** = 150' Early Warning Station; 300**C** = 300' Compliance Station; **BG** = Background Station (600 feet from in-water work location); **NTU** = Nephelometric Turbidity Unit

| Tidal Elevations | Elevation | Time | Elevation | Time |
|---|---|---|---|---|
| High: | | | | |
| Low: | | | | |