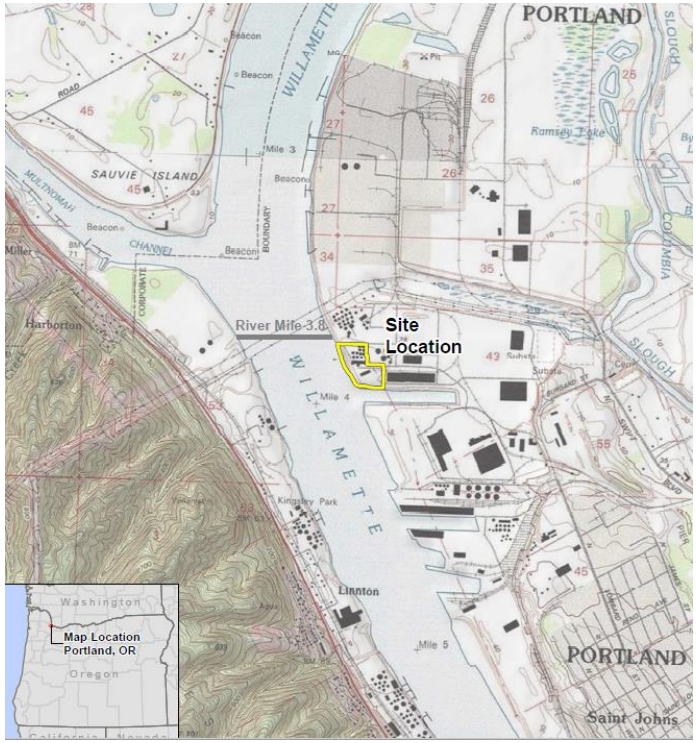
Oregon Source Control Conference

Cleanup ~ Water Quality ~ Portland Harbor



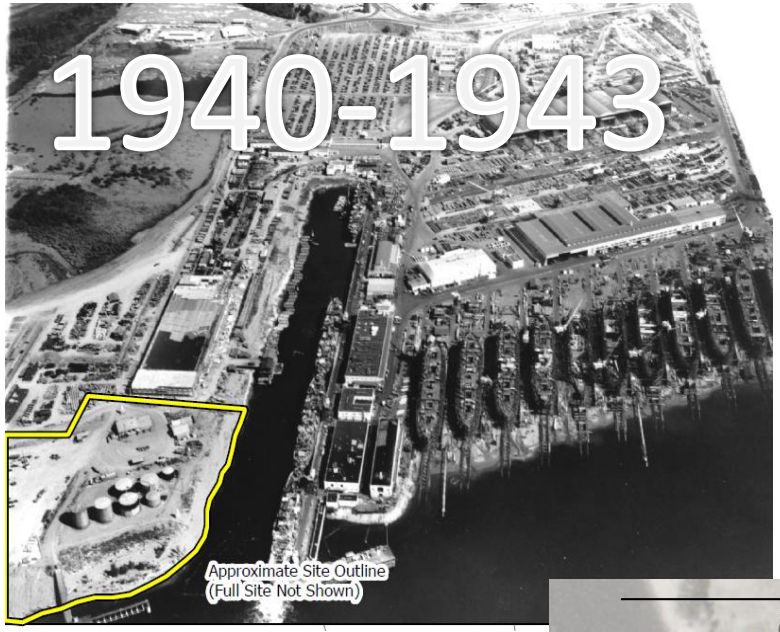
Case Study: Premier Edible Oils

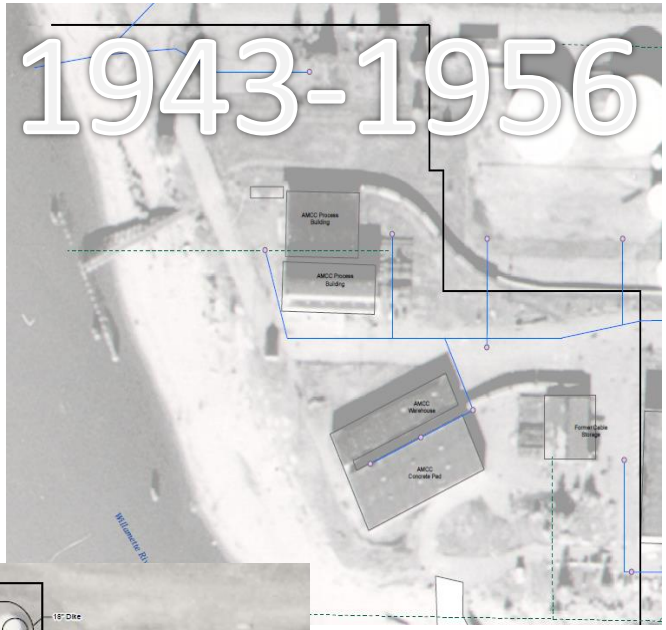
May 19, 2017

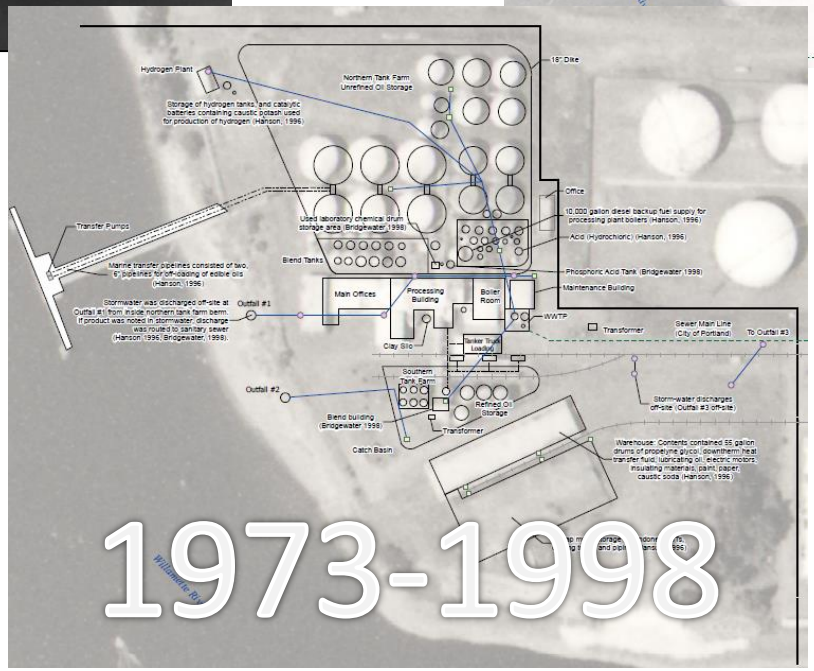
Portland, Oregon

Erin McDonnell | Oregon Department of Environmental Quality

DEQ State of Oregon Department of Environmental Quality







Logistical Support for WWII Shipbuilding

Bulk Petroleum Storage

Material Production (Batteries)

Refining/Storage Edible Oils

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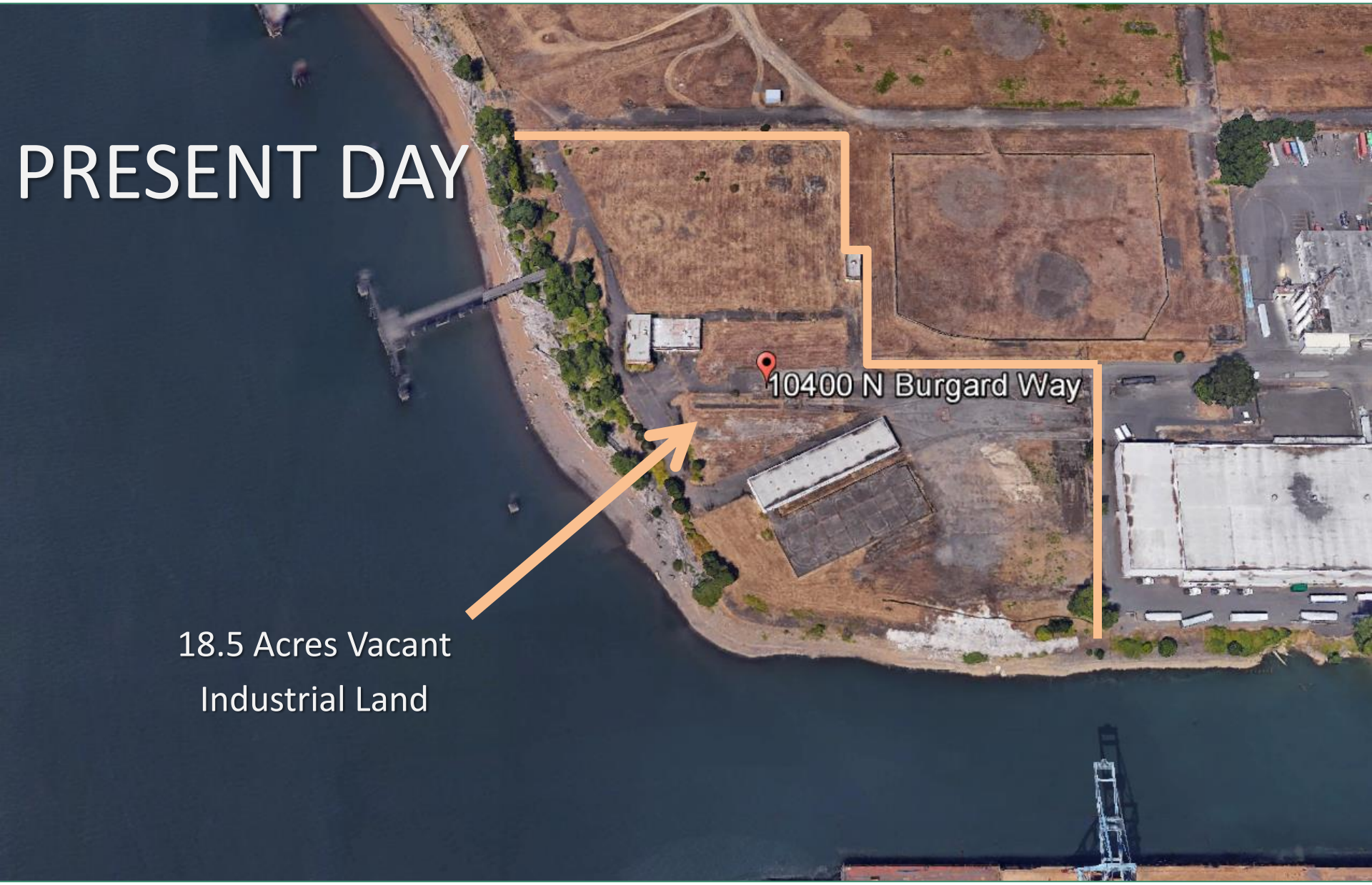

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REGULATORY

2000 Portland Harbor Superfund

2001 DEQ Voluntary Cleanup Program
- RI/FS
- Source Control

2014 Groundwater Source Control Decision

2017 Portland Harbor ROD

2017 Upland RI and SCE (riverbank and stormwater) ongoing

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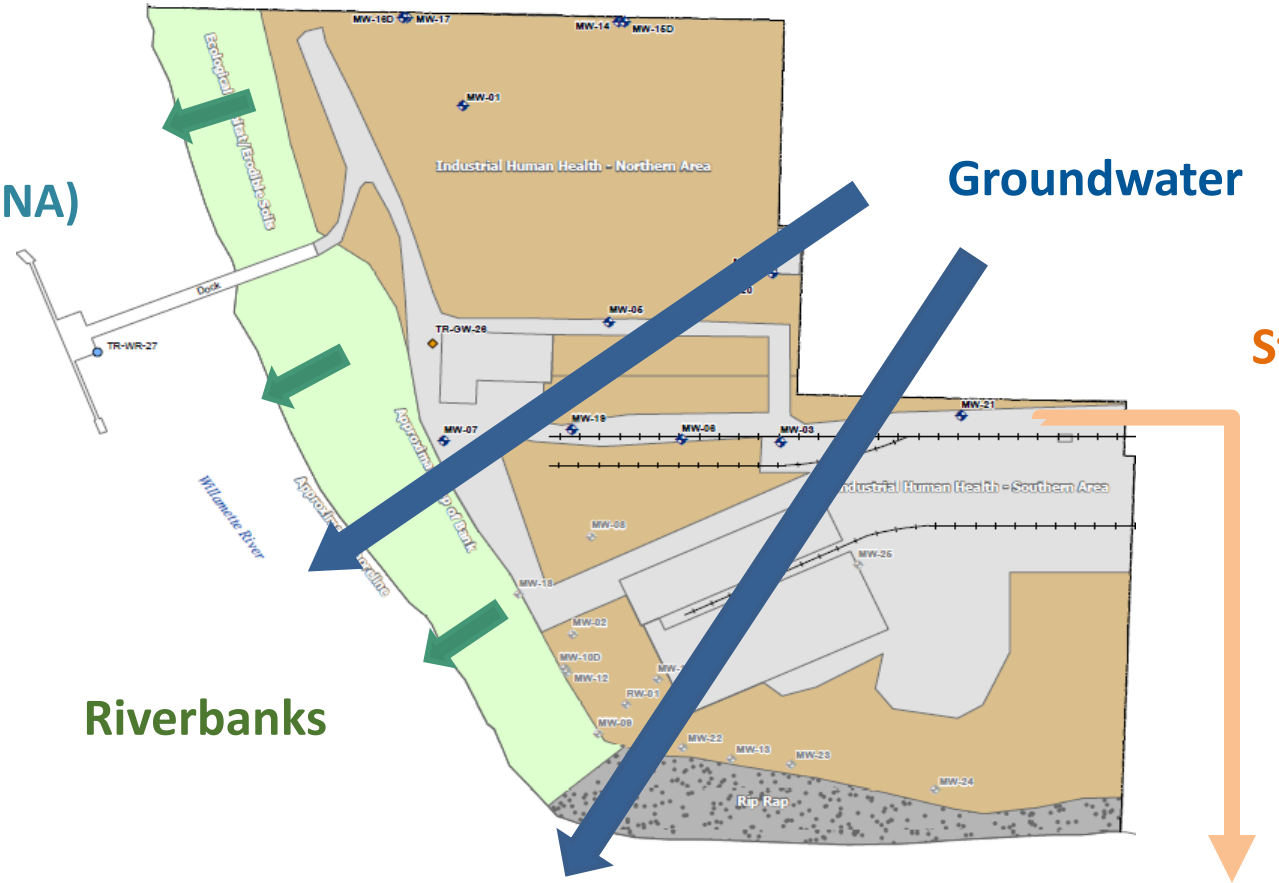
SOURCE CONTROL EVALUATION

Lines-of-Evidence Approach

Over Water (NA)

Groundwater

Stormwater



Riverbanks

"Unacceptable levels" include harm to ecological-human health and/or potential for recontamination of a sediment action area

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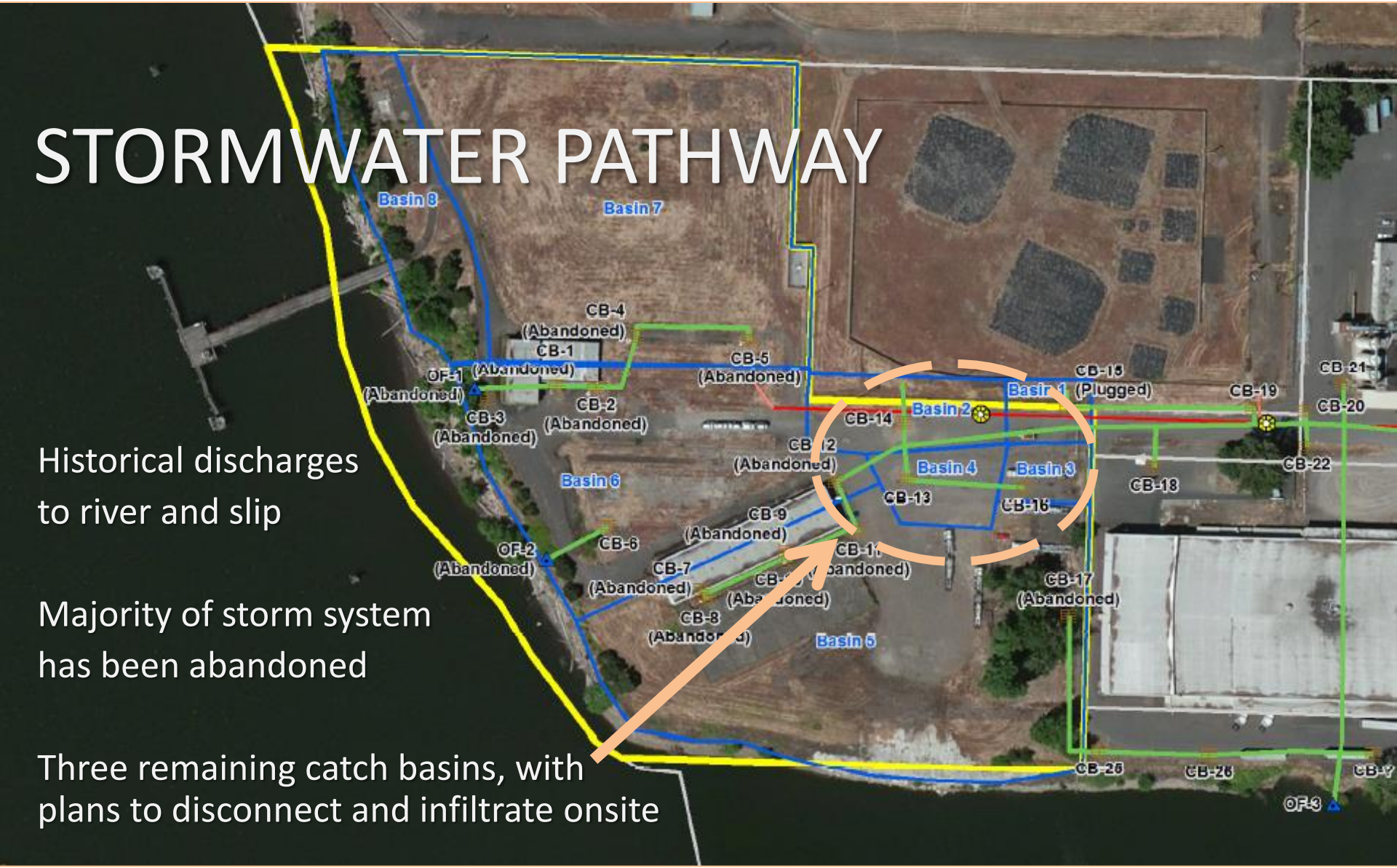
STORMWATER PATHWAY



Historical discharges to river and slip

Majority of storm system has been abandoned

Three remaining catch basins, with plans to disconnect and infiltrate onsite

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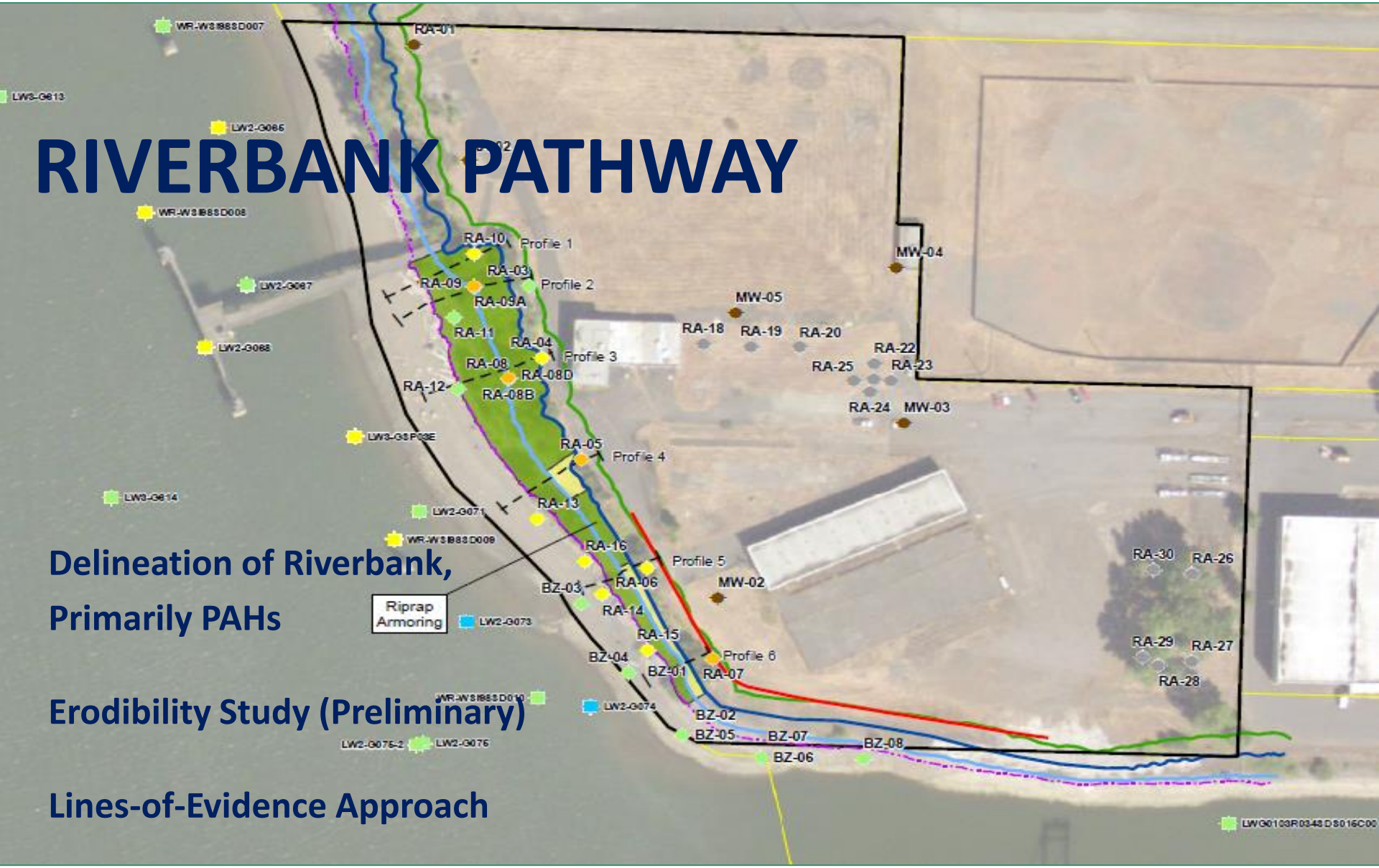
RIVERBANK PATHWAY



Delineation of Riverbank, Primarily PAHs

Erodibility Study (Preliminary)

Lines-of-Evidence Approach

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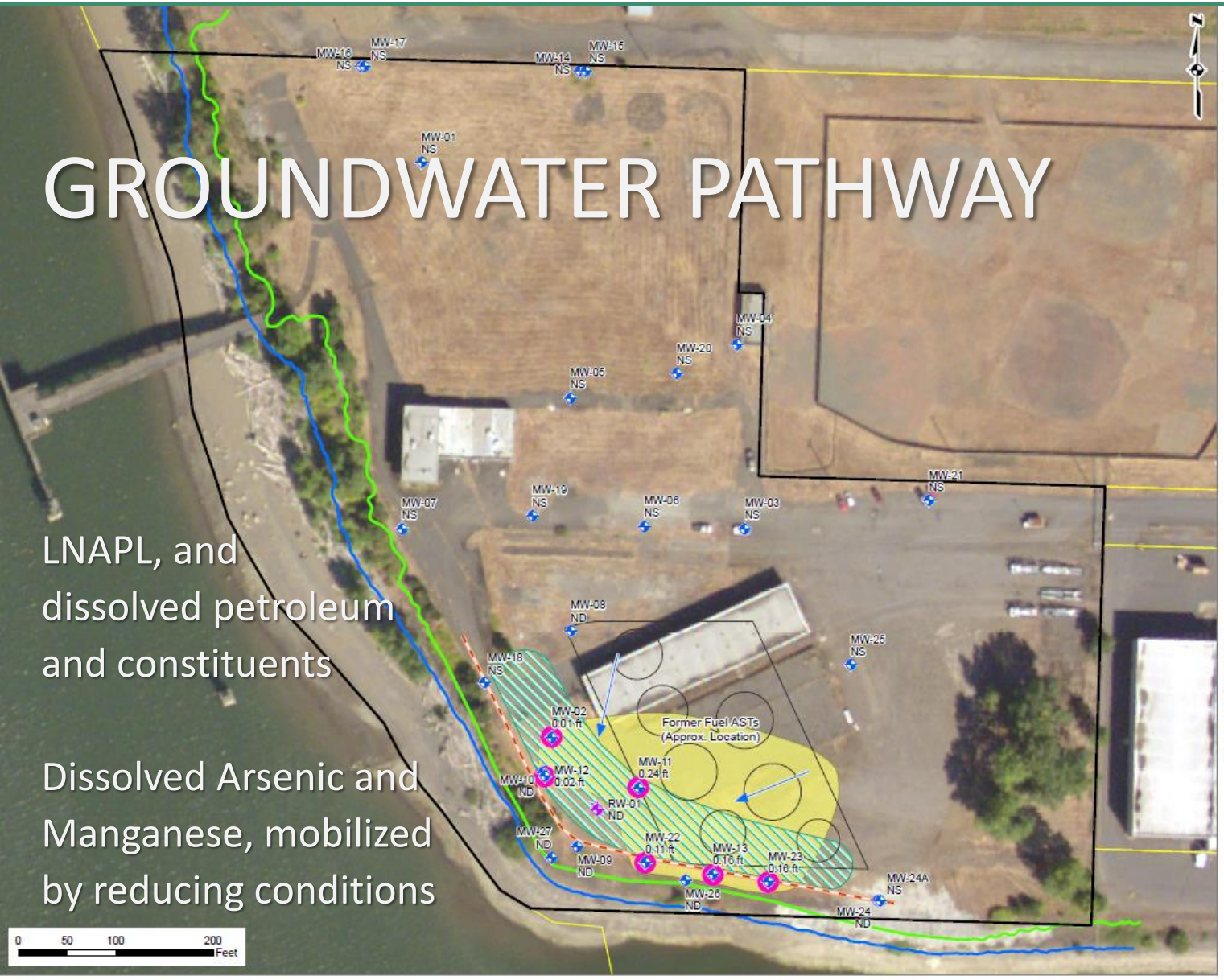
GROUNDWATER PATHWAY

LNAPL, and dissolved petroleum and constituents

Dissolved Arsenic and Manganese, mobilized by reducing conditions



Legend

- Recovery Well
- Monitoring Well
- LNAPL Detected (6/3/15)
- Barrier Wall Alignment
- Ordinary High Water (20.5 ft)
- Top of Bank
- Approx. Direction of Groundwater Flow (August 2012)
- Conceptual Oxygenation/ Biobarrier Area
- Historic LNAPL Extent (Approx.)
- Historical Structures (Source: Treadwell & Rollo, 2014)
- Property Boundary
- Parcels

Notes:
LNAPL: Light Non-Aqueous Phase Liquid
ND: Not Detected
NS: Not Sampled
Monitoring occured on 6/3/2015, except for wells MW-26 and MW-27 which were sampled on 6/7/2015
Elevation data given in NAVD88
Aerial Imagery: City of Portland, flown 7/7/2012

Figure 2
GW SCM Layout
Performance Monitoring Plan
Southern PEO Site
Portland, Oregon

Environmental Resources Management
1001 SW 5th St, Suite 1010
Portland, Oregon 97204

ERM

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GROUNDWATER SOURCE CONTROL

Groundwater Source Control Decision

Summer 2014

Groundwater Barrier Wall

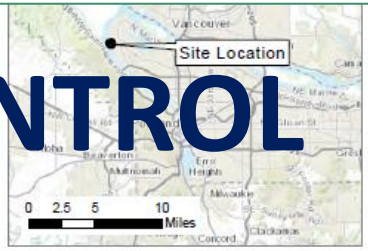
Installed Fall 2015

Oxygenation System

Air Sparge Study - Summer 2017

Performance Monitoring

Baseline – May 2017



Legend

- Proposed Shallow Monitoring Well
- Proposed Deep Monitoring Well
- Shallow Monitoring Well
- Deep Monitoring Well
- Recovery Well
- Abandoned Monitoring Well
- Barrier Wall Alignment
- Ordinary High Water (20.5 ft)
- Top of Bank
- Conceptual Oxygenation/Biobarrier Area
- Property Boundary
- Parcels

Notes:
Elevation data given in NAVD88
Aerial Imagery: City of Portland, flown 7/7/2012

Figure 3
Proposed Performance Monitoring Network Layout
Performance Monitoring Plan
Southern PEO Site
Portland, Oregon

Environmental Resources Management
1001 SW 5th St, Suite 1050
Portland, Oregon 97204
ERM

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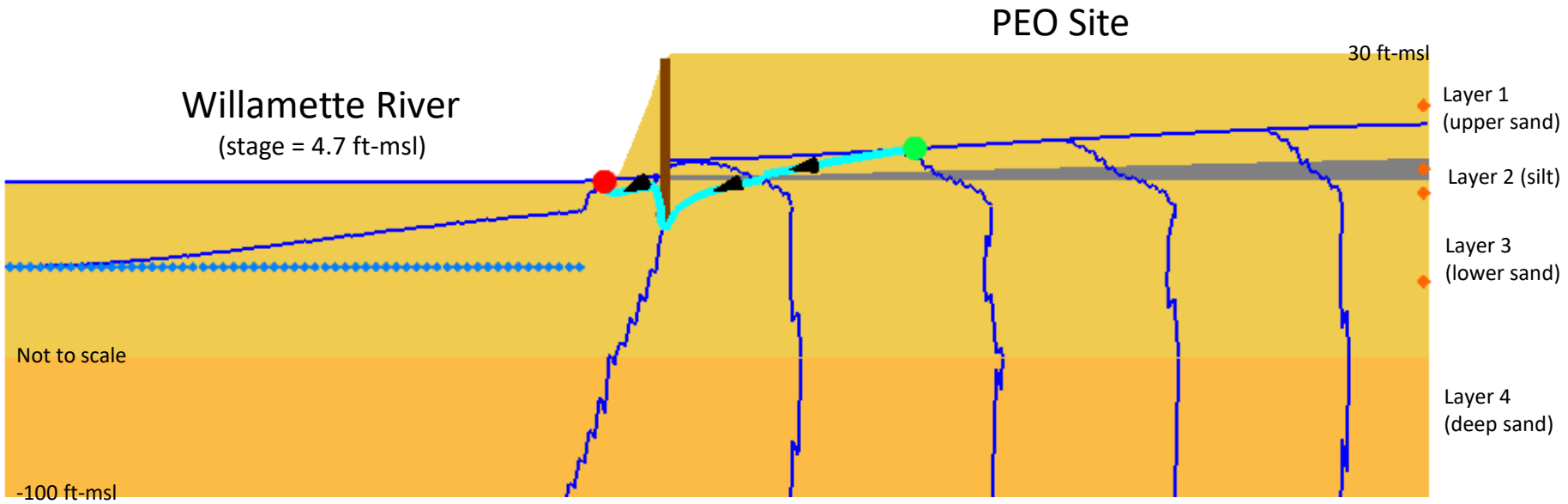
GROUNDWATER SOURCE CONTROL



Increase Travel Distance → **Increase Degradation (LNAPL)**

Particle Track

Start — Finish

1 year travel time tick mark

Introduce Oxygen → **Promote Degradation (LNAPL)**

Introduce Oxygen → **Shift Geochemistry (Metals to Less Mobile Form)**

Engineering Control & Monitored Natural Recovery

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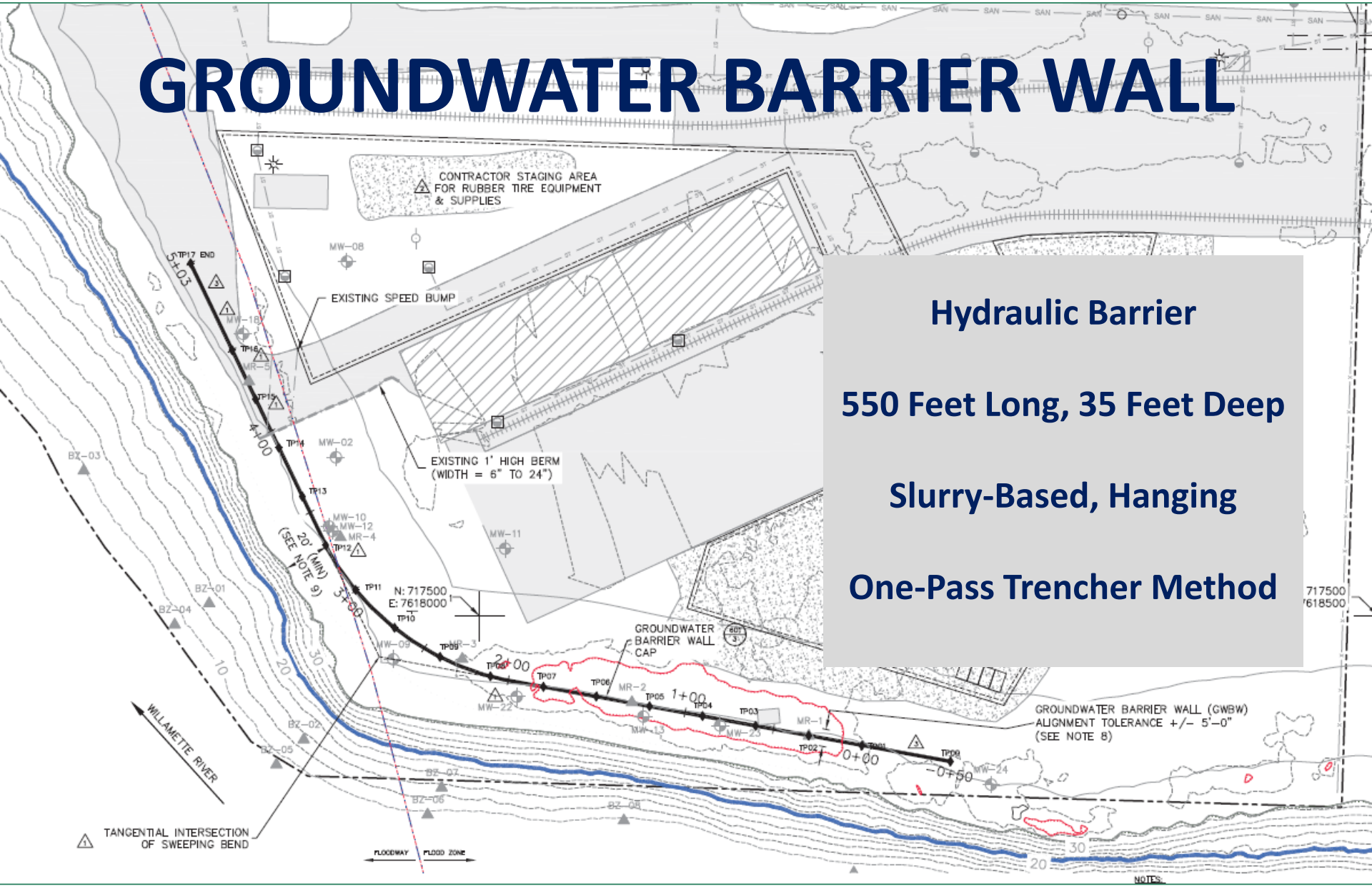
GROUNDWATER BARRIER WALL



Hydraulic Barrier

550 Feet Long, 35 Feet Deep

Slurry-Based, Hanging

One-Pass Trencher Method

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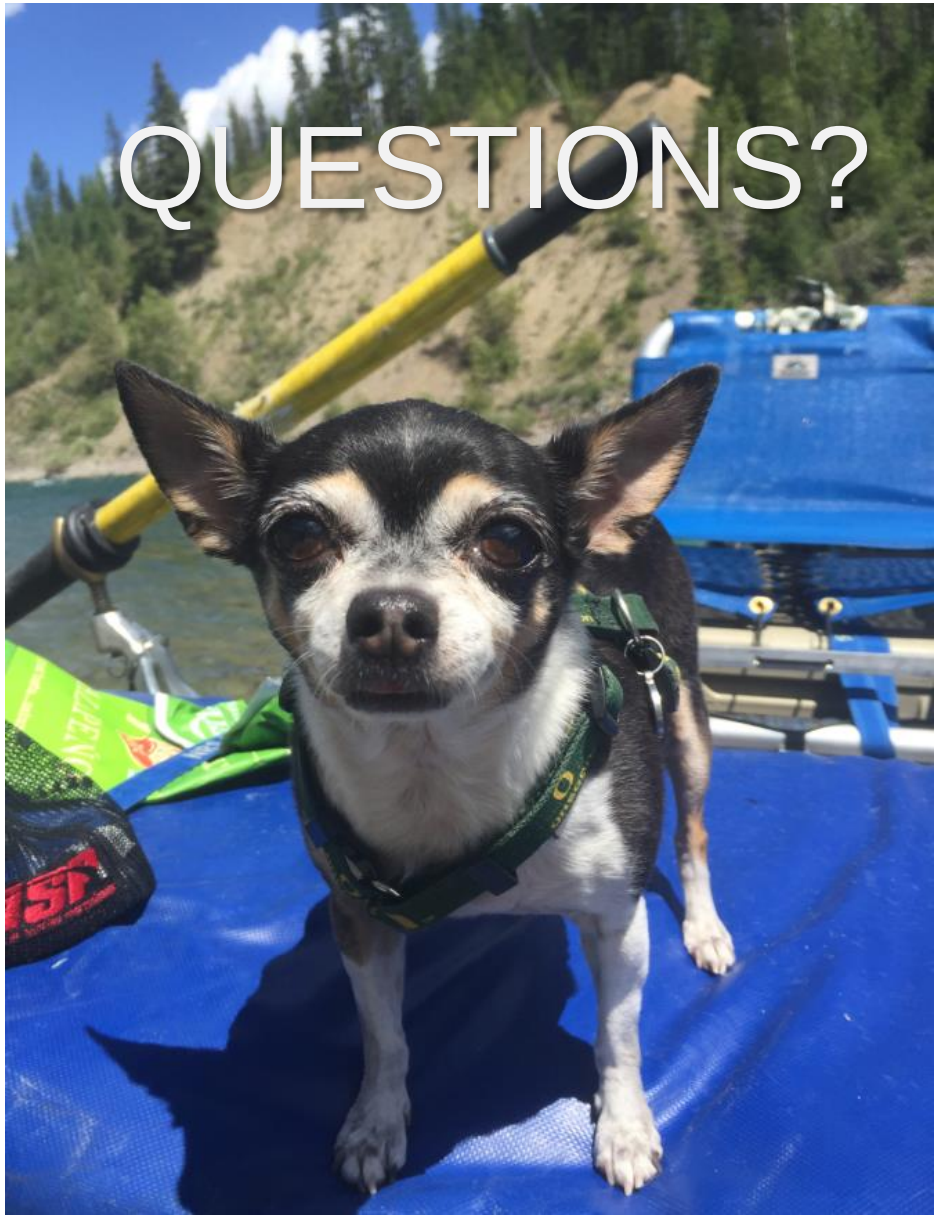
One-Pass Trencher – DeWind Photo


QUESTIONS?