

Remedial Investigation and Feasibility Study

Gas Works Park Site
Seattle, Washington

for

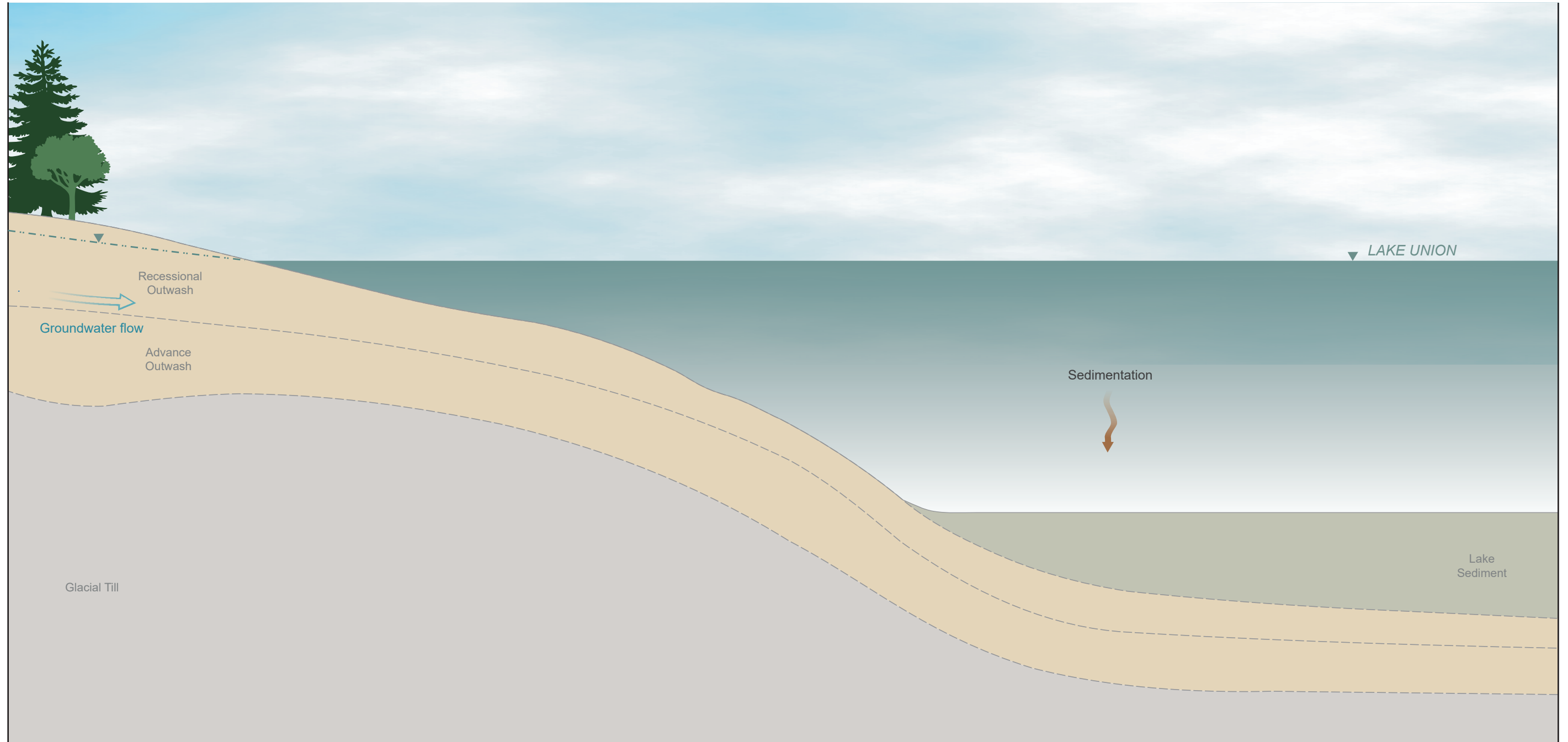
Puget Sound Energy and the City of Seattle

January 2023



North


South



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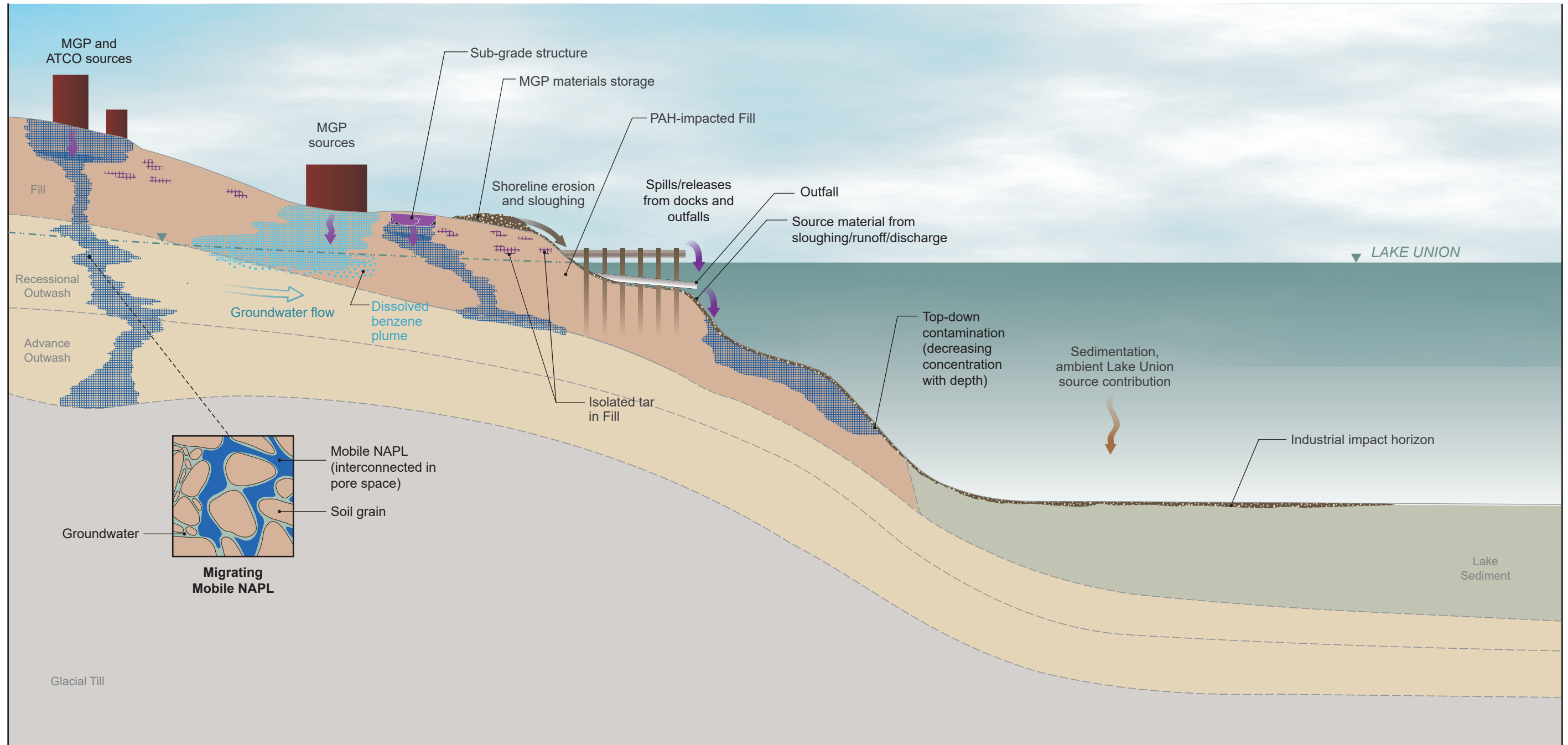
**Pre-Industrial Setting
(Circa 1900) CSM Cross Section**

Gas Works Park Site
Seattle, Washington

GEOENGINEERS  **Figure 7-1A**

North

South



Notes:
 1. See Figure 7-3A for the arsenic CSM during MGP operations.

Legend:

-  Mobile LNAPL
-  Mobile DNAPL
-  Tar
-  Dissolved Plume
-  Source Material (e.g., Black Carbon)

**Operational Period (1907-1956)
 CSM Cross Section**

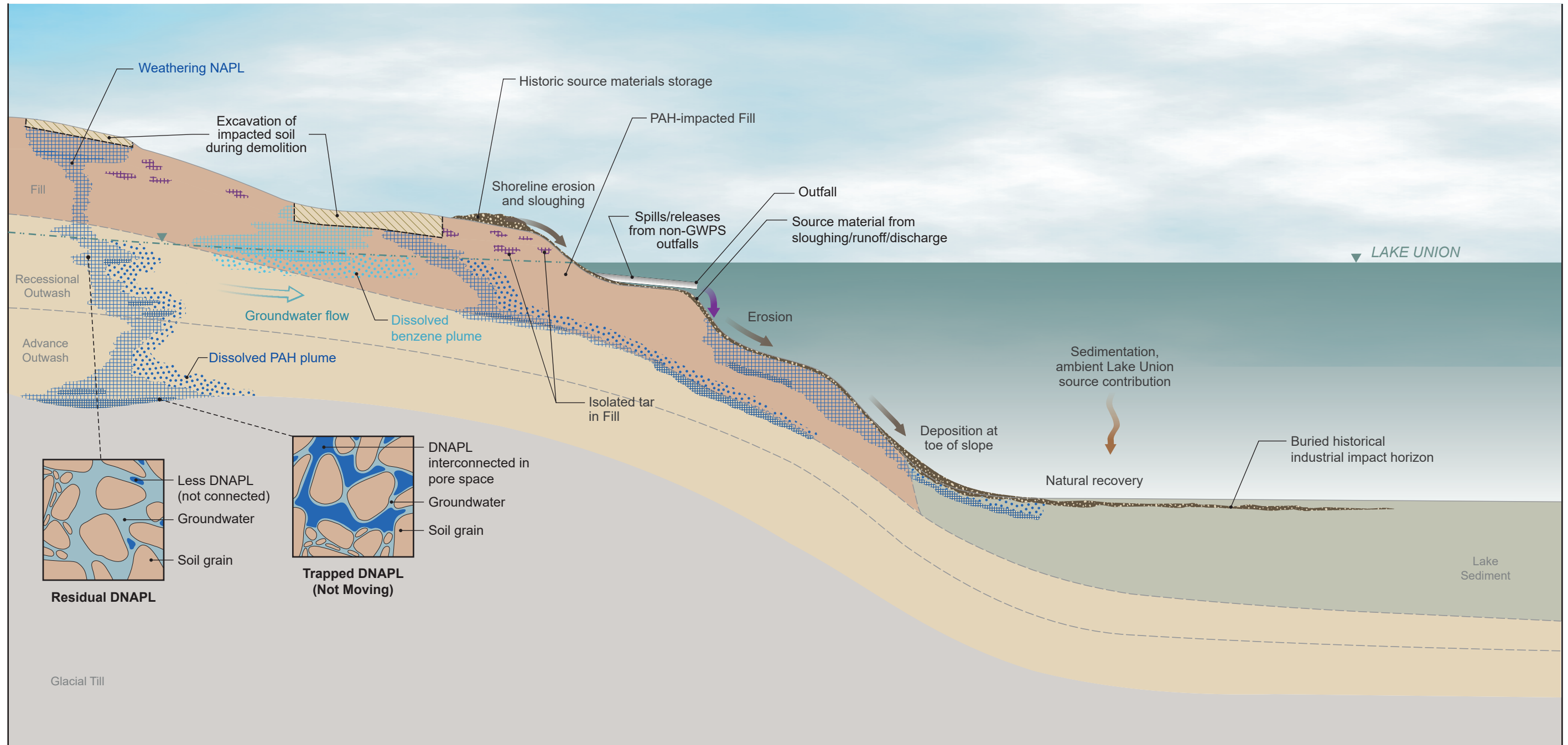
Gas Works Park Site
 Seattle, Washington






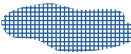
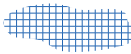


Figure 7-1B

North

South



Legend:

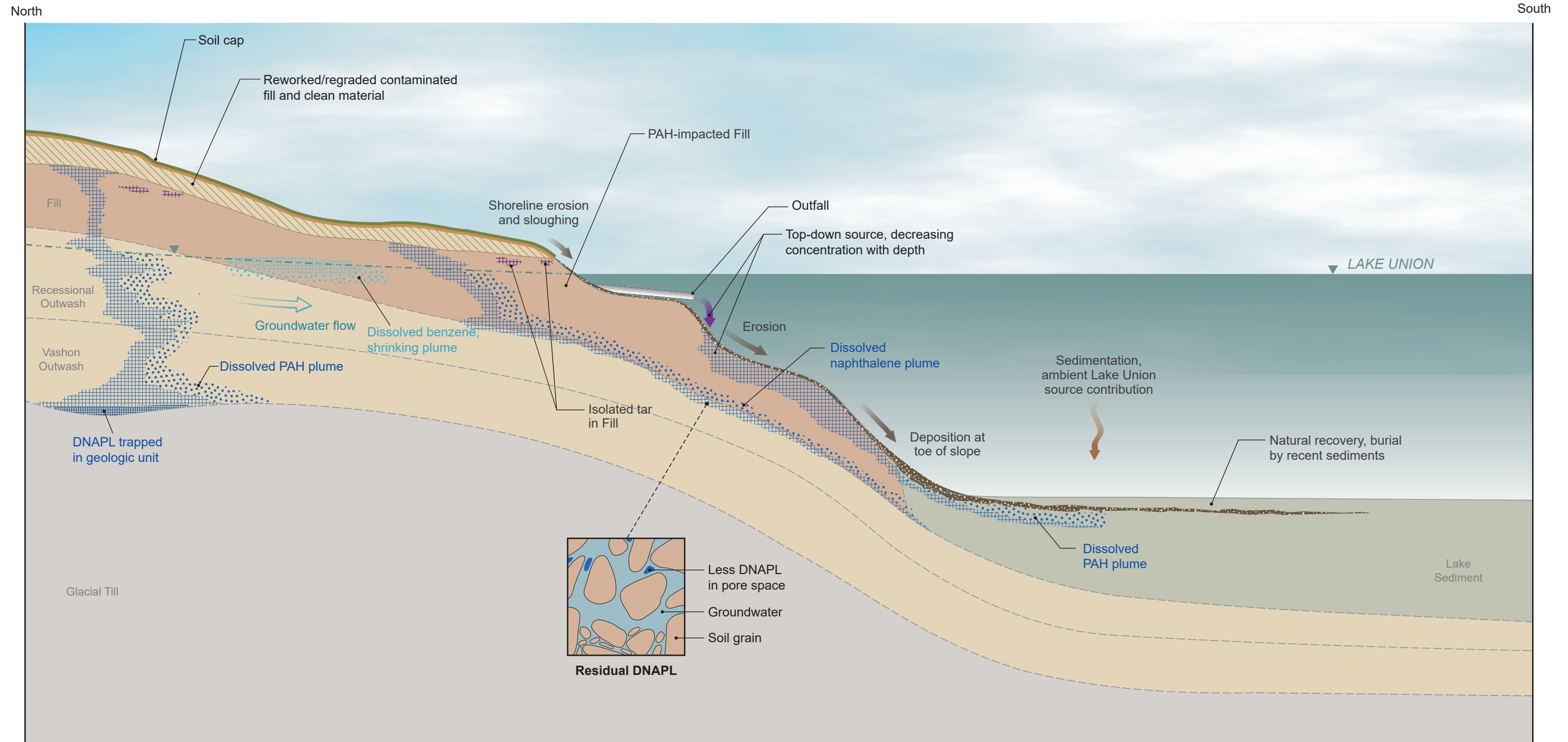
-  Mobile LNAPL
-  Residual LNAPL
-  Dissolved Plume
-  Mobile DNAPL
-  Residual DNAPL
-  Source Material (e.g., Black Carbon)
-  Tar

**Post-Industrial Setting
(Circa 1973) CSM Cross Section**

Gas Works Park Site
Seattle, Washington

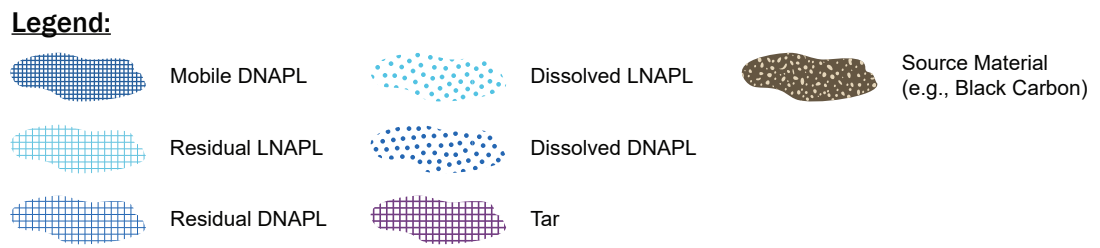


Figure 7-1C



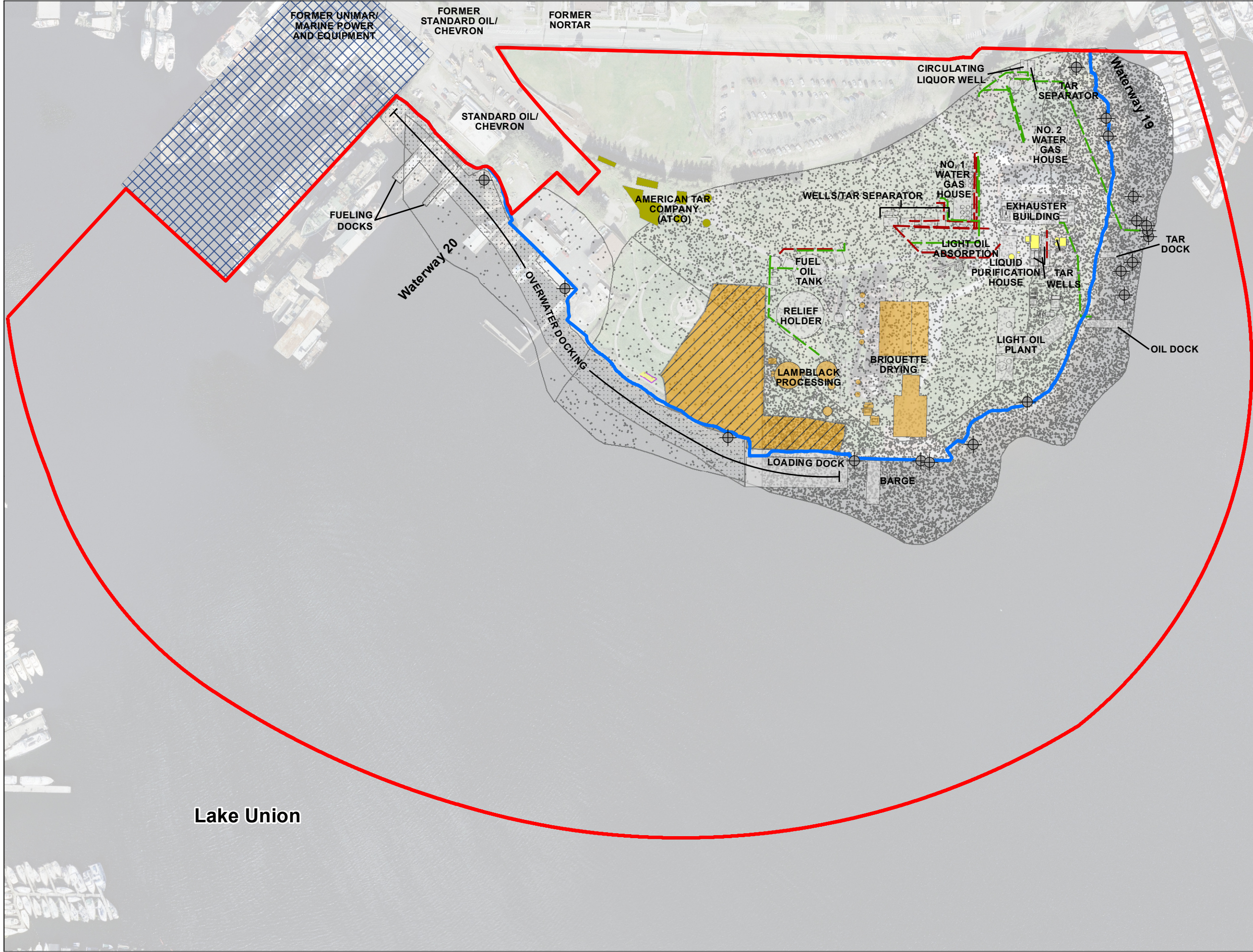
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Notes:
 1. See Figure 7-3B for the arsenic CSM under current conditions.



Current Conditions CSM Cross Section	
Gas Works Park Site Seattle, Washington	
GEOENGINEERS	Figure 7-1D

Office: SEA Path: P:\010186846\GIS\MXD\Phase01\16781018684601_F7-2_Primary_Sources_ReleaseMech2021.mxd Map Revised: 03 December 2021 maugust



Legend

- Area of Investigation
- Shoreline (OHWM)

Historical Sources

- - - Oil Line
- - - Tar Line
- MGP Sources
- Former MGP Materials Storage (Lampblack)
- Lampblack Use/Storage/Processing
- Thylox Process
- Tar Refinery Structures
- + Historical Outfall
- Approximate Location of Former Wallingford Outfall
- Western Overwater Docking
- Shipyard Operations

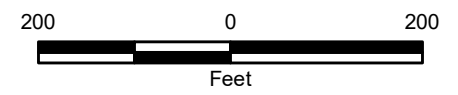
Historical Fill Sources

- MGP Fill
- Redistributed Fill
- West Fill
- Post-1919 Fill

Notes:

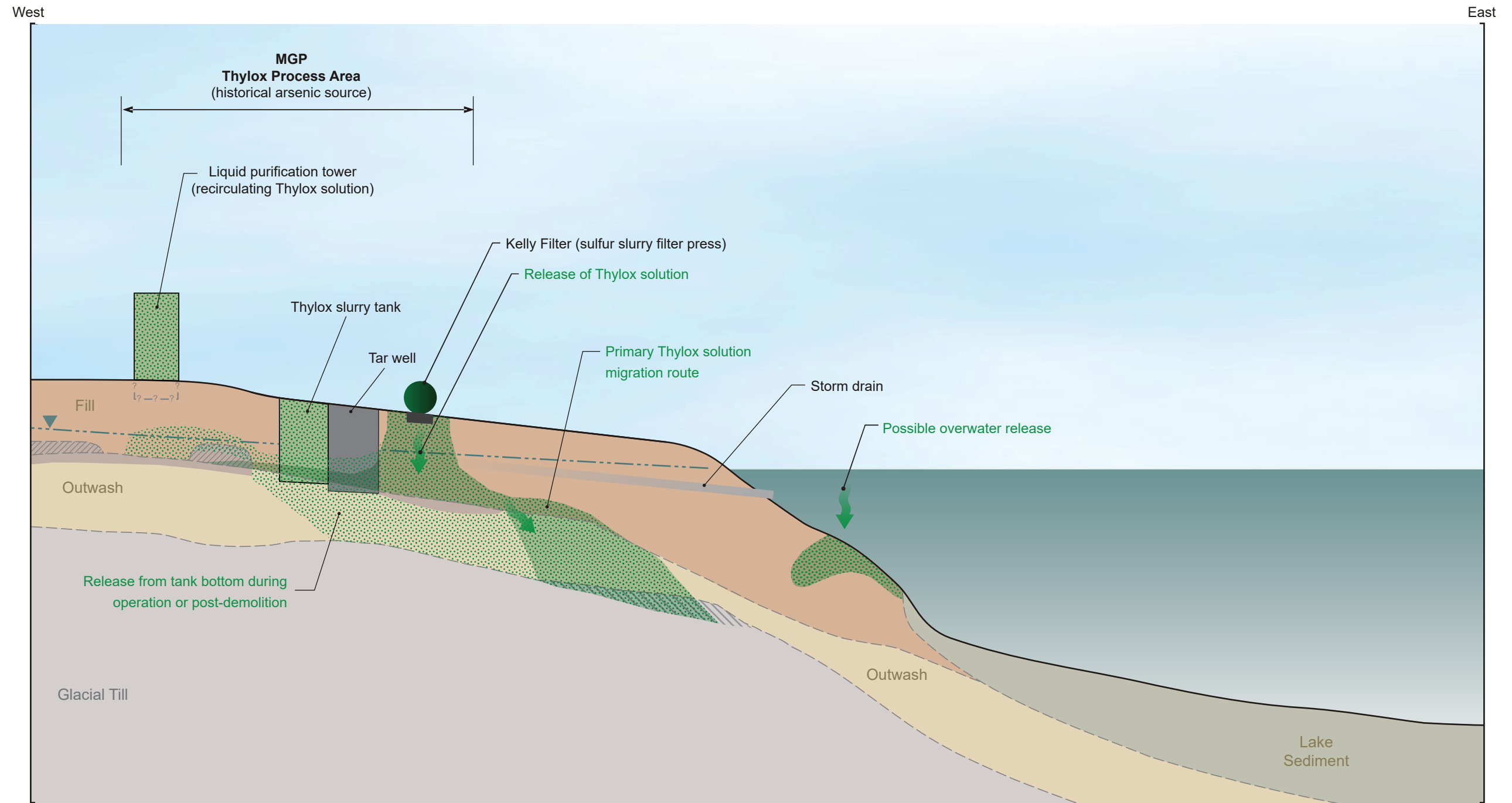
1. Site structures delineated as shown in the General Plan, Lake Station, Seattle Gas Company, April 1949, revised in June 1953. Historical railroad features shown as delineated in General Plan, Lake Station, Seattle Gas Co., June 1938. ATCO footprint as shown on 1919 Sanborn map, Sanborn Fire Insurance Map, 1950, Parametrix (1998) FFS, 1946, 1956 aerial photo, and Haag 1973.
2. Locations of oil and tar lines approximate. Based on work by AECOM. See Figure 1A-3 for original sources of information.
3. Reference Appendix 1B for evaluation of potential historical MGP sources and the fate of MGP structures.
4. Basemap 2005 USGS aerial photograph. Does not show current conditions.
5. Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601.

DISCLAIMER: This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. The locations of all features are approximate. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

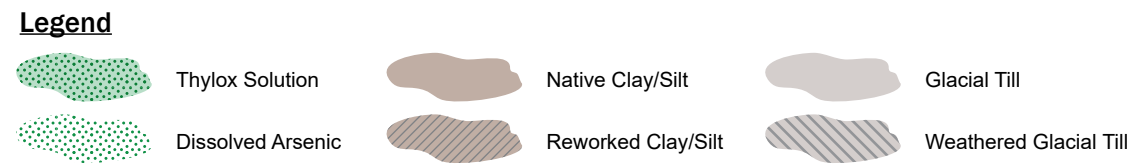


Potential Historical Sources

Gas Works Park Site
Seattle, Washington



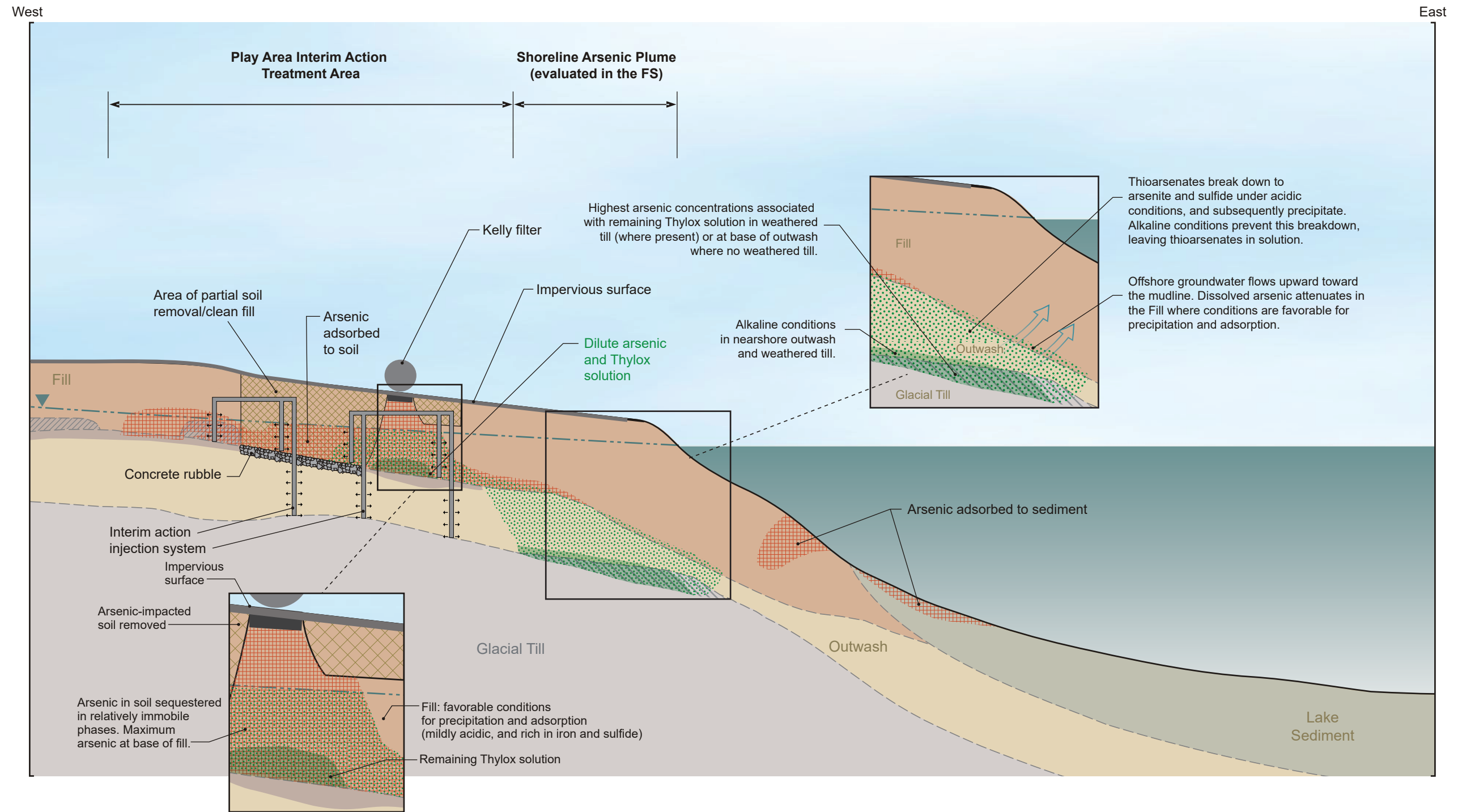
Notes:
 1. See Figure 7-1B for the non-arsenic (LNAPL, DNAPL, Tar, etc.) during MGP operations.



**Historical CSM –
 Arsenic Release and Transport
 Mechanisms and Pathways**

Gas Works Park Site
 Seattle, Washington

Figure 7-3A



Notes:
 1. See Figure 7-1D for the non-arsenic (LNAPL, DNAPL, Tar, etc.) under current conditions.

Legend

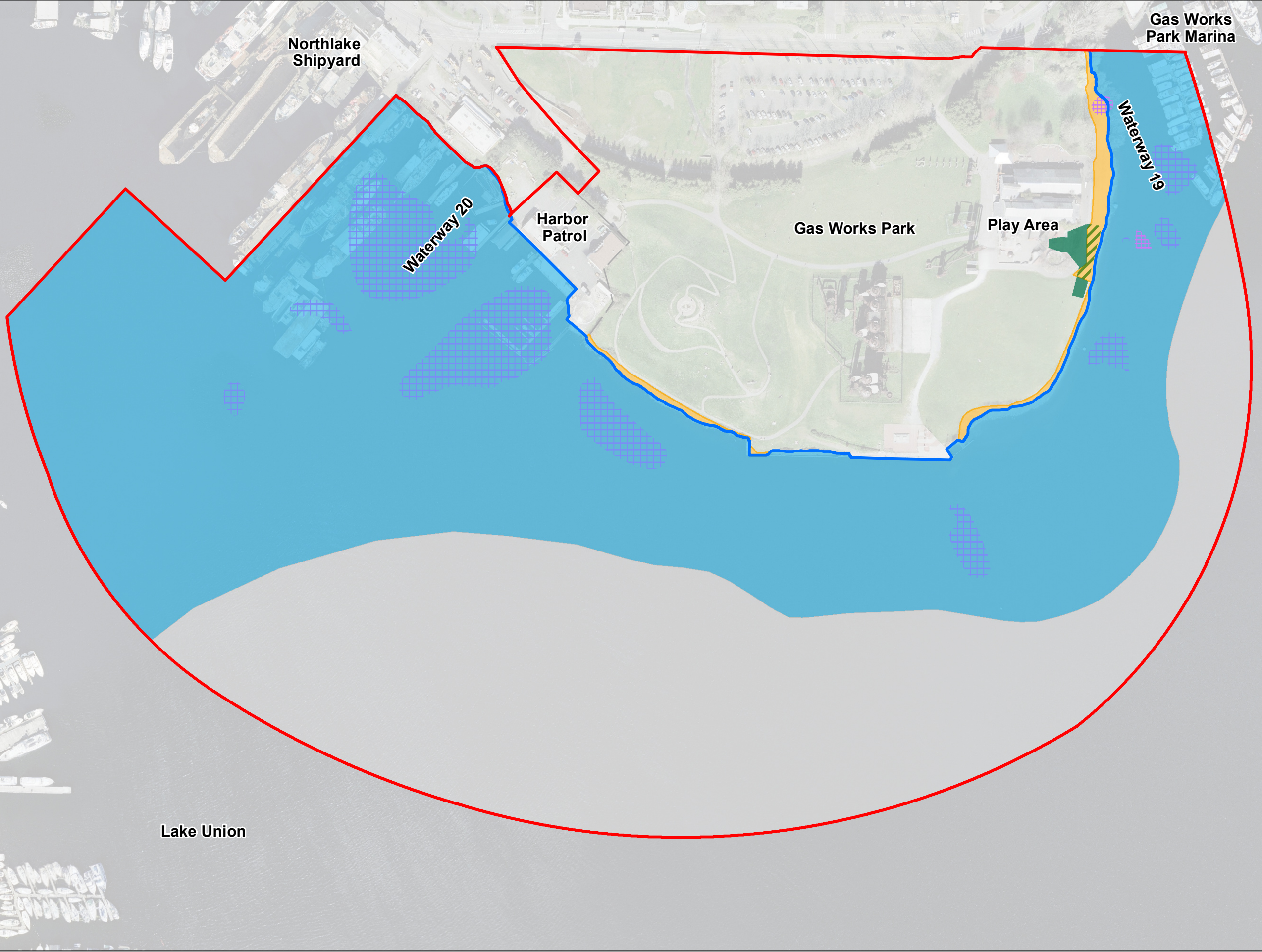
	Remaining Thylox Solution		Native Clay/Silt		Glacial Till
	Dissolved Arsenic		Reworked Clay/Silt		Weathered Glacial Till
	Arsenic in Soil/Sediment				

**Current CSM -
 Arsenic Release and Transport
 Mechanisms and Pathways**









Gas Works Park Site
 Seattle, Washington

Figure 7-3B

Office: SEA Path: P:\010186846\GIS\MXD\Phase01\16781018684601_F7-4_Secondary_Sources2021.mxd Map Revised: 29 April 2021 maugust



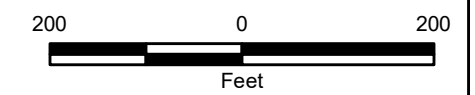
Legend

-  Area of Investigation
-  Shoreline (OHWM)
- Remaining Areas of Contamination**
-  Tar (0 to 1 Foot)
-  NAPL (0 to 1 Foot)
-  cPAH-Impacted Soil/Exposed Unstable Bank
-  Primary GWPS COC Impacted Sediment > Ambient Conditions
-  Primary GWPS COC Impacted Sediment = Ambient Conditions
-  Shoreline Arsenic Area

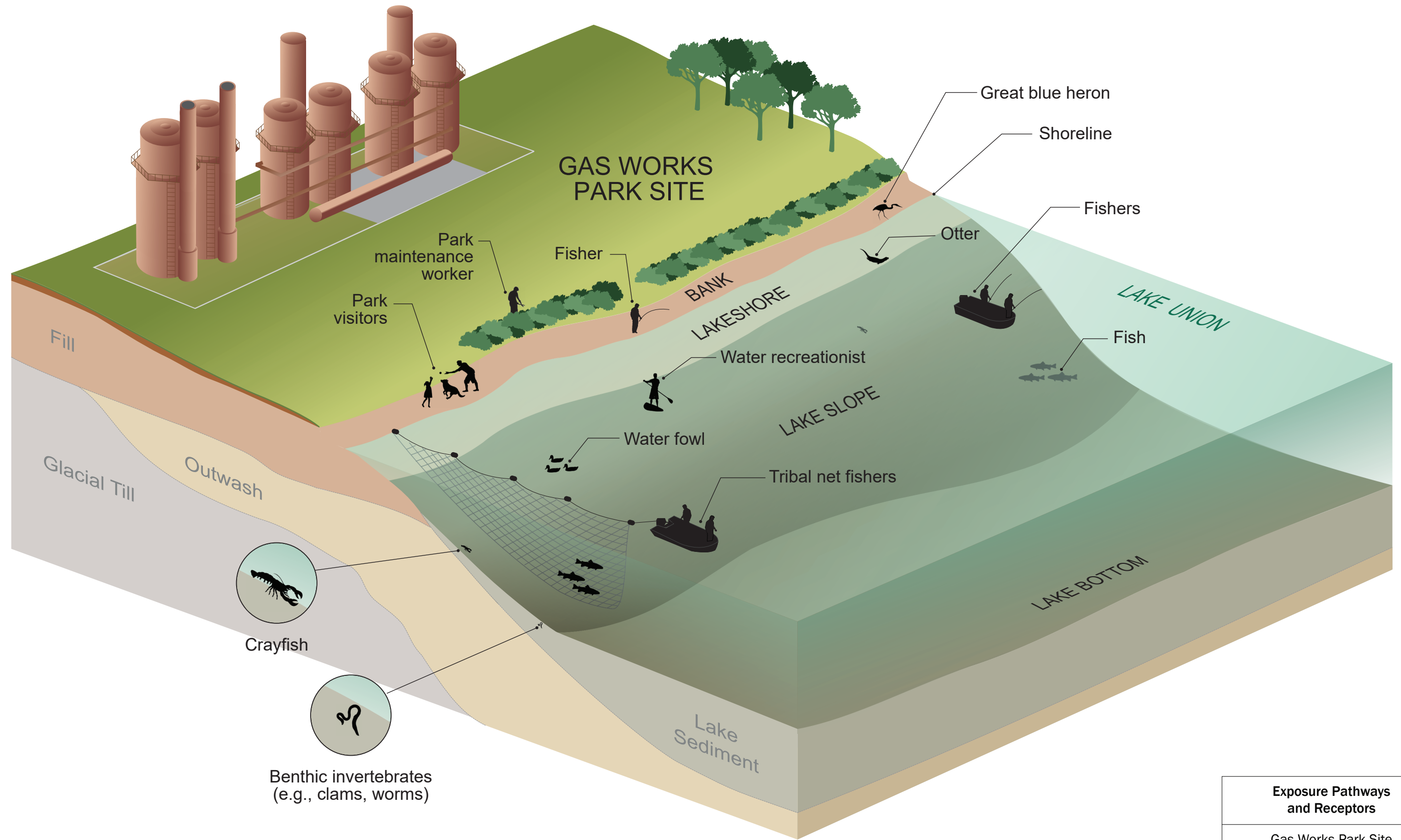
Notes:

1. Basemap - 2005 USGS aerial photograph. Does not show current conditions.
2. Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601.

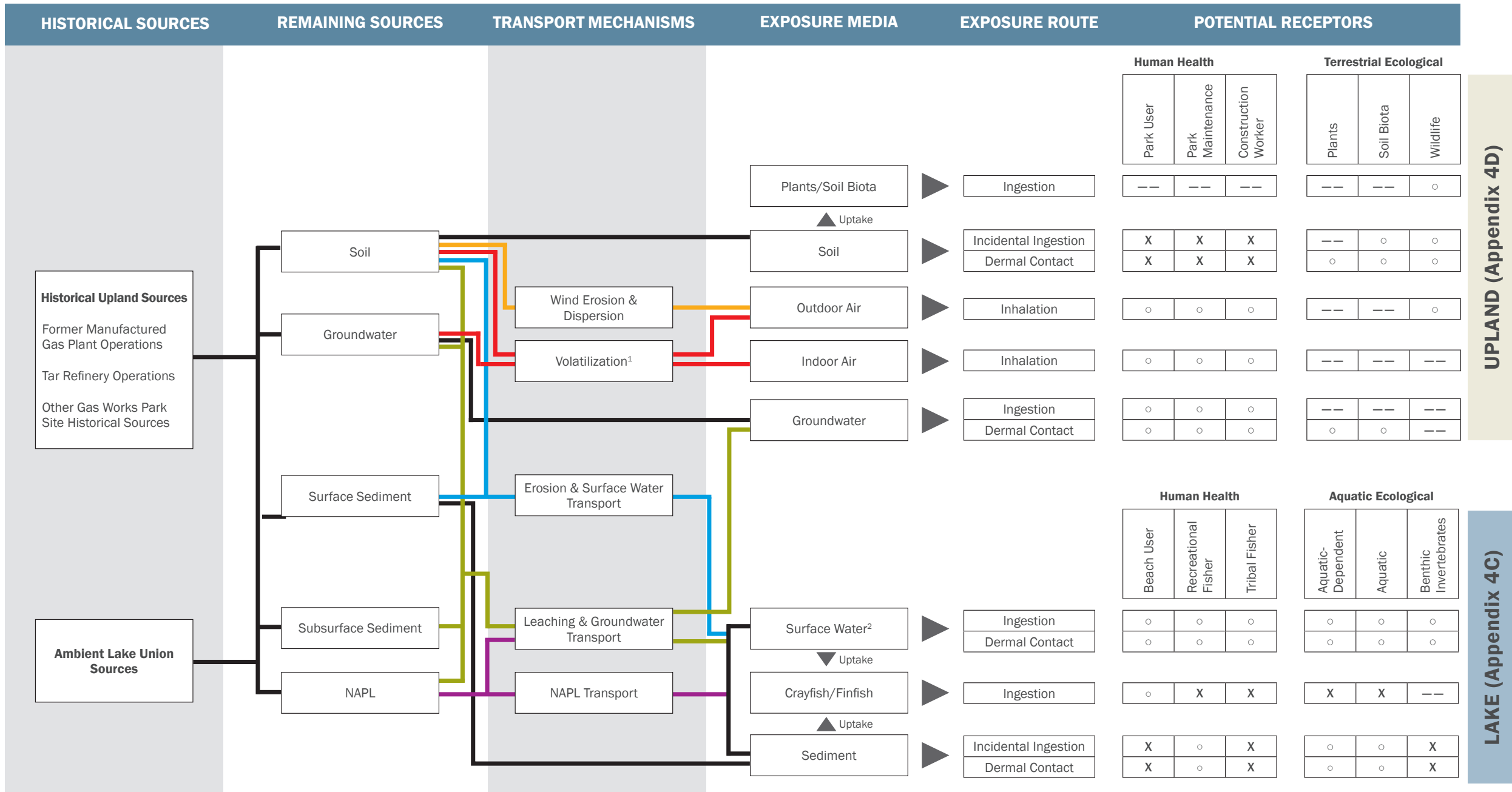
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Remaining Areas of Contamination	
Gas Works Park Site Seattle, Washington	
	Figure 7-4



Exposure Pathways and Receptors	
Gas Works Park Site Seattle, Washington	
	Figure 7-5



UPLAND (Appendix 4D)

LAKE (Appendix 4C)

Legend

- Volatilization
- Wind Erosion & Dispersion
- Leaching & Groundwater Transport
- Mobile Non-Aqueous Phase Liquid (NAPL) Transport
- Erosion & Surface Water Transport
- X Complete Pathway
- o Incomplete or Minor Pathway
- Not Applicable

- Notes**
- Upland NAPL is a potential source to soil and groundwater; associated contaminants can volatilize to air.
 - The protection of surface water is addressed by the use of surface water screening levels in the evaluation of offshore groundwater.

Conceptual Site Exposure Model

Gas Works Park Site
Seattle, Washington

Figure 7-6