Appendix H

Hazardous Materials Remediation History

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Remediation history for the project area and Applicant's leased area are described below. The sections that follow describe the remedial action process, screening levels by media, remediation activities prior to the Remedial Investigation/Feasibility Study (RI/FS), remediation of the project area, remediation of the Applicant's leased area (outside of the project area), chemicals of concern, and final cleanup actions.

Remedial Action Process

In June 2014, an RI/FS (Anchor QEA 2015) was performed for the former Reynolds Metals Company facility (Reynolds facility), including the project area, per the requirements of the Model Toxics Control Act (MTCA), which is administered by the Washington State Department of Ecology (Ecology). Under the MTCA, the RI/FS includes two parts.

- Completion of the investigation of potential contaminants at the former Reynolds facility.
- Evaluation of the potential options for cleanup. The selection of a final cleanup action will be done in consultation with Ecology and will occur in a separate step and will be documented in the Cleanup Action Plan.[1]

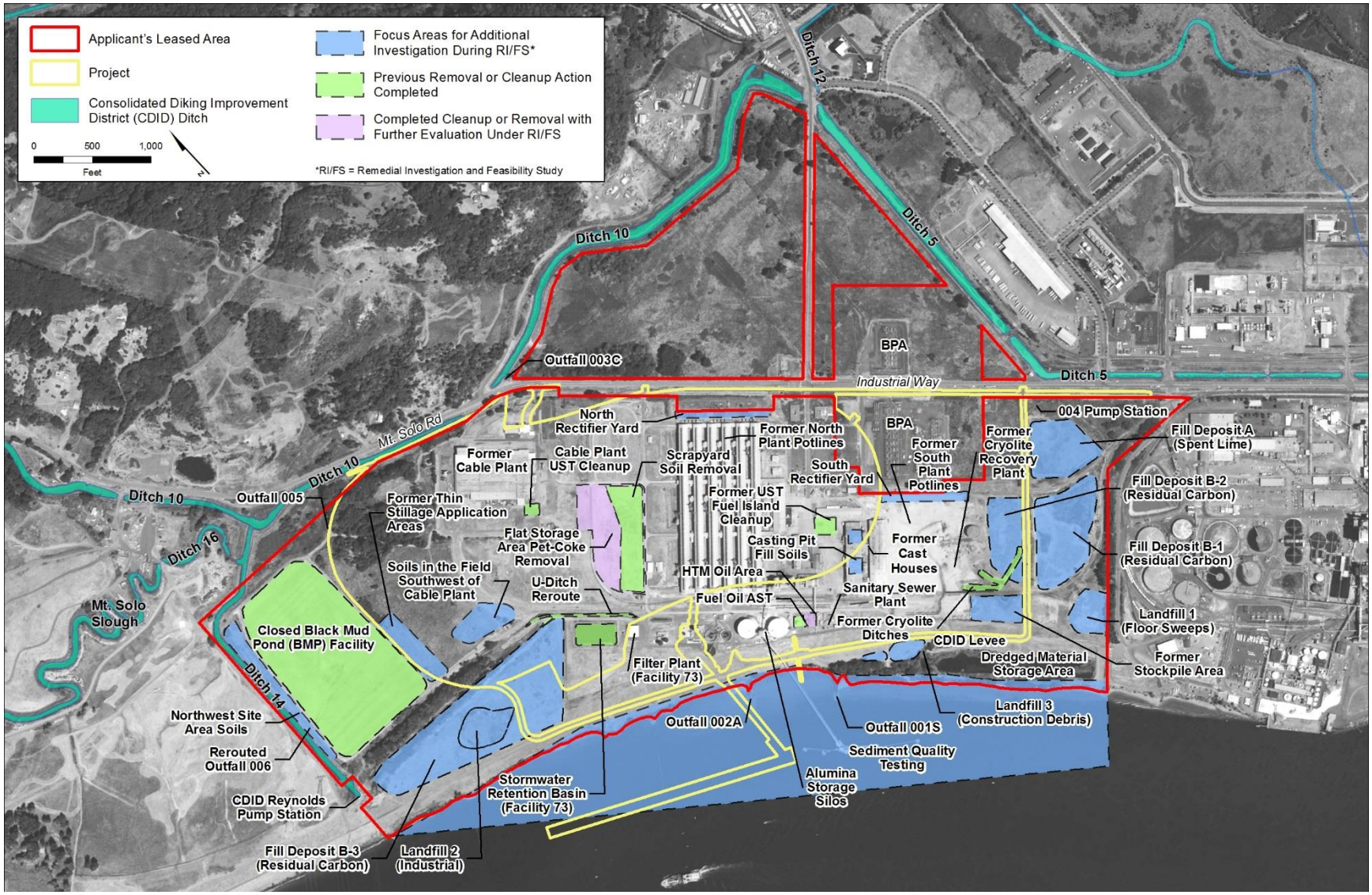
Prior to preparation of the RI/FS, an initial site assessment was performed by Ecology, which reviewed available data and established the agency's priority ranking for the site investigation and cleanup. During this phase, Ecology ranked the former Reynolds facility as a 5, the lowest priority on Ecology's five-point scale.

Since completion of the initial site assessment and site ranking, a number of investigations and cleanup actions have been completed in coordination with Ecology. The previously completed cleanup actions prior to preparation of the RI/FS have resolved cleanup at a number of areas in the Applicant's leased area and on the project area. Areas where previous removal or cleanup actions have been completed are shown in Figure H-1.

In addition to site cleanup activities, extensive quantities of materials (mostly building materials and equipment) have been appropriately reused, recycled, or disposed of at approved off iste facilities. These actions have improved site safety and helped to return the property to productive reuse (Anchor QEA 2015; Appendices A, B, and C). After Ecology reviewed information from the previous investigation, cleanup, and closure activities, it defined focus areas for further evaluation and defined specific data gaps and testing requirements to be addressed in the RI/FS. The RI/FS included multiple phases of investigation activity, the scopes of which were developed and approved by Ecology. Focus areas identified for additional investigation during the RI/FS are shown in Figure H-1.

[1] A draft Cleanup Action Plan and draft Consent Decree were released in 2016 for a 60-day public comment period (Washington State Department of Ecology 2016). The comment period ended March 18, 2016. A responsiveness summary will be prepared to address public comments and then the reports will be finalized.

Figure H-1. Previous Cleanup and Focus Areas in the Applicant's Leased Area and the Project Area



Final cleanup decisions are to be specified in the MTCA Cleanup Action Plan. The Cleanup Action Plan is a separate document from the RI/FS, and design and implementation of the cleanup action will be performed after finalization of the plan and court approval of the Consent Decree. Long-term management to monitor and clean up persistent hazardous materials will be addressed in the Cleanup Action Plan.

Screening Levels by Media

The findings of the RI/FS testing program were evaluated against a set of screening levels appropriate to different media. The purpose of the screening process was to identify those constituents that could be present at concentrations that require further evaluation under MTCA. The screening levels were based on the MTCA regulations and other applicable or relevant state or federal regulations. The screening levels used for the RI/FS do not necessarily represent final cleanup levels applicable to the final Cleanup Action Plan. Screening levels for soils, landfills, and fill deposits, as well as groundwater, are described in the following sections.

Soils, Landfills and Fill Deposits

Screening levels for soils, landfills, and fill deposits in the RI/FS considered MTCA cleanup levels protective of industrial site uses and groundwater. Where available, MTCA Method A and Method C soil cleanup levels for industrial land uses were used as initial screening criteria. MTCA Method A industrial soil cleanup levels are based on industrial land uses. These cleanup levels consider values protective of adult industrial workers. MTCA Method A levels also include conservative assumptions regarding the chemical concentrations that would be protective of groundwater quality (Washington Administrative Code [WAC] 173–340–745). When Method A cleanup levels were not available, Method C values were applied. MTCA Method C levels are based on a direct-contact exposure scenario. These cleanup levels are also protective of industrial workers (WAC 173–340–745).

Groundwater

Although the groundwater contained in the fill soil and shallow silt and clay soils of the upper alluvium in the Applicant's leased area is not used as a drinking water source, the data screening process for groundwater considered regulatory requirements applicable to groundwater that is used as a drinking water source. MTCA Method A groundwater cleanup levels were used as these levels consider risks associated with ingestion of drinking water (WAC 173–340–720). State drinking water maximum contaminant levels were also used because these levels assume drinking water as the highest beneficial use of groundwater and are typically more stringent than the national drinking water standards (WAC 246–290–310).

Remediation Prior to the Remedial Investigation/ Feasibility Study

Decommissioning and demolition activities have been conducted at the Reynolds facility since the plant ceased operations in 2001. From 2004 through January 2011, Chinook Ventures, Inc. (CVI) conducted plant-wide demolition and cleanup activities, including soil cleanup work. Approximately 29,270 tons of hazardous waste were disposed of off site.

In January 2011, CVI sold its onsite assets to the Applicant. At that time the Applicant took ownership of the facility and continued cleanup efforts through December 2012. Removal of the remaining aluminum smelting equipment, materials, and waste from the property, as well as materials that remained from CVI operations, occurred from 2011 to 2012, and included the following materials: cleanup debris, wood waste, scrap metal, pitch-contaminated debris, underflow solids, thin stillage, stormwater runoff from the flat storage area, alkaline ore, carbon, and fly ash. Between June 2011 and December 2012, abatement, removal, and facility repair activities occurred on the machine shop floor in the maintenance building. This area contained asbestos, polychlorinated biphenyl (PCB), and lead, all of which are considered hazardous waste. These materials required removal and disposal under a Toxic Substances Control Act permit. Figure H-1 shows the locations of removal and cleanup actions on the former Reynolds facility, including areas where previous removal or cleanup actions have been completed, areas where previous cleanup or removal actions need further evaluation under the RI/FS, and focus areas for additional investigation during the RI/FS.

Project Area Remediation

The status of remedial actions in the project area is summarized in Table H-1. A more detailed description of remedial actions at each of these facilities can be found in the *SEPA Hazardous Materials Technical Report* (ICF 2017).

Table H-1. Project Area Remediation

Facility	Status of Remediation
Flat Storage Area	Ecology approved the Applicant's plan to remove remaining petroleum coke and cement during decommissioning. This area has been identified for long-term management and will be included in the final Cleanup Action Plan.
Stormwater Retention Basin	Pond solids were removed from the stormwater retention basin and disposed of in an approved and permitted facility off site. Remedial actions have been completed for this area, and no further cleanup activities have been identified.
Scrap Yard Soil	Polycyclic aromatic hydrocarbon (PAH)-affected soil in the scrap yard was removed. Soil samples collected after the cleanup confirmed that residual soil PAH concentrations were less than the MTCA industrial land use cleanup levels; however, Ecology requested that expanded soil sampling be conducted throughout the adjacent flat storage area as part of the final Cleanup Action Plan to determine if contaminants associated with petroleum coke leached into surrounding soils.
Cable Plant Underground Storage Tank	An underground storage tank adjacent to the cable plant was removed and localized gasoline-affected soil and groundwater were cleaned up under Ecology's oversight via a voluntary cleanup program. In 2003, Ecology provided a "no further action" determination for this area.
Former Underground Storage Tank and Fuel Island	Cleanup action addressed a localized area of diesel-affected soil associated with a former underground storage tank fuel island. Remedial actions have been completed for these areas, and no further cleanup activities have been identified.
Drum Soil (near North Plant)	Affected soils were removed and trichlorobenzene and PCB concentrations were cleaned up to acceptable levels. Remedial actions have been completed for this area, and no further cleanup activities have been identified.

Applicant's Leased Area Remediation

The status of remedial actions conducted outside the project area but within the Applicant's leased area is summarized in Table H-2. A more detailed description of remedial actions at each of these facilities can be found in the *SEPA Hazardous Materials Technical Report* (ICF 2017).

Table H-2. Applicant's Leased Area Remediation (Outside the Project Area)

Facility	Status of Remediation
Cryolite Recovery Plant	The cryolite recovery plant was demolished in 2004. No further remedial activities related to the cryolite recovery plant are required in the final Cleanup Action Plan.
Cryolite Area Ditches	Cleanup of soils containing elevated PAH concentrations was completed in 2008; however, further remedial activities will be performed in the cryolite area ditches as part of the final Cleanup Action Plan.
Diesel Aboveground Storage Tank	Diesel-affected soils adjacent to the 200,000-gallon diesel aboveground storage tank were treated on site using bioremediation. Cleanup of the tank area included recording institutional controls for a localized area of affected soils that remained below the tank foundation. No further remedial activities related to the tank are required in the final Cleanup Action Plan.
Heat-Transfer Media Oil Area	Soil affected by a release of heat-transfer media oil was removed; however, further remedial activities will be performed in the oil and pitch storage areas as part of the final Cleanup Action Plan.
Closed Black Mud Pond (BMP) Facility	The 33-acre black mud pond impoundment was formally closed in 1992 and has been subject to an ongoing maintenance and monitoring program overseen by Ecology. No further remedial activities are required in the final Cleanup Action Plan.
Fill Deposit A (Spent Lime)	Elevated fluoride and PAH concentrations were recorded for Fill Deposit A and will be further remediated as part of the final Cleanup Action Plan.
Fill Deposit B-1 (Residual Carbon)	Elevated fluoride and PAH concentrations were recorded for Fill Deposit B-1 and will be further remediated as part of the final Cleanup Action Plan.
Former Spent Potliner Stockpile Area	In 2002, soil and groundwater testing was conducted in the area of the former spent potliner stockpile. No spent potliner was observed in the area; however, further remedial activities will be performed in the stockpile area as part of the final Cleanup Action Plan.
Cryolite Recovery Plant and Fill Deposit B-2 (Residual Carbon)	Testing of the soils in the footprint and in the vicinity of the former cryolite recovery plant revealed elevated fluoride in areas east of the former plant where residual carbon was managed. Further remedial activities will be performed as part of the final Cleanup Action Plan.
Landfill 1 (Floor Sweeps)	Elevated fluoride and PAH concentrations were recorded for Landfill 1 and will be further remediated as part of the final Cleanup Action Plan.
Landfill 2 (Industrial) and Fill Deposit B-3 (Residual Carbon)	Elevated fluoride and PAH concentrations were recorded for Landfill 2 and Fill Deposit B-3, and will be further remediated as part of the final Cleanup Action Plan.

Chemicals of Concern

The primary chemicals of concern identified in the RI/FS are cyanide, fluoride, PAHs, PCBs, metals, total petroleum hydrocarbons, volatile organic compounds (VOCs), pesticides, and nutrients

(Anchor QEA 2015). The status of cleanup actions for these chemicals of concern are summarized in Table H-3.

Table H-3. Status of Cleanup Actions for Chemical of Concern

Chemical	Status of Cleanup Actions
Cyanide	Soil testing found that total cyanide levels in soils, landfills, and fill deposit materials throughout the project area were very low. None of the samples tested exceeded the Ecology-approved RI/FS soil screening levels, and all were below both the MTCA soil cleanup levels applicable to industrial sites and the more stringent criteria for residential sites. Therefore, cyanide in soils will not be further evaluated in the Cleanup Action Plan.
Fluoride	Elevated fluoride concentrations were found to be present in the immediate vicinity of Fill Deposit B-3 in the project area and in the immediate vicinity of the landfills and fill deposit areas in the Applicant's leased area that are outside the boundary of the project area. Cleanup of soils with elevated fluoride concentrations will be performed under the final Cleanup Action Plan once the preferred remedial alternative identified in the RI/FS has been approved.
Polycyclic Aromatic Hydrocarbons	Areas in the project area with elevated levels of PAH compounds include Fill Deposit B-3 and the former flat storage area. Areas outside the project area but within the Applicant's leased area that have elevated levels of PAH compounds include all three landfills, Fill Deposits B-1 and B-2, soils near the cryolite ditches, and soil in and near the former stockpile area. Elevated levels of PAH compounds will be addressed under the final Cleanup Action Plan once the preferred remedial alternative identified in the RI/FS has been approved.
Polychlorinated Biphenyls	Results of soil testing for PCBs found none of the measured soil concentrations exceeded screening levels and PCBs have not been detected in any groundwater samples. However, because the Toxic Substances Control Act has more restrictive cleanup levels for PCBs than those evaluated in the RI/FS, PCBs will be further evaluated in the final Cleanup Action Plan.
Metals	The RI/FS testing program results confirm that concentrations of heavy metals are very low in the Applicant's leased area, including the project area. With the exception of localized metals exceedances in the landfill deposits outside of the project area but in the Applicant's leased area, concentrations of heavy metals were below screening levels applicable to industrial sites. Additionally, Ecology requested that landfill and fill deposit materials be evaluated for toxicity characteristics leaching procedure[2] metals. No exceedances of test criteria were noted in any of the samples, and metals will not be further evaluated in the Cleanup Action Plan.
Total Petroleum Hydrocarbons	Soil testing identified an area (SU13) where petroleum hydrocarbon–affected soil exceeded applicable screening levels. Total petroleum hydrocarbons and heat-transfer media oil will be further evaluated in the Cleanup Action Plan to verify the results of previous investigations.
Volatile Organic Compounds	No chlorinated solvents or other VOCs were identified in excess of applicable screening levels. These results are consistent with findings from groundwater studies, which do not indicate VOC impacts in groundwater beneath the project area. VOCs will not be further evaluated in the final Cleanup Action Plan.

[2] Toxicity characteristic leaching procedure, or TCLP, is a soil sample extraction method for chemical analysis employed as an analytical method to simulate leaching through a landfill. The testing methodology is used to determine if a waste is characteristically hazardous (D-List).

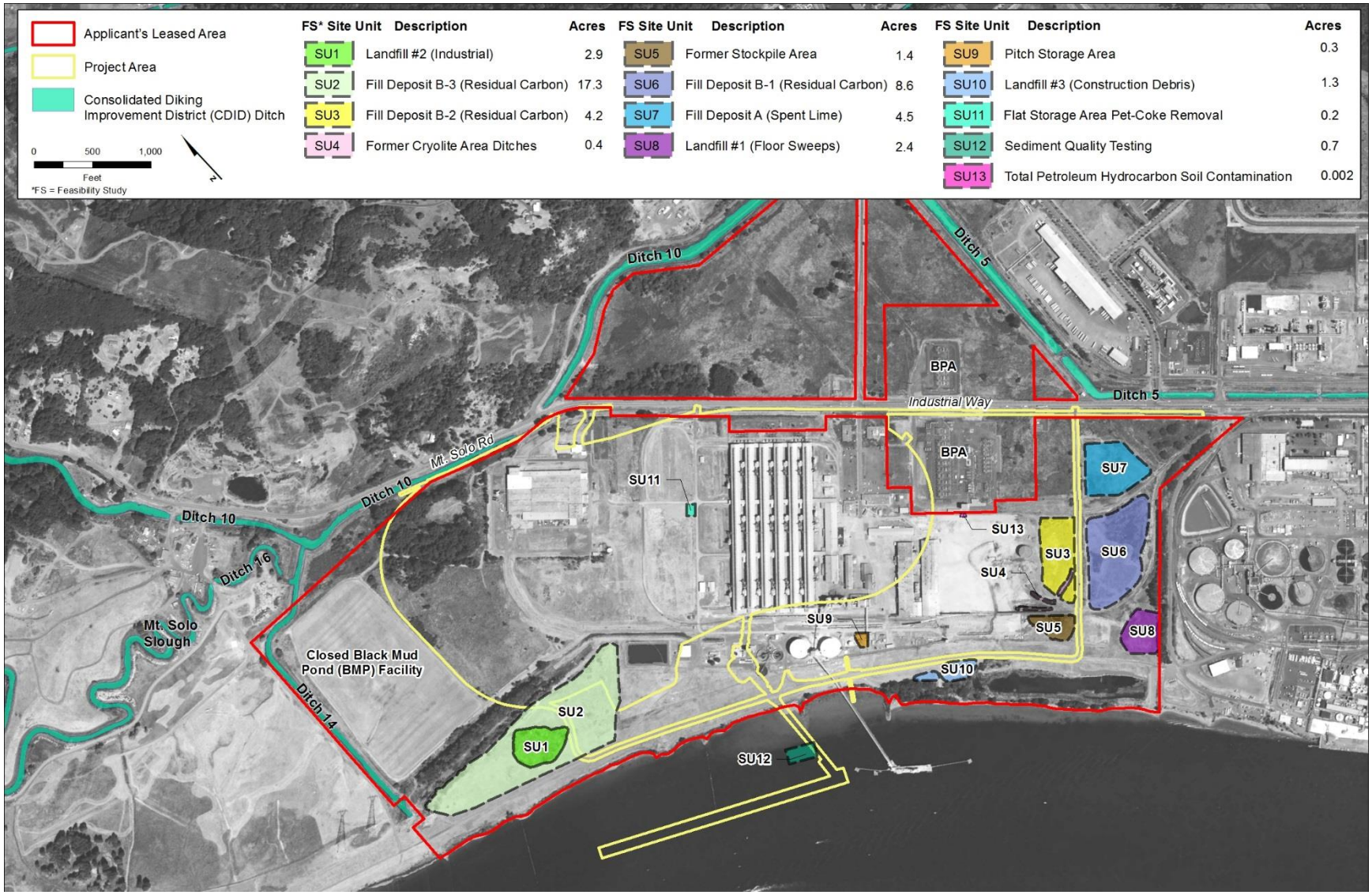
Chemical	Status of Cleanup Actions
Pesticides	Pesticides were not detected in samples tested under the RI/FS program; therefore, pesticides will not be further evaluated in the final Cleanup Action Plan.
Nutrients	Thin stillage (an agricultural byproduct from ethanol manufacturing that is sometimes used as cattle feed) was applied to a portion of a field located on the project area. Soil testing analyzed samples from the thin stillage application areas and from clean reference areas where no thin stillage was applied. The range of nutrient concentrations in the test samples was not significantly different from the reference samples; therefore, nutrients will not be further evaluated in the final Cleanup Action Plan.

Final Cleanup Actions

Soil cleanup levels were developed in the RI/FS for fluoride, PAHs, total petroleum hydrocarbons, and PCBs; however, the principal site chemicals of concern in soils are fluoride and PAH compounds that are localized to the landfill and fill deposit areas. Based on the results of the remedial investigation in the RI/FS, 13 distinct feasibility study site units (SUs) and two areas of affected groundwater have been identified for further evaluation, as shown in Figure H-2. SU11 and a portion of SU2 are located on the project area and include the eastern corner of the flat storage area and the northeastern portion of Fill Deposit B-3. The other 11 SUs are not located on the project area, but are in the Applicant's leased area.

Ecology will select cleanup standards and points of compliance in the final Cleanup Action Plan. A Cleanup Action Plan is typically prepared after the RI/FS has been finalized and a preferred remedial alternative has been selected. The plan is based on information and technical analyses generated during the RI/FS and consideration of public comments and community concerns. A draft Cleanup Action Plan and draft Consent Decree were released in 2016 for a 60-day public comment period (Washington State Department of Ecology 2016). The comment period ended March 18, 2016. A responsiveness summary will be prepared to address public comments and then the reports will be finalized. Likely remedial technologies will include a combination of, but not necessarily all of, the following: removal, consolidation, capping, groundwater treatment, and monitored natural attenuation treatments. Property owner Northwest Alloys, Inc. (a subsidiary of Alcoa, Inc.) and the Applicant are legally responsible for the cleanup, including paying for and performing the work.

Figure H-2. Feasibility Study Site Units in the Applicant's Leased Area and the Project Area



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