

**ATTACHMENT F - ANALYSIS OF
BROWNSFIELD CLEANUP ALTERNATIVES
(ABCA)**

Draft Analysis of Brownfields Cleanup Alternatives
Port of Tacoma Maritime Center – Parcel 132
426 East 11th Street, Tacoma Washington

This Analysis of Brownfields Cleanup Alternatives (ABCA) was prepared with funding provided under the Community-Wide Brownfields Assessment Cooperative agreement (BF-02J21201) executed between the Port of Tacoma and the U.S. Environmental Protection Agency. It summarizes the existing conditions and potential cleanup alternatives for the Parcel 132 property, located within the Port of Tacoma’s Maritime Center master planning area (Figure 1).

I. Introduction & Background

a. Site Location (*426 East 11th Street, Tacoma*)

The Port of Tacoma is developing a Maritime Center in partnership with the Tacoma School District to promote workforce development and create connections with people, businesses and education to inspire and grow the future of the maritime industry. Current redevelopment activities within the master planning area include two significant public investments:

- **New 253 Maritime Skills Center:** The skills center is being developed in partnership with the Tacoma School District. It will provide targeted training in maritime career skills for junior and senior high school students from 32 regional high schools in the Tacoma and Pierce County area.
- **New Port Headquarters Building:** The proposed Port headquarters building will provide workspace for approximately 150 employees of the Port of Tacoma and The Northwest Seaport Alliance. It will include chambers for Port of Tacoma Commission meetings, as well as some Managing Members meetings of The Northwest Seaport Alliance.

Parcel 132 is located at the gateway of the greater Port of Tacoma Maritime Center master planning area (Figure 1), just across the 11th Street Bridge from downtown Tacoma. The Port purchased this property in December 2023, as a further investment in the master planning area, and more broadly to support the continued redevelopment along the Thea Foss Waterway. Parcel 132 and adjacent Port-owned property are currently vacant and are proposed for redevelopment for maritime trades related uses. Future development opportunities include additional education and training facilities, business incubator space, additional office space for Maritime logistics and supply companies, commercial and retail spaces, green spaces and public amenities. The cleanup and redevelopment of Parcel 132 will help catalyze the next phase of the Maritime Center project.

b. Previous Site Uses

Parcel 132 and the surrounding lands were originally part of an extensive area of tideflats located at the mouth of the Puyallup River. They were acquired and prepared for development by the Northern Pacific Railroad. Between the 1890s and 1910, the properties in the vicinity were filled with dredge materials from the development of the Foss Waterway (formerly the City Waterway).

For nearly 100 years the property was used for wood products manufacturing and distribution, and later for heavy equipment storage:

- Between 1910 and the early 1930s, Parcel 132 was used for wood products manufacturing by the Richardson & Elmer Lumber Company and by the City Millwork company.
- The Northern Pacific Railroad sold the northern portion of the property to private owners in 1924. The southern portion of the property remained owned by the railroad until 1940 when it was sold to Hampton Lumber Company.
- The Hampton Lumber Company acquired the northern portion of the property and began lumber storage activities there in 1938. Following acquisition of the southern portion of the property from the railroad, a wood products warehouse was constructed on the property in 1941.
- The Hampton Lumber warehouse was expanded by 1948, with the building occupying the northern portion of the property along Northeast 11th Place between East E-street and East F street (see Figure 2). The southern portion of the property was used for parking and material storage.
- In November of 1965, the Hampton Lumber warehouse was destroyed by fire. It was never rebuilt. After the fire, Hampton moved its operations off-site.
- During the 1970s and 1980s, the property remained vacant. Finished lumber that had been manufactured by Western Dry Kilns was stored on Parcel 132. Western Dry Kilns operated on the adjacent property as a tenant of Northwest Door Company/St. Regis Paper Company and later the Wattles Company. During the 1970s and early 1980s that lumber was treated with sap stain preventatives. This practice was discontinued by 1988 based on an environmental assessment conducted at that time.
- Lindall Cedar homes continued to lease the property for lumber storage on parcel 132 during the 1990s.
- Between approximately 2009 and 2023 the property was used for storage of vehicles and heavy equipment by Ness Crane & Equipment and NTR Logistics. NTR Logistics specialized in transportation of heavy equipment such as wind turbines. In 2018 the Washington Department of Ecology (Ecology) received a complaint about potential oil dumping on the property during the time that NTR Logistics was operating on site.

The property remains undeveloped except for an electric fence surrounding the property. In 2023, following completion of Phase 1 and Phase 2 environmental site assessments, the Port of Tacoma acquired the property from the most recent property owners (426 East 11th Street LLC). The Port did so as a bona fide prospective purchaser.

In 2023, the Port reported the presence of soil and groundwater contamination to Ecology. The agency subsequently listed the site under the site name “Port Maritime Center”. That listing includes Parcel 132 as well as the adjacent Parcel 94 and Parcel 92 properties, both owned by the Port. None of the properties are subject to existing Federal or State orders or formal agreements for cleanup at this time. Investigation and cleanup activities are currently being conducted by the Port as independent remedial actions under Washington’s Model Toxics Control Act (WAC 173-340), with close coordination with both Ecology and EPA. Eligibility of Parcel 132 for Brownfields grant funding was confirmed by EPA prior to preparing this ABCA.

c. Site Assessment Findings

Prior to taking ownership of Parcel 132, the Port of Tacoma retained Anchor QEA, Inc. (Anchor QEA) to conduct Phase 1 and Phase 2 environmental assessments of the Parcel 132 property (Anchor QEA, 2023a; Anchor QEA 2023b). This work was conducted in coordination other Phase 2 environmental and cultural resource assessment activities performed on the adjacent Parcel 94 site (Anchor QEA 2024a).

The Phase 1 identified multiple Recognized Environmental Conditions (RECs) for Parcel 132, including 1) historical fill placement, 2) potential impacts from past industrial uses of the property, and 3) the presence of a former gasoline service station at an adjacent property. The Phase 2 environmental assessment collected data to investigate each of these concerns.

The Phase 2 environmental assessment included drilling of six soil borings located on a 90-meter grid pattern within Parcel 132 (Figure 3). Each boring was screened for the presence of environmental contamination and potential cultural resources, with archaeological monitoring performed in coordination with the Puyallup Tribe. Soil samples were then collected for environmental testing from three of the borings, Borings SO-92, SO-96 and SO-97. Groundwater samples were collected from these same borings.

Similar testing was performed at a soil boring located on the adjacent Port-owned portions of Parcel 94 located to the south (Boring SO-02).¹

Following completion of the Phase 2 ESA, additional testing was conducted within and adjacent to Parcel 132. That work included collection of additional soil analytical samples to better evaluate the depth of contamination. This work was funded directly by the Port, with some additional testing funded by the Brownfields Grant in support of this ABCA.

Results of the combined sets of environmental investigations are summarized in Figure 3. Ultimately no contamination was identified in association with the former service station on the adjacent property to the east. However, on-site soil and groundwater contamination

¹ The area surrounding Boring SO-02 on the adjacent Parcel 94 property was historically used for lumber storage by Western Dry Kilns and contains surface soil contamination similar to Parcel 132. If grant funding is awarded for the cleanup of Parcel 132, the Port anticipates remediating this portion of Parcel 94 in parallel with the cleanup at Parcel 132.

were confirmed, including contamination related to similar contamination located in adjacent areas of Parcel 94. Significant findings from the Phase 2 and follow-up environmental assessment activities are summarized below:

- **Surface Soil Contamination:** Surface soils within and adjacent to Parcel 132 are contaminated to depths of 2-4 feet below ground surface with multiple chemical contaminants at concentrations exceeding applicable cleanup levels. Identified contaminants include the following:
 - **Arsenic and dioxin/furans** from historical storage of lumber treated with sap stain preventative solutions in the 1970s and 1980s; this contamination is also present in adjacent areas of Parcel 94
 - **Lead, mercury and carcinogenic PAH compounds** from the 1965 building fire that destroyed the Hampton Lumber Company warehouse
 - **Petroleum** (diesel and motor-oil range) hydrocarbons from spills from vehicles and equipment stored on the property
- **Groundwater Contamination:** Groundwater was free of petroleum, heavy metals and volatile organic contaminants, except for arsenic at one location:
 - **Total and dissolved arsenic** concentrations exceed groundwater cleanup levels in the eastern portion of Parcel 132 (location of SO-96 as shown on Figure 3) in the finished lumber storage area. Arsenic concentrations met cleanup levels in other areas of the property, indicating that the contamination is localized. It is expected to naturally attenuate following removal of the residual soil contamination.

As part of the Port's cooperative agreement with EPA, the Port is leading Brownfield assessment activities in coordination with the local Brownfields Advisory Committee (BAC). Current members of the BAC include the following:

- The City of Tacoma
- The Puyallup Tribe
- The Tacoma Pierce County Health Department
- The New Tacoma Neighborhood Council and North End Neighborhood Council
- Communities for a healthy Bay
- University of Washington School of Urban Studies
- Washington State Department of Ecology
- Clover Park Technical College

Under the Brownfields Grant, a site inventory of potential priority projects was completed for the Tideflats Industrial Area. Through that process and with input from the BAC, Parcel 132 was identified as a high priority for assessment and remediation. This ABCA was developed by Anchor QEA with funding provided by EPA under the Cooperative Agreement.

d. Project Goal

Parcel 132 sits at the gateway to the Port Maritime Center Master Planning Area. Cleanup and redevelopment of Parcel 132 is proposed to remove the existing blight in this important location. High school students attending the 253 Maritime Center will

pass by the property every day on their way to and from the school. The property is also located on the main transportation and pedestrian corridors within the planning area.

Currently the use of the property is restricted to industrial activities due to the presence of soil contamination. The property is surrounded by an electrified fence, providing security and engineering controls to limit access to the property. While the fencing provides protection of area students, it represents a blight on the remainder of the Master Planning Area.

The Port proposes to clean up Parcel 132 and the adjacent portion of Port-owned property to the south (Figure 3) to prepare them both for the next phase of the Maritime Center project. Future development opportunities include additional education and training facilities, business incubator space, additional office space for Maritime logistics and supply companies, commercial and retail spaces, green spaces and public amenities.

The redevelopment is expected to continue the use of sustainable development practices exemplified by the 253 Maritime Center and the Port Headquarters Building. The new Port building will achieve LEED Silver certification ensuring that the building meets high standards for energy efficiency, water conservation, and indoor environmental quality. The new school building will meet the Washington Sustainable Schools Protocol standards, focusing on creating healthy, energy-efficient, and environmentally friendly learning environments.

e. Regional and Site Vulnerabilities

Parcel 132 is not located within an existing flood zone. However, it is located within an area of the Tacoma Tideflats surrounded by three tidally-influenced waterways (the Foss Waterway to the west, the Wheeler Osgood Waterway to the south and the Middle Waterway to the northeast).

Planning for the Port Maritime Center has included evaluation of climate-related risks including sea level rise. Based on an analysis performed by Anchor QEA (Anchor QEA, 2024b), a minimum floor elevation of 19 feet above current Mean Lower Low Water (MLLW) elevations has been recommended for new development to provide resilience against future sea level rise. Ground surface elevations at Parcel 132 currently comply with this target elevation, indicating that it has a high resiliency for sea level rise.

According to the US Global Change Research Program (USGCRP), expected weather trends for the Puget Sound area include temperatures, increased precipitation with greater variability and increased extreme precipitation events are likely to occur in the future. Parcel 132 does not currently have an on-site stormwater management system. Stormwater-related improvements will be required to prevent adverse impacts from heavy storm events that would tend to overwhelm available on-site stormwater management measures.

Groundwater is present at depths of approximately 8 feet below ground surface (elevation 11 ft MLLW). Based on the nature of the Site and its proposed reuse, changing temperature, rising sea levels, wildfires, changing dates of ground thaw/freezing, changing

ecological zone, saltwater intrusion and changing groundwater table are not likely to significantly affect conditions at Parcel 132.

II. Applicable Regulations and Cleanup Standards

a. Cleanup Oversight Responsibility

The cleanup of Parcel 132 will be led by the Port and conducted in compliance with Washington's Superfund program, the MTCA regulations. The MTCA cleanup program is overseen by Ecology.

Ecology has designated the larger Port Maritime Center area as a contaminated site. The site is identified as the "Wheeler Osgood Maritime Center" site (cleanup site ID 17005). There are no active orders with EPA or the State dictating timeframes or methods for cleanup of this site at this time. Cleanup and redevelopment of this area is being led by the Port, with the work being conducted in phases under Washington's independent remedial action program.

Like the ongoing cleanup at the adjacent portions of Parcel 94 (the locations of the 253 Maritime Center and the New Port Headquarters building) the cleanup will be performed as a MTCA interim remedial action. Interim actions are used to remediate portions of larger sites and address specific contaminant exposure pathways.

b. Cleanup Standards for Major Contaminants

The Port seeks to clean up Parcel 132 in a manner that supports a wide range of future uses. Residential uses are not proposed. The Port proposes to remediate Parcel 132 to unrestricted use standards so that engineering controls (e.g., fencing) are not required. This will provide protectiveness if future uses include coordination between on-site activities and students from the 253 Maritime Center (e.g., participation of high school students in on-site activities during training or mentorship programs).

Cleanup levels for contaminated soils are expected to include the MTCA Method A and B cleanup levels established for unrestricted land use as listed in Table 1. That table lists each of the priority contaminants identified in on-site soils (Figure 3).

Cleanup levels for groundwater include MTCA Method A and B cleanup levels for groundwater, with applicable adjustments for the natural background, method quantitation limits and as necessary for the protection of surface water quality. For arsenic, the only contaminant currently detected above cleanup levels, the cleanup level will be based on Washington State natural background levels (8 ug/L) for arsenic in Puget Sound area groundwater (Ecology, 2022).

Table 1. Preliminary Site Cleanup Levels

Analyte	Cleanup Level	Units	Basis
Soil Cleanup Levels			
Arsenic	20	mg/kg	MTCA Method A for unrestricted land use
Lead	250	mg/kg	MTCA Method A for unrestricted land use
Mercury	2	mg/kg	MTCA Method A for unrestricted land use
cPAH TEQ	190	ug/kg	MTCA Method B for unrestricted land use
Dioxin/Furan TEQ	13	ng/kg	MTCA Method B for unrestricted land use
Petroleum (diesel + oil)	2000	mg/kg	MTCA Method A for unrestricted land use
Groundwater Cleanup Levels			
Arsenic	8	ug/L	Natural background for Puget Sound area groundwater (Ecology, 2022)

Notes:

cPAH: Carcinogenic Polynuclear Aromatic Hydrocarbons

MTCA: Model Toxics Control Act (WAC 173-340)

TEQ: Toxicity Equivalent Concentration

c. Laws & Regulations Applicable to the Cleanup

Federal laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, and the Federal Davis-Bacon Act. The cleanup will be conducted in compliance with the various provisions of the Model Toxics Control Act (WAC 173-340).

Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed.

Environmental review and permitting requirements applicable to the cleanup include the following:

- State Environmental Planning Act (SEPA; WAC 197-11) review will be completed prior to procuring project permits
- A Tacoma site development permit (SDEV) will be obtained for site grading and stormwater management activities
- A construction stormwater general permit (CSGP) will be obtained to regulate construction stormwater management during the cleanup in compliance with the National Pollutant Discharge Elimination System (NPDES) regulations and corresponding state of Washington requirements
- Stormwater that requires treatment and off-site discharge during the cleanup will be treated and discharged to the sanitary sewer under the terms of a Tacoma Special Authorized Discharge (SAD) permit
- Soils transported for off-site disposal will be profiled and managed consistent with a Tacoma Pierce County Health Department Waste Discharge Authorization
- Utility clearances (i.e., call before you dig) will be obtained prior to initiation of soil excavations or other ground penetrating construction activities.

III. Evaluation of Cleanup Alternatives

a. Cleanup Alternatives Considered

To address contamination at the Site, three different alternatives were considered for the cleanup of contaminated soils. These include the following:

- Alternative #1: No Action,
- Alternative #2: Capping, and
- Alternative #3: Excavation with Offsite Disposal.

Alternatives #2 and #3 also include monitored natural attenuation and institutional controls for management of localized groundwater arsenic contamination. Groundwater monitoring activities associated with the cleanup of Parcel 132 are expected to be coordinated with similar work to be performed throughout other portions of the Port Maritime Center site.

b. Evaluation of Cleanup Alternatives

Prior to selecting a recommended cleanup approach, each of the three cleanup alternatives was evaluated to assess and compare the effectiveness, implementability, and costs.

Effectiveness – Including Vulnerability/Resiliency Considerations

- Alternative #1: No Action. Alternative #1 does not support project requirements. It does not provide a permanent, protective cleanup for Parcel 132. It relies on the continued use of engineering controls (i.e., fencing) to protect property users and neighbors from the soil contamination. It does not support the planned future reuse of the property in line with the goals of the Port Maritime Center.
- Alternative #2: Capping can be an effective approach to contain contaminated soils when it is implemented in parallel with a specific long-term land use. The preliminary design for Alternative #2 incorporates new stormwater infrastructure to manage stormwater and ensure long-term resiliency of the remedy. Future construction could require capped areas to be re-worked one or more times to support site redevelopment. In addition, capping will require periodic monitoring and the filing of restrictive covenants to ensure long-term protectiveness of the remedy. Groundwater monitoring activities would be integrated with similar activities performed throughout the Port Maritime Center site.
- Alternative #3: Excavation with Offsite Disposal is an effective way to permanently eliminate human health risks at Parcel 132, since soil contamination will be removed, and the exposure pathways will no longer exist. The preliminary design for Alternative #3 incorporates new stormwater infrastructure to manage stormwater and ensure long-term resiliency at the site. Removal of contaminated soils will remove encumbrances that could inhibit future site redevelopment and thereby support the revitalization goals of the Port Maritime Center project.

Implementability

- Alternative #1: While highly implementable in the short-term, the ongoing presence of contaminated surface soils and groundwater under Alternative #1 will ultimately require further action to address MTCA cleanup requirements and prevent exposure of property users and stormwater to soil and groundwater contaminants.
- Alternative #2: Capping is a readily implementable cleanup approach provided that the cap design anticipates the needs of stormwater management and addresses grade transitions required to align with area roadways and infrastructure. Measures to address these requirements are included in the preliminary design and estimated costs for Alternative #2. Future redevelopment will require additional costs to retrofit the cap as necessary to accommodate building and utility construction, and that redevelopment will require active stormwater controls to manage contaminated materials that may be exposed during construction.
- Alternative #3: Excavation with Offsite Disposal is readily implementable using similar approaches as those used for implementation of the Parcel 94 interim action currently under construction at the adjacent property. Those measures include proactive stormwater management and dust control during the cleanup and adherence to project permitting and environmental review constraints, use of appropriate industrial truck haul routes and using adaptive management during construction to address any unforeseen conditions. Removal of the soil contamination will remove encumbrances to future site redevelopment in comparison to Alternatives #1 and #2 and is expected to improve restoration times for on-site groundwater contamination.

Estimated Cost

- Alternative #1: No Action. No costs are estimated for the no action alternative. However, future costs will necessarily be incurred to manage contaminated soils and groundwater at Parcel 132 to comply with MTCA and support future redevelopment.
- Alternative #2: Capping. The costs to implement Alternative #2 are estimated at \$1.98 million. Additional costs would be incurred at the time of future redevelopment to seat new buildings and utilities into the cap and manage displaced contaminated soils and contaminated stormwater.
- Alternative #3: Excavation with Offsite Disposal is estimated to cost roughly \$3.20 million. This alternative would eliminate incremental future redevelopment costs associated with the management of contaminated soils and stormwater.

c. Recommended Cleanup Alternative

The recommended cleanup alternative is Alternative #3: Excavation with Offsite Disposal.

- Alternative #1 – No Action: Alternative #1 cannot be recommended since it does not meet MTCA cleanup requirements or support the cleanup and revitalization goals of the Port Maritime Center.
- Alternative #2 – Capping: The direct costs of capping are less expensive than excavating soils and disposing them offsite. However, Alternative #2 will require

ongoing monitoring and maintenance of the cap, and additional costs will be incurred in the future to support site redevelopment.

- Alternative #3 – Excavation and Offsite Disposal. Alternative #3 is recommended. Though it has the highest direct costs, it provides the highest degree of effectiveness and permanence and best supports future redevelopment goals for the project. It also eliminates future incremental cleanup-related costs necessary to support site redevelopment.

Green and Sustainable Remediation Measures for Selected Alternative

To optimize the sustainability of the cleanup action, several green remediation approaches will be applied including the following:

- The most recent Best Management Practices (BMPs) issued under ASTM Standard E-2893: Standard Guide for Greener Cleanups will be used as a reference in this effort.
- The work will be planned for the dry season to minimize stormwater management requirements. Stormwater generated during the cleanup will be prevented from discharge to Commencement Bay waters. Stormwater will be managed through on-site infiltration to the extent practicable. Waters that cannot be infiltrated will be treated and discharged to the sanitary sewer in accordance with the requirements of a City of Tacoma SAD permit.
- The Port will maximize soil reuse opportunities both for 1) reusable soils generated during the cleanup (i.e., soils that are suitable for reuse at other Port-owned industrial properties), or 2) imported clean soils required to backfill cleanup excavations. For example, clean dredge materials generated from port navigation improvement projects could be used for some of the excavation backfill materials. All soil reuse will be conducted in accordance with applicable State and local regulations and requirements.
- Air emissions associated with construction vehicles and equipment will be minimized using measures such as an idle-reduction policy, the use of heavy equipment with advanced emissions controls operated on ultra-low sulfur diesel, and/or the use of electric vehicles where appropriate to the work being performed.

IV. References Cited

Anchor QEA, 2023a: Phase 1 Environmental Site Assessment of the Property at 426 East 11th Street. Prepared on Behalf of the Port of Tacoma. October 2023.

Anchor QEA, 2023b: Phase 2 Environmental Assessment Report for the Property at 426 East 11th Street. Prepared on Behalf of the Port of Tacoma. October 2023.

Anchor QEA, 2024a: Final Phase 2 Environmental Site Assessment Report for the Parcel 94 Property. Prepared on Behalf of the Port of Tacoma. July 2024.

Anchor QEA, 2024b: Tacoma Maritime Center: Sea Level Rise Evaluation. Prepared for BNBuilders and the Port of Tacoma. February 2024.

Ecology, 2022. Natural Background Groundwater Arsenic Concentrations in Washington State: Study Results. Ecology Publication Number 14-09-044. January 2022.

Figure 1. Location of Parcel 132 within the Port Maritime Center Master Planning Area



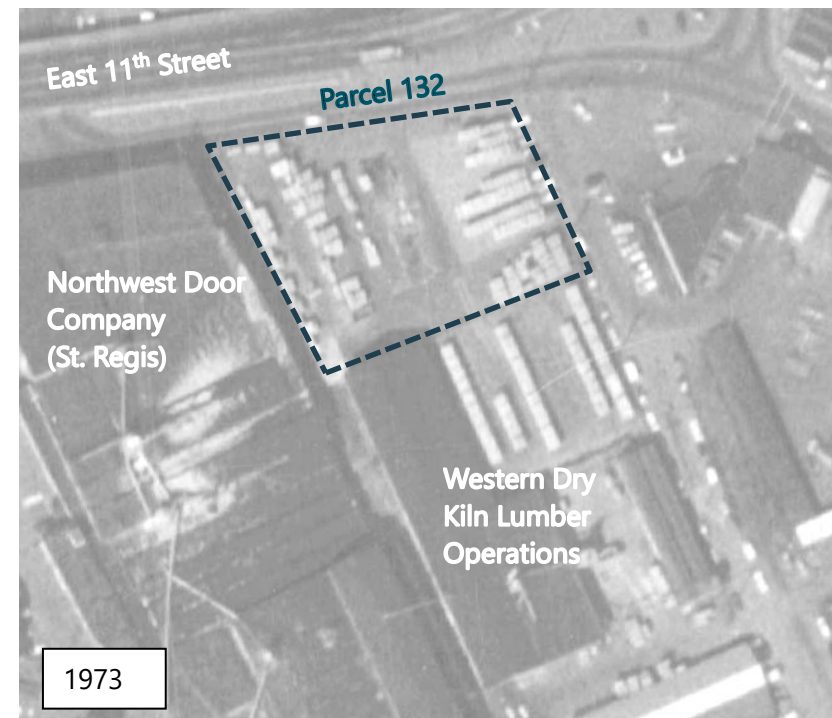
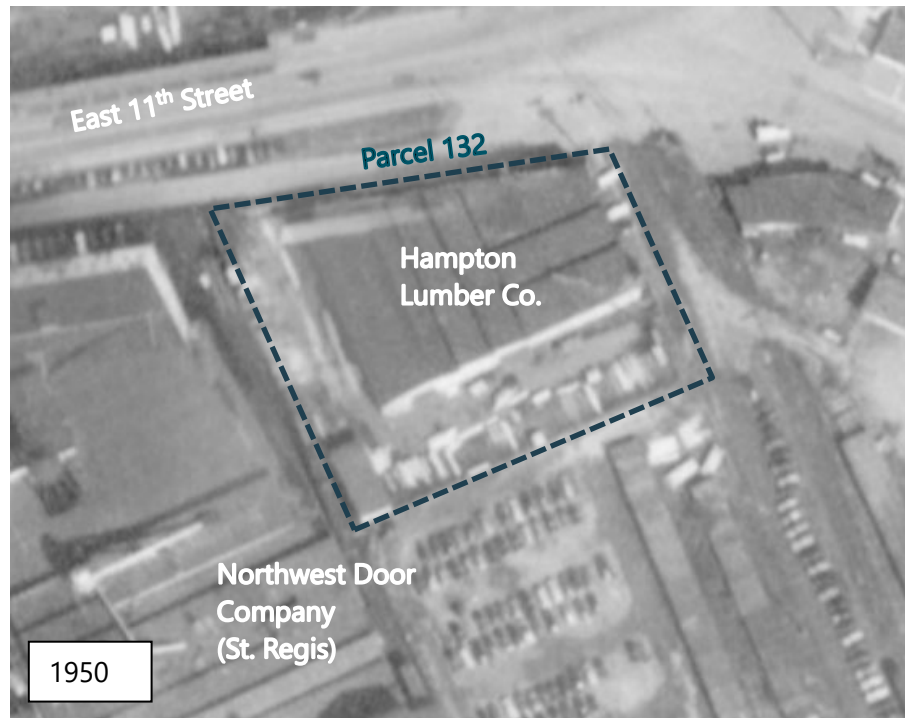
Figure 2. Selected Historical Photographs of Parcel 132

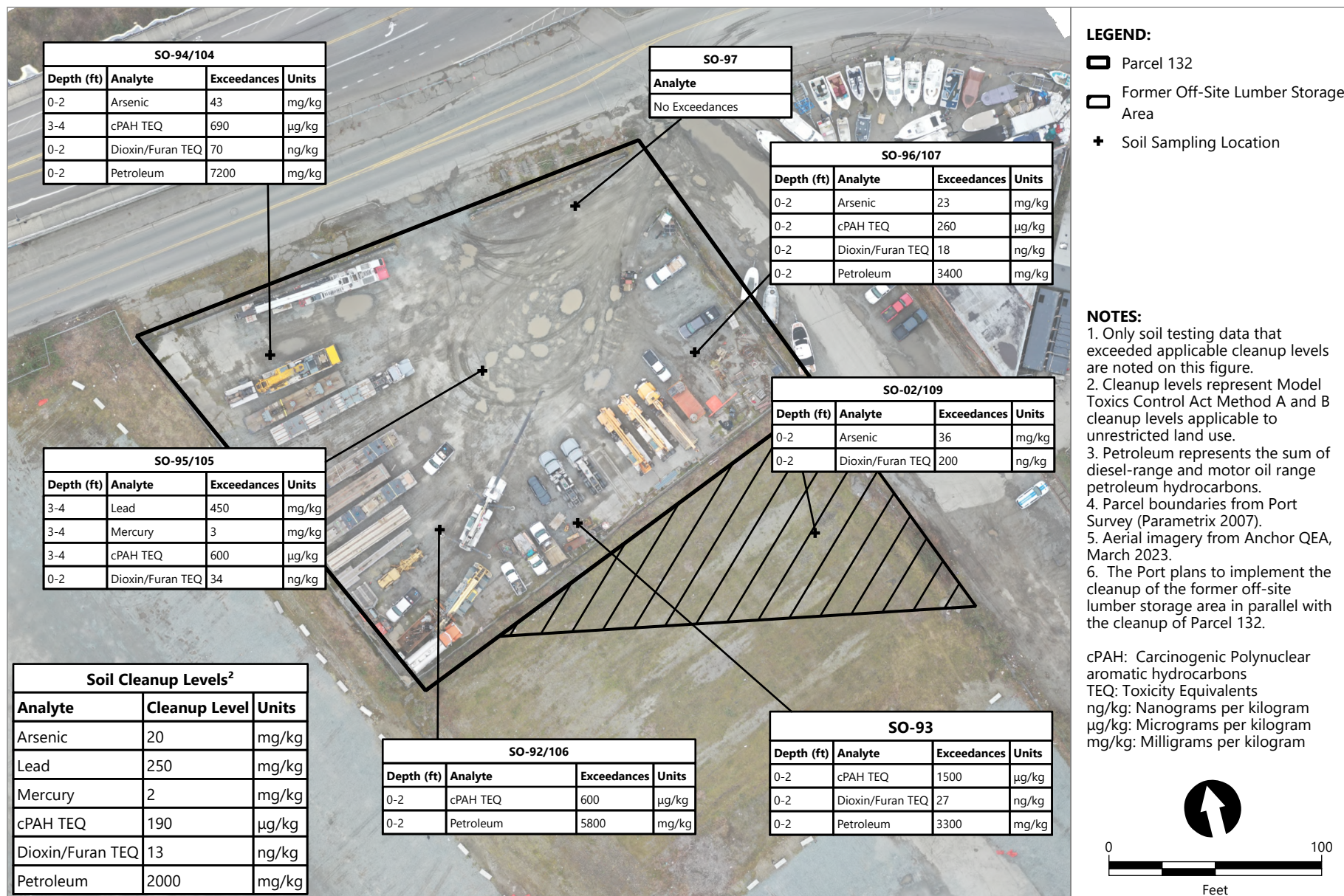


Upper Left: Photograph from 1948 showing the Hampton Lumber Company Building following full build-out.

Lower Left: Aerial photograph from 1950 showing the Hampton Lumber Company building located in the northern portion of Parcel 132. Properties to the south and west were operated at the time by the Northwest Door company.

Lower Right: Aerial photograph from 1973 after destruction by fire of the Hampton building. The property was used at that time for storage of finished lumber manufactured by the Western Dry Kiln company who operated as a tenant on the Northwest Door Company parcel to the south. Northwest Door Company was a subsidiary of St. Regis Paper Company.





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Figure 3
Summary of Detected Soil Contamination
 Analysis of Brownfield Cleanup Alternatives
 Port Maritime Center Project - Parcel 132