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REMEDIAL ACTION REPORT
AMERICAN CROSSARM & CONDUIT

Chehalis, Washington

Prepared for

U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

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ARCS QUALITY ASSURANCE CONCURRENCE

Remedial Action Report

Project Name:	American Crossarm & Conduit Remedial Action Chehalis, Washington
Contract Number:	68-W9-0046
Work Assignment Number:	46-36-0R91
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EXECUTIVE SUMMARY

The American Crossarm & Conduit Site is located in Chehalis, Washington. The site is within the active floodplain of the Newakum and Chehalis rivers. The former wood milling and treatment facility consisted of a treatment works and retorts, drying kilns, a manufacturing mill, and a landfill. From the 1930s until 1985 the site was used for wood cutting and treating operations. Wood crossarms and conduits were treated on site using pentachlorophenol. The wooden crossarms and conduits were placed into retorts and treated under pressure. A creosote dip tank was also used for wood treating.

Over the years of operation, treatment sludges were routinely disposed to the soil on-site. Wastewater was discharged to an unlined surface impoundment. In 1986, a flood upset tanks filled with wood treating formulation [pentachlorophenol (PCP) in a diesel oil carrier]. Approximately 10,000 gallons of the formulation spread into the nearby residential area. Contaminated soil, furniture, and debris from the residential area was collected, transported to the site, and incinerated as part of an emergency removal action.

In 1989, The EPA initiated an RI/FS to determine the nature and extent of contamination, human health and ecological risks and a cleanup action. The selected remedy consisted of removal and off-site disposal of the most highly contaminated soil on-site, removal of contaminated soil from the residential area and subsequent relandscaping, removal and off-site disposal of contaminated lagoon sediments, demolition of on-site structures and covering the residual contaminated soil on-site with a soil cover.

Design of the selected remedy was initiated in April 1994 and was completed in October 1995. To fast track the cleanup, the project was divided into 12 discrete work phases. The design was performed as 12 different design packages completed sequentially. As a design phase was completed, it was bid, a contract awarded, and the cleanup work within that phase initiated.

Work began in September 1994 with the abandonment of site monitoring wells. Over the next 20 months, facility structures were demolished, contaminated sediment was removed from the lagoon, 26 residential yards were cleaned up, contaminated site soil was removed, and the site was backfilled with clean soil and revegetated. The last phase of work was completed in March 1996. Approximately 25,000 man-hours of labor was expended on the cleanup with no injuries resulting in lost worktime. The remediation efforts endured three site inundating floods and hurricane-force winds between November 1995 and February 1996.

The total cost of this phase of the cleanup, which included design, project management, and construction, was $9.2 million. The following table provides an estimate of the quantity of material generated and disposed/recycled from the cleanup:

Item	Units	Quantity
Noncontaminated wood debris recycled	cubic yards	17,800
Noncontaminated wood debris disposed off-site	cubic yards	2600
Contaminated wood debris disposed off-site	tons	97
Contaminated soil disposed	tons	32,416
Lagoon sludges treated and disposed off-site	tons	3440
Wastewater treated	gallons	609,000
Drummed waste disposed off-site	Drums	152
Residential soil removed and consolidated on the ACC site	cubic yards	2500
Tank sludges disposed	gallons	1500
Site fill placed	tons	99,433

The American Crossarm & Conduit company, which owned and operated this facility, is no longer solvent. Other potentially responsible parties (PRPs) have yet to be identified. In 1989, the U.S. EPA initiated a remedial investigation and feasbility study (RI/FS). The RI and FS reports have been placed in the Administrative Record. The Record of Decision, which initiated the selected site remedy, was signed by the EPA Regional Administrator on 10 May 1993.

SECTION 1

INTRODUCTION

This remedial action report summarizes the remedial action at the American Crossarm & Conduit (ACC) site in Chehalis, Washington. This report documents the activities that occurred at the site and to certify that these activities were performed consistent with the specified performance standards. The elements of the report include the following:

- Chronology of the site history and remedial action events
- Construction quality assurance
- Description of remedial action construction activities
- Performance standards attainment certification
- Operation and maintenance activities
- Project costs

1.1 SITE DESCRIPTION

The former ACC facility (site) is located in Chehalis, Lewis County, Washington in Section 32, Township 14 North, Range 2 West, of the Centralia Quadrangle. The 14-acre former wood treating facility is located on the south edge of Chehalis within the 100-year floodplain of the Chehalis and Newaukam rivers. Most of the facility rests in a marshy lowland on the east margin of a 2- to 3-mile-wide alluvial valley. Elevation in the Chehalis area ranges from 560 feet above mean sea level (MSL) in the hills to the east, to 168 feet MSL, which is slightly less than the 100-year floodplain (182 feet MSL).

The geology consists of a veneer of alluvium resting on bedrock. Locally, manmade fill has been placed on the alluvium, which is approximately 40 feet thick and is predominantly clayey to sandy silt. Coarse-grained alluvium, which is typically dense to very dense interbedded silty sand to clayey sandy gravel, is present under the treatment area. The bedrock is an indurated low permeability siltstone with good bearing capacity that occurs at fairly consistent elevation (approximately 135 feet MSL) beneath the site.

The former facility was composed of four areas including wood treatment works, kilns, mill, and a landfill. The wood treatment area, which contained underground tanks, a surface impoundment, and a control room, was used to treat wood with mixture of diesel and PCP. The facility also included an elevated crane-way and eight kilns used to dry timber prior to treatment. The mill was a large wooden structure that contained wood crossbars and conduit manufacturing equipment

constructed in a low-lying area on posts/pilings to elevate it to the height of the kilns. The landfill, used from the 1930s to 1985, was located south of the former mill. The landfill was used to dispose of wood waste and other debris from operation of the mill and treatment works.

From the early 1930s to 1983, conducted wood cutting, milling, and treating operations were conducted at the site. Wood waste, a wastestream from the milling operation, was placed in the wetland, creating a landfill. Wood treating began in the early 1930s. Crossarms and conduit for electrical utility poles were treated in open dip tanks with hot or cold creosote and PCP. Tank sludge is suspected to have been disposed of in the landfill. Solvents, paints, paint thinners, lubricating oils, petroleum products, and other miscellaneous wastes may also have been disposed of in the landfill. The contaminants of concern are carcinogenic polyaromatic hydrocarbons (CPAHs), PCP, and dioxin/furans.

The Area of Contamination (AOC) adjacent to the facility area include the Chehalis Avenue area (a commercial/residential section of the city which includes a playfield), wetland south and west of the facility, a section of Dillenbaugh Creek, and a stormwater discharge lagoon. The wetland area south of the facility (approximately 37 acres) is traversed by the Burlington Northern-Union Pacific (BN-UP) railroad tracks. The wetland discharges to Dillenbaugh Creek.

1.2 CHRONOLOGY OF SIGNIFICANT EVENTS

In early 1983, the Washington State Department of Ecology (Ecology) conducted a compliance inspection of the ACC facility. The inspection determined the facility was not in compliance with state waste handling requirements. Ecology required ACC to eliminate discharges of wastewater to the environment, to prepare a wastewater treatment and disposal plan, and to redirect all boiler blowdown to the sanitary sewer collection system. In late 1983, ACC stopped the wood milling and treatment operations.

Several floods occurred in the next few years, releasing contamination to the surrounding area. In 1986, the Chehalis River flooded ACC spreading approximately 10,000 gallons of PCP-diesel solution to the Chehalis Avenue area and potentially to the wetlands and Dillenbaugh Creek. An emergency action was taken to clean up contamination from this flood. Contaminated soil, debris, furniture, and other material generated from the cleanup that constituted the principle threat to human health and the environment were placed on the facility. In 1988, an incinerator was brought on the facility to incinerate the principle threat, generating approximately 207 tons of ash. Prior to that in 1987, contaminated sludge and sediment were removed from the surface impoundment.

In 1989, the U.S. EPA initiated a remedial investigation and feasbility study (RI/FS). The FS was completed in September 1992. The RI and FS reports have been placed in the Administrative Record.

In 1991 and 1992, the EPA undertook an action to further reduce the potential for spread of contaminants. In 1991, gravel was spread over the treatment area to keep fugitive dust containing wood treating chemicals from becoming airborne. Above ground tanks and piping in the

treatment works were decontaminated and the steel taken to a recycler in 1992. Laboratory chemicals and PCB-containing electrical equipment were collected from various buildings and secured by placing them in overpacks. Asbestos was removed from exposed pipe and placed in sealed drums.

On 10 May 1993, a Record of Decision (ROD) was signed, describing the remedial action to be taken in response to the contamination at the site. The selected remedy is the final response of a series of actions to be conducted at ACC.

Table 1-1 provides a temporal listing of key events that occurred relating to cleanup of the ACC site.

1.3 REMEDIAL ACTION OBJECTIVES

The site remediation based on the ROD involved the following objectives:

- Excavation of low-level contaminated soil in the Chehalis Avenue area to meet Washington State Model Toxics Control Act (MTCA) Method B (residential) cleanup standards.
- Demolition of facility structures and recycling of material.
- Excavation of ACC facility soil from the most contaminated areas and disposal at an approved off-site hazardous waste landfill.
- Removal of contaminated sediment in the lagoon and stormwater sewer to meet ambient water criteria (AWQC) and MTCA cleanup standards for surface water in Dillenbaugh Creek.
- Removal of floating product underneath the treatment works to meet Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) and MTCA cleanup levels of groundwater at the facility boundary.
- Site regrading and installation of a vegetated cover to meet MTCA cleanup standards through containment and institutional controls.

Table 1-1—Chronology of Events

Event	Date
Ecology conducts a compliance inspection of ACC. Violations found.	Early 1983
ACC stops wood treating operations	Late 1983
ACC provides contaminated soil to the residential area to be used for fill	1985
Ecology directs ACC to remove contaminated fill from residential lots	1985
ACC abandons the site	Early 1986
Chehalis River floods. PCP left in tanks is spread throughout the neighborhood	November 1986
Emergency removal action taken to cleanup PCP from flood	November 1986
Incinerator brought on-site and burns contaminated debris from the removal action	1988
ACC becomes an NPL site	1989
Remedial Investigation and Feasibility study performed	1989 through 1992
Tanks, piping and asbestos removed from treatment works	June 1992
Proposed plan prepared and reviewed by public	September 1992
Record of Decision signed	June 1993
Remedial design begins	January 1994
Cleanup construction begins	September 1994
Site floods	November 1995
Site floods	February 1996
Prefinal construction completion inspection performed by EPA and Ecology	April 1996
Site floods	April 1996
Site work is completed	May 1996

1.4 REMEDIAL ACTION SUMMARY

Specific remedial action activities performed to implement the selected remedy are discussed below:

- Abandonment of wells. (Five existing off-site monitoring wells were maintained for performance monitoring).
- Removal and off-site disposal of drums containing filtercake, contaminated soil and water, chemicals, PCB capacitors, sludges and solvents.

- Demolition and disposal/recycling of the treatment works, mill, kiln, above- and belowground tanks, foundations, loading docks, concrete-lined trenches, sheds and other support facilities.

- Removal of lagoon sediment, reconfiguration of the lagoon and relining of the stormdrain sewer from Chehalis Avenue to the lagoon to mitigate infiltration into the buried pipeline.

- Excavation of soil from in and under the surface impoundment, under and around the treatment works, between the mill and kilns, and from the remaining surface locations of the treatment area.

- Collection of floating product found in the excavations under the treatment works.

- On-site treatment and off-site disposal of the soil and sediment removed from the lagoon and from beneath the treatment area and surface impoundment.

- Excavation of soil in the residential area and consolidation on the ACC facility.

- Backfill of residential area with clean soil and revegetation.

- Placement of clean soil cover on the ACC facility, fine grading of the cover and revegetation.

- Installation of site access controls (fencing) around the entire perimeter of the ACC facility.

- Implementation of institutional controls to control site use and intrusive work.

SECTION 2

PROJECT EVENTS

2.1 CHRONOLOGICAL LISTING OF PROJECT EVENTS

Described below in chronological order are the sequence of events associated with the remedial construction.

Table 2-1—Chronological Listing of Remedial Construction Events

Date	Event
6 July 1994	WESTON receives notice to proceed with remedial action
September 1994	Well abandonment begins
10 October 1994	WESTON conducts pre-final inspection of well abandonment work activity
2 February 1995	Chemical Waste Management performs initial sampling activity for drum Removal
8 February 1995	E.P. Johnson begins site mobilization for general facility support and site soil consolidation and debris removal
20 February 1995	E.P. Johnson begins clearing/grubbing , stockpiling and haul road construction
21 February 1995	Chemical Waste Management begins drum removal work activities
7 March 1995	E.P. Johnson performs concrete pour for decontamination pad structure
15 March 1995	E.P. Johnson completes construction of secondary containment area
20 March 1995	E.P. Johnson begins excavation of office area soil
22 March 1995	Lincoln Cristi personnel performs removal of small quantity of asbestos containing material (ACM) from the office basement
3 April 1995	E.P. Johnson completes excavation of office area down to the clean native clay layer for grids around office building
5 April 1995	E.P. Johnson begins and completes demolishing the office building
10 April 1995	E.P. Johnson completes excavation of soil under office building
19 April 1995	WESTON conducts pre-final inspection of general facility support and debris removal
27 April 1995	WESTON conducts final inspection of general facility support and debris removal
27 April 1995	WESTON conducts pre-final inspection of drum removal
2 May 1995	E.P. Johnson completes demobilization

Table 2-1—Chronological Listing of Remedial Construction Events

Date	Event
5 May 1995	E.P. Johnson completes delivery of last remaining item from final inspection checklist
11 May 1995	Iconco personnel on-site to evaluate Structural Demolition procedures
22 May 1995	Structural Demolition Preconstruction meeting with Iconco
23 May 1995	Chemical Waste Management picks up last drum under the drum removal Contract
24 May 1995	Engineer from Andersen Bjornstad Kane Jacobs, Inc. conducted structural survey of mill floor system for Iconco
24 May 1995	Travers Electric perform relocates electrical panels for air monitoring system from the treatment works area to the completed ACC site office area
25 May 1995	Travers Electric completes relocation of electrical panels
26 May 1995	Iconco begin mobilization process - set up office trailer, equipment *trailer, and other heavy equipment*
1 June 1995	Iconco demolishes the shop buildings
8 June 1995	Iconco demolishes the west kiln control room
12 June 1995	Iconco begins demolition of rail trestle south of mill building
13 June 1995	Iconco mobilizes crane house and boom
13 June 1995	Gelco begins mobilization for storm pipe relining
14 June 1995	Iconco completes demolition of railroad trestle and begin removal of sheet metal and steel frame roof structure over cooling shed
14 June 1995	Gelco builds dam across lagoon to enable access to stormdrain outfall and performed pre-installation television inspection
15 June 1995	Iconco begins removal of roof and wall structures from the mill area
19 June 1995	WESTON conducts residential soil sampling activities
21 June 1995	WESTON completes residential soil sampling activities
22 June 1995	Iconco begins removal of mill floor's wooden deck and piling structures
10 July 1995	Iconco completes demolition and removal of the roof and wall structures
24 July 1995	Gelco mobilizes equipment to resume stormdrain cleaning and relining activities
27 July 1995	Gelco begins pipe liner installation
28 July 1995	Gelco completes liner installation and curing process

Table 2-1—Chronological Listing of Remedial Construction Events

Date	Event
31 July 1995	Iconco completes demolition of kilns
10 August 1995	WESTON conducts pre-final inspection of stormdrain cleaning and relining
15 August 1995	OHM begins mobilization for lagoon sediment removal/disposal/restoration
18 August 1995	WESTON conducts pre-final inspection of structure demolition
23 August 1995	Iconco completes structure demolition
23 August 1995	Echeco Environmental begins mobilization for facility soil removal and tank/pipe removal
28 August 1995	Smith Environmental begins mobilization for residential soil removal
30 August 1995	WESTON conducts final inspection of Iconco's structure demolition
05 September 1995	AETS, the transportation and disposal contractor, begins mobilization to the site.
13 September 1995	AETS begins loading and removal of contaminated soil
14 September 1995	OHM begins isolation of lagoon and completes bypass installation
18 September 1995	OHM begins dewatering the lagoon in preparation for sediment removal
20 September 1995	OHM begins testing of the water treatment plant
02 October 1995	Echeco completes decontamination of all USTs
03 October 1995	Echeco begins removal of creosote soil. OHM begins sediment removal and stabilization.
10 October 1995	WESTON holds site walk for backfill grading proposal.
18 October 1995	Echeco removes UST steel from site and ships to a recycler
20 October 1995	OHM completes removal of sediment from lagoon and begins demobilization
31 October 1995	OHM completes reconfiguration of lagoon banks
02 November 1995	Smith completes residential soil removal and begins demobilization
06 November 1995	OHM removes sheet pile from lagoon isolation and completes installation of erosion control mat. Smith completes demobilizing.
09 November 1995	Echeco completes facility soil removal and begins demobilizing
17 November 1995	OHM completes the majority of demobilization.
21 November 1995	AETS completes removal and disposal of contaminated soil and begins demobilization

Table 2-1—Chronological Listing of Remedial Construction Events

Date	Event
29 November 1995	Site floods.
21 December 1995	WESTON completes silt fence installation
04 January 1996	Backfill/Grading preconstruction meeting held with Echeco
05 January 1996	Echeco begins mobilization
12 January 1996	Echeco begins backfilling site low points
17 January 1996	Echeco completes clearing the landfill and begins chipping wood
2 February 1996	Echeco begins compacting granular cover
7 February 1996	Site floods
12 February 1996	Site work resumes after flood. Chipping, filling and grading performed.
20 February 1996	Echeco begins removal of facility support structures
21 March 1996	Echeco begins placing topsoil over site fill
26 March 1996	Echeco removes site fence and begins installation of new fence
11 April 1996	Site tree planting begins
17 April 1996	EPA and Ecology perform pre-final inspection of the work
24 April 1996	Site floods
9 May 1996	Final grading completed. Hydroseeding begins.
11 May 1996	Hydroseeding complete. Demobilization begins
17 May	Demobilization complete.

2.2 SCHEDULE OF MAJOR CONSTRUCTION EVENTS

Table 2-2 lists significant construction tasks and their completion dates.

Site operation, maintenance, and monitoring activities will begin in 1996 and will continue up to 5 years, at which time the effectiveness of the remedial action will be reviewed. These activities are summarized in Section 7 and have been described in greater detail in the Operation and Maintenance Plan.

Table 2-2—Construction Task Completion Dates

Work Phase	Invitation to Bid	Prebid Conference	Proposal Due	Notice to Proceed	Substantial Completion
Well Abandonment	9 Sept 1994	13 Sept 1994	19 Sept 1994	24 Sept 1994	10 Oct 1994
General Facility Support	18 Nov 1994	29 Nov 1994	21 Dec 1994	8 Feb 1995	1 May 1995
Debris Removal	18 Nov 1994	29 Nov 1994	21 Dec 1994	8 Feb 1995	1 May 1995
Drum Removal	18 Nov 1994	29 Nov 1994	9 Dec 1994	10 Jan 1995	26 May 1995
Structure Demolition	29 March 1995	29 March 1995	12 April 1995	12 May 1995	5 Sept 1995
Stormdrain Reline	20 Sept 1994	26 Sept 1994	7 Oct 1994	11 April 1995	13 Dec 1995
Lagoon Restoration	28 March 1995	5 April 1995	15 June 1995	10 Aug 1995	2 Nov 1995
Tank/Pipe Removal	9 June 1995	19 June 1995	7 July 1995	14 Aug 1995	2 Nov 1995
Facility Soil Removal	9 June 1995	19 June 1995	7 July 1995	14 Aug 1995	19 Dec 1995
Residential Soil Removal	30 June 1995	17 July 1995	31` July 1995	28 Aug 1995	2 Nov 1995
Transportation and Disposal	17 May 1995	23 May 1995	9 June 1995	14 Aug 1995	19 Dec 1995
Backfill/Grading	3 Oct 1995	8 Oct 1995	10 Nov 1995	22 Dec 1995	17 May 1996

SECTION 3

CONSTRUCTION QUALITY ASSURANCE

3.1 PERFORMANCE STANDARDS

The Performance Standards were identified in the ROD and implemented by the EPA, their contractor—WESTON—and several remediation companies contracted to WESTON. The Remedial Action Contractor was WESTON and the respective subcontractors. WESTON, which formed an Independent Quality Assurance Team (IQAT) for the oversight role, ensured that the remediation subcontractors complied with the Performance Standards.

The substantive performance standards, identified from the ROD, which are applicable to the remedial action, and the attainment of these standards are presented in this section.

3.1.1 Structure Demolition

ACC facility structures were demolished to eliminate physical hazards such as slips, trips, falls, fires and building collapse. As specified in the ROD, demolition debris was cleaned and recycled when feasible. Otherwise, the debris was disposed in a permitted landfill as appropriate.

The disposal of the wood waste was determined based on wood chip samples taken and analyzed during the RI. The sample analytical data indicated the wood waste passed the Toxicity Characteristic Leachate Procedure (TCLP) for PCP. Therefore, the wood debris was handled as a nonregulated material.

Demolition activities generated 10,100 cubic yards of salvage wood that was resold at a local yard setup by the subcontractor or was sent elsewhere by the subcontractor for reuse. Another 7,700 cubic yards of wood were recycled as fiber recovery stock or used as hog fuel. Approximately 350 tons or 39 truckloads of scrap steel, iron and tin were also transported to recycle facilities. Waste wood and debris generated from demolition activities that could not be reused accounted for 2,200 cubic yards. This wood waste was transported to a local landfill for disposal. Approximately 89% of the demolition material was recycled or reused.

3.1.2 Monitoring/Production Well Abandonment

One on-site production well and several groundwater monitoring wells were abandoned as part of the remedial activities. The wells were abandoned in accordance with Washington State Regulation (WAC 173-160) by a driller licensed in the state of Washington

3.1.3 Soil Excavation and Disposal

The removal of soil in the Chehalis Avenue area was performed to a predetermined depth based on pre-excavation sampling to assure cleanup levels were met that would reduce the cancer risk to residents to 1×10^{-5} criteria. Excavated soil from the residential area was placed on the ACC facility and used as backfill since it did not exceed the facility cleanup goals.

The cleanup objectives for the residential area were based on performance requirements which were consistent with the numerical cleanup criteria of the Washington State Model Toxics Control Act (MTCA) regulations, WAC 173-340. The cleanup standards (Method B, residential) based on a risk of 1×10^{-6} are:

Compound	Maximum Groundwater Concentration	Cleanup Level Groundwater	Maximum Soil Concentration	Cleanup Level Soil
CPAH	600 µg/L	0.012 µg/L[a] 0.3 µg/L[b]	258,000 µg/kg	172 µg/kg[a]
PCP	91,400 µg/L	0.729 µg/L[a]	250,000 µg/kg	8,330 µg/kg[a]
TCDD	ND	0.00058 ng/L[a] 0.025 ng/L[b]	143,000 ng/kg	0.0066 ng/kg[a]

Notes:

[a] MTCA Method B (Carcinogenic) for benzo-a-pyrine. Total CPAH cleanup concentration established by Washington State department of Ecology is 1204 µg/kg.
[b] Practical Quantitation Limit
ND Not detected

The goal of the residential lot cleanup was to remove soil which exceeded the value shown in the table above or background concentrations if greater than the cleanup level.

Prior to cleanup of the residential yards, ten representative background samples were taken in the residential area above the flood elevation of 185 feet MSL. The background samples were analyzed for PAHs and PCP. These samples were used to provide a baseline from which to compare the residual residential soil concentrations. These samples helped delineate residential soil that was affected as a result of the flood verses "background concentrations" since PAHs can be generated by burning of wood, are found in motor oil, and can be present as a result of several domestic activities.

Dioxins were present in several yards due to its association with PCP. Generally, where PCP is found, dioxin will also be found since dioxins are formed when PCP is produced and heated. Removing the PCP-contaminated soil and placing clean topsoil over the yards resulted in removal of the risk associated with dioxin.

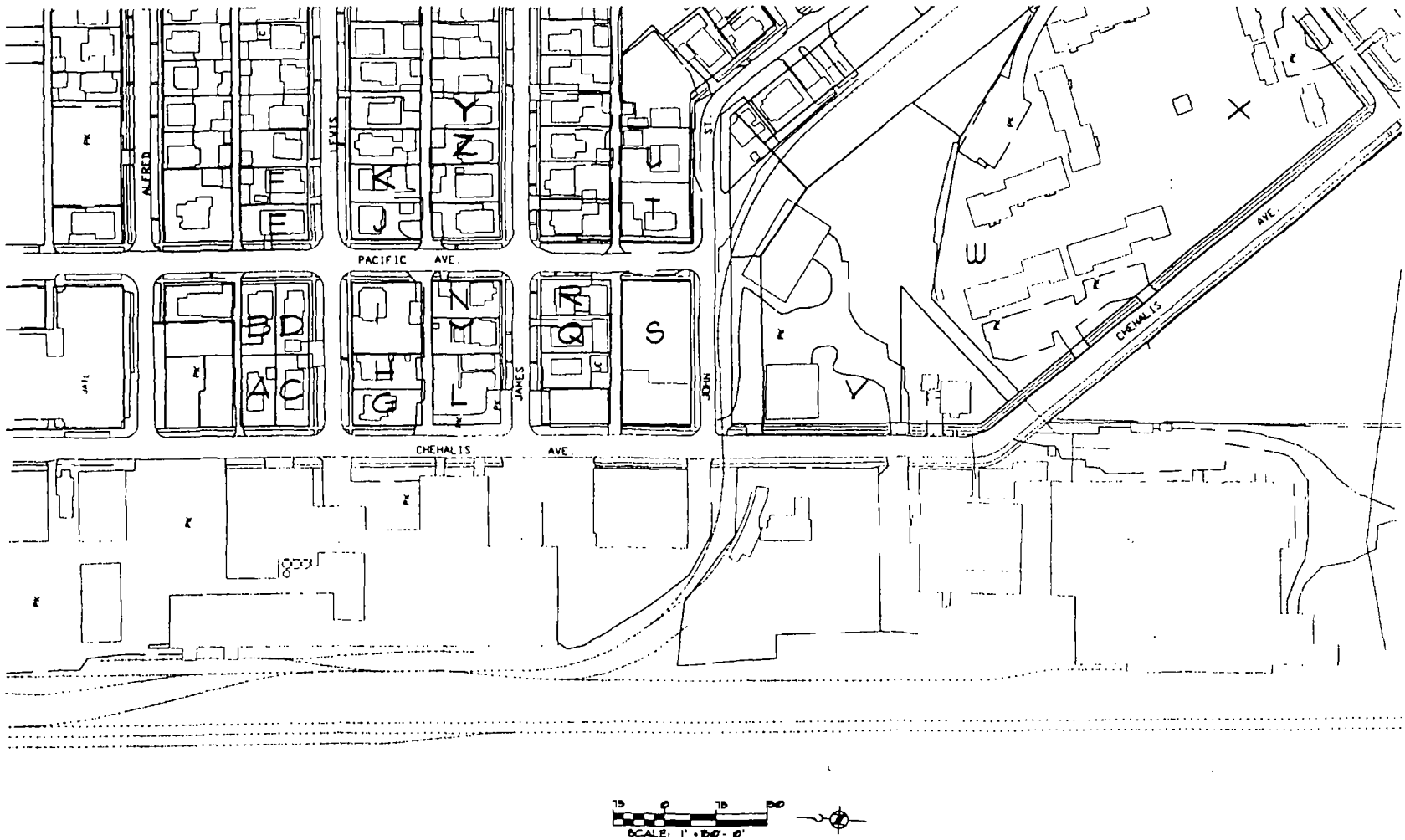
Sampling was completed in residential and commercial lots prior to excavation. The samples were collected from a depth of 8 to 12 inches to confirm the depth of excavation necessary to remove residual site risks. Soil was collected from five locations in each lot and composited to form a single sample for analysis. This procedure was completed for each residential lot.

The data confirmed that an excavation depth of 8 to 12 inches would be sufficient to meet the cleanup objectives. Table 3-1 shows the lot number and concentration of PCP and PAHs in the

remaining residential soil. The address for each of these lots is provided in Section 4.9. The location of these lots is shown in Figure 3-1.

Table 3-1—Residential Lot PCP and PAH Concentrations

Lot Number	CPAH Concentration (µg/kg)	PCP Concentration (µg/kg)
A	215.7	0
B	357.7	0
C	136.7	0
D	712.6	0
E	425.7	0
F	1010.1	0
G	329.2	0
H	778.8	0
I	72.8	0
J	162.8	49.7
K	469.3	0
L	450.4	11.8
M	656	0
N	272.8	117
Q	258.6	0
R	242.1	0
S	1129.5	605
T	107.9	0
U	182.3	0
V	62.6	0
W	87.7	27
X	23.5	0
Y	854.4	20.5
Z	95.5	0



Residential Lot Locations

WESTON MANAGERS DESIGNERS/CONSULTANTS

AMERICAN CROSSARM and CONDUIT
CHEHALIS, WA
FEBRUARY, 1995

Figure
3-1

96-558W.FIG

Table 3-5—Inspections

Work Phase	Prefinal Inspection Date	Final Inspection
Well Abandonment	10 Oct 1994	10 Oct 1994
General Facility Support	18 April 1995	1 May 1995
Debris Removal	18 April 1995	1 May 1995
Drum Removal	18 April 1995	26 May 1995
Structure Demolition	22 Aug 1995	5 Sept 1995
Stormdrain Reline	15 Aug 1995	15 Nov 1995
Lagoon Restoration	1 Nov 1995	15 Nov 1995
Tank/Pipe Removal	1 Nov 1995	2 Nov 1995
Facility Soil Removal	1 Nov 1995	15 Nov 1995
Residential Soil Removal	1 Nov 1995	15 Nov 1995
Transportation and Disposal	1 Nov 1995	21 Nov 1995
Facility Backfill/Grading	17 April 1996	14 May 1996

SECTION 4

CONSTRUCTION ACTIVITIES

WESTON served as the general contractor during the implementation of remedial activities. These activities included the design and overall project construction, quality assurance, and management services.

4.1 GENERAL FACILITY SUPPORT

As subcontractor to WESTON, E.P. Johnson Construction, Inc., Pasco, Washington, provided the labor, equipment, and materials necessary for the constructing of the general facilities support area. Construction of the general facility support area included office building demolition, contaminated soil excavation, clearing and grubbing, construction of the haul road, construction of the decontamination pad and secondary containment area, utility installation, and other items.

Prior to the commencement of work, the subcontractor was given a health and safety orientation. Topics discussed included the areas to avoid, air monitoring around personnel work areas, levels of protection or personal protective equipment (PPE) applicable for individual work items, safety board information, emergency evacuation, and other items contained in the WESTON Site Health and Safety Plan. Danger and caution tapes were established at designated areas and reconfigured as the work progressed to ensure that the health and safety of all personnel on-site are protected as well as to avoid cross-contamination from exposed contaminated areas.

Demolition of the office building was accomplished using a 320 trackhoe. The walls of the office building were torn down and collapsed onto itself. A demolition iron ball and chain tied to the end of the trackhoe was used to break down the reinforced concrete safe within the office building. Wood debris was segregated, stockpiled, and hauled off as nonhazardous waste to the Stafford Creek Landfill in Aberdeen. Remaining concrete, steel debris, and contaminated soil excavated from under the office building were segregated and stockpiled on the south end of the ACC site.

WESTON established a 40-foot by 40-foot grid system over the office excavation area and numbered the grids to ease identification. The soil excavation proceeded systematically over the established grids for the first 8-inch lift. A soil testing laboratory was set up to perform analysis for PCPs and PAHs as the excavation progress. A problem was encountered with the PCP analysis test kit due to the cold temperature in the field lab. Further excavation was performed based on results of the PAH levels. Elevated PAH above cleanup levels was encountered for most of the grids even after a second lift of 6-inch excavation was performed. WESTON conferred with EPA and determined that excavation to the clean native clay layer was necessary to remove most of the contaminated soil. The native clay layer provided a protective and relatively impermeable layer that prevented contamination from migrating.

Approximately 2,105 cubic yards of contaminated soil was excavated from the office area. All excavated soil was consolidated on the landfill located at the south end of the ACC site. In addition a total of 225 tons of noncontaminated debris was hauled and disposed off-site.

A total of 6,464 tons of clean backfill material was imported for the general facility support area. This included 429 tons for the decontamination pad area 1,643 tons for the haul road, and 4,392 tons to backfill the office excavation area.

The site haul road was graded to provide proper drainage towards the decontamination pad and the former mill. A geotextile fabric layer was laid under the haul road gravel in areas with visibly soft subgrade to provide stability. Additional gravel was hauled and placed on the south end to allow access for the heavy equipment to stockpile debris piles.

The decontamination pad was constructed according to specifications and engineering drawings. The sump location was relocated to improve the drainage design. During concrete pouring work, a personnel from Pacific Testing Laboratories, Inc., Tacoma, Washington, remained on-site to perform slump tests on each load of concrete. All slump tests were found to be within the tolerances of 4-inch maximum and 1-inch minimum slumps. Entrained air content for the concrete mix was 7.6%, within the specified requirement. A number of concrete test cylinders were made and cured in the field as well as in the laboratory. The average compressive strength of the test cylinders was found to be greater than 4,000 psi.

All utility installation was performed in accordance with specifications. Electrical panels and light fixtures installed met or exceeded the standards specified. Sewer line installation and connections were conducted in the presence of an inspector from the City of Chehalis. The hydrostatic test performed on the sewer line showed results that were well within allowable limits.

4.2 SITE DEBRIS REMOVAL

The site debris removal and consolidation work was performed by the subcontractor, E.P. Johnson Construction, Inc., Pasco, Washington. This work consisted of removal of various piles of wood debris located throughout the site. The wood, determined to be nonhazardous by sampling and analysis, was taken to a local landfill for disposal. All wood was removed to within 6 inches of the ground. Approximately 130 tons of wood and miscellaneous debris was hauled off-site for disposal at the Stafford Creek Landfill. The remaining wood in contact with the soil was considered potentially hazardous and left to be disposed on-site.

4.3 DRUM REMOVAL

As subcontractor to WESTON, Chemical Waste Management, Inc., Tukwila, Washington, performed all the drum removal work. The subcontractor conducted an initial sampling and inventory of all drums to be removed. Contents of drums include soil and soil/water; lab packs, PCB capacitors, pump room debris, PCP/diesel solutions, PCP sludge, cutting/drilling fluids,

solvents, filter cake overpacks, asbestos wall coating, and other unknown liquids. Drums removed as-is were properly labeled and sealed before off-site disposal.

An exclusion zone was established around the drums. A boom truck was used to relocate drums that could not be reached by forklift. A vacuum tanker truck was used to remove water from several drums. Empty steel drums were crushed with a small drum crusher and placed in a rolloff for off-site transportation.

Off-site disposal of drums was conducted after contents were properly identified and the disposal site was verified appropriate for the designated material. Approximately 152 drums of material (93 drums of miscellaneous wastes and 59 drums of filter cake) were disposed off-site. Disposal consisted of emptying the drums of soil and water into bulk containers and shipping this material off-site. Drums of filter cake were overpacked prior to shipping. Most drum contents were transported to Arlington, Oregon, for disposal. Drums containing fuel were disposed at Western Compliance Services in Sherwood, Oregon. Copies of waste records/manifest and certificates of disposal verifying receipt and quantity of each shipment from the appropriate facilities were obtained.

Material shipped off-site for disposal consisted of the following:

Material	Units	Quantity
Contaminated Soil and Debris	Tons	7.2
Contaminated Water	Gallons	2280
Solvents	Gallons	20
PCP/ Diesel Fluids	Gallons	150
Lab Chemicals	Drum	2
Filter Cake	Drums	59
PCB Capacitors	Pounds	713
Tar	Drum	1
Acid	Drum	1
Asbestos Wall Coating	Drum	1

4.4 STRUCTURE DEMOLITION

Structure demolition, recycle, and disposal work was performed by the subcontractor Iconco, Inc., Seattle, Washington. Prior to commencement of work, the subcontractor submitted complete demolition work plan and conducted a field structural survey of the buildings to evaluate demolition strategy. Engineers from Anderson Bjornstad Kane Jacobs, Inc., were contracted by Iconco to perform a structural evaluation of the allowable equipment load on various portions of the mill factory. The result from this structural evaluation was used to determined the size of

equipment that can be placed on top of the mill for demolition work and the extent of the area where equipment may work.

Iconco utilized a CAT 320 excavator and a Komatsu PC220 trackhoe to remove the railroad trestle and demolish the kiln control rooms, fuel shed, kiln shop, kiln platform, and other specified structures aside from the main mill factory. The mill roof and walls were removed utilizing a 150-ton crane with up to 200 feet of boom and a clam bucket attached. The mill wood flooring was stripped using a small CAT EL90 trackhoe operating on top of the mill floor. The crane was used to transport the stripped wood floor secured by cable chokers to a stockpile next to the mill. Larger joist members in the mill were rigged by a laborer in full body harness and fall protection gear. The crane was then used to remove these joist members to a stockpile on the ground. A small Bobcat loader was used on top of the mill to consolidate debris from the roof and wall demolition.

Mill concrete footings were dropped into the mud under the former mill and incorporated into the subgrade to provide stability. Salvaged steel was transported to General Metals, a metal recycler in Tacoma, Washington. Clean noncontaminated salvaged timber in reasonable condition was processed and inventoried at a local yard and sold to the public or sent elsewhere for use by Iconco. Wood of lower quality was sent to a recycler to be used for fiber recovery or as boiler fuel. Wood debris was also sent to a local nonhazardous landfill for disposal. Approximately 20,000 cubic yards of wood was generated from demolition of site structures.

Small quantities of asbestos containing material used for insulation was removed by certified asbestos removal personnel. The asbestos removal process was strictly monitored by the site health and safety officer. Other small quantities of material (autoclave insulation, gaskets, etc. found inside the mill) suspected to contain asbestos were handled and disposed by Iconco personnel as asbestos rather than sampling and awaiting test results. Old tires found on-site were stockpiled and later hauled to a recycler. Almost 2,000 tons of pit-run gravel was imported to extend the haul road and to enable equipment to access cleared areas.

The treatment works and kiln boiler room buildings were demolished and the resulting debris sent to the Chemical Waste Management hazardous waste landfill in Arlington, Oregon. This debris was handled as hazardous waste due to severe staining and saturation with wood treating compounds. Concrete from the treatment works building foundation was broken into 1-foot pieces and buried near the kilns to provide subgrade stability. During demolition of the concrete foundations, a 10,000-gallon underground tank filled with water was found. This tank was surrounded by concrete walls. The water was removed and used for dust suppression. The tank was removed, decontaminated and recycled as scrap steel, and the concrete walls demolished. The tank was determined to be a buried retort that was used for storage of wood treating materials.

During the RI, it was determined that the kiln brick mortar may contain asbestos. Subsequent sampling showed this assumption to be true. Discussions were held with the Lewis County Health Department, Southwest Air Pollution Authority, and EPA regarding safeguards to be taken to minimize asbestos migration in preparation for demolition. Asbestos guidelines and worker requirements (40 CFR 61, WAC 296-65) were reviewed and incorporated into the demolition

specifications. Since the asbestos was in a nonfriable matrix, there was no requirement to remove it prior to demolition as long as the asbestos did not become airborne during demolition. The appropriate notifications were formally submitted to EPA and the Lewis County Health Department.

The kilns were sprayed with water prior to demolition to prevent asbestos dust from being generated. Water was also constantly applied throughout the demolition process. The kilns were subsequently demolished with the trackhoe. The kiln debris was left in place, graded relatively flat and covered with incinerator ash to confine the asbestos in the brick mortar.

4.5 STORMDRAIN CLEANING AND RELINING

Stormdrain cleaning and relining work was performed by the subcontractor Gelco, Inc., Salem, Oregon. A dam was built across the stormdrain outlet section of the lagoon with ecology blocks. This part of the lagoon was pumped dry before a camera was sent through the drain pipe for a television inspection of the pipe's internal conditions. The drain pipe was found to be relatively straight with a few leaky joints and only a small amount of gravel and sand on the bottom of the line. The stormdrain line was then cleaned and videotaped before installing the Cured-In-Place-Pipe (CIPP). The required length of the CIPP was measured (830 feet) and transported on site packed in ice.

The CIPP placed in the stormdrain consisted of a 24-mm-thick polyester fabric impregnated with resin. The pipe was fit inside the existing drain using hydrostatic pressure from a water column outside the manhole. Once the pipe was placed, the water inside the pipe was heated to activate the resin and cure the pipe into a rigid lining.

The installation of the CIPP was performed continuously over a 24-hour period with two crews. The curing process was carried out in accordance to the product manufacturer's specifications with close monitoring of the temperature and pressure. The temperature and pressure log of the curing process were maintained for verification by the QA personnel. A post-installation television inspection was performed on the completed drain pipe. A videotape of this inspection along with test results of the material strength performed on samples of the pipe material cured in the same conditions was submitted for final acceptance of the work accomplished.

4.6 LAGOON SEDIMENT REMOVAL/DISPOSAL/RESTORATION

Lagoon sediment removal, disposal, and restoration work was performed by the subcontractor, OHM Remediation Services Corp., Seattle, Washington. The lagoon was located at the outlet of the stormdrain flowing east to west across the ACC site. OHM elected to install a new manhole 60 feet upstream from the lagoon headwall and divert flow directly to Dillenbaugh Creek, bypassing the stormwater lagoon, instead of pumping the flow between two manholes along Chehalis Avenue. This approach avoided the potential of mechanical pump failure and limited

construction activities to the lagoon area. A new temporary sedimentation basin was also constructed for the diverted flow.

Once the bypass was completed, a sheet pile isolation wall was installed at the outlet of the lagoon, isolating it from Dillenbaugh Creek. As this was occurring, a water treatment system consisting of filtration and carbon adsorption was installed to treat wastewater. Approximately twenty 20,000-gallon tanks were brought on-site and set in a secondary containment cell. Surface water in the lagoon was pumped to the tanks and treated. Upon completion of surface water removal, a hole was dug in the sediments and water pumped from the hole to dewater the sediments. Water was pumped to the tanks and treated.

After the sediments were dewatered, a trackhoe was used to pile the sediments in the center of the lagoon. The wet sediments were mixed with CKD to remove free liquids. The solidified sediment was then loaded into trucks, weighed on-site, and then taken to Arlington, Oregon, for disposal. The surface of the lagoon banks were scraped until a clean clay surface was visible (approximately 6 inches).

After the sediment had been removed, the banks of the lagoon were reconfigured. During the reconfiguration, a localized area of dark stained wood debris was encountered in the buried former creek channel bed near the head of the lagoon. This material was sampled. EPA reviewed the results indicated the concentrations of PCP were not significant enough to require removal. The area was covered with PVC to isolate it from the lagoon water, then covered with soil.

The sheet pile isolation wall was removed. Erosion control matting was placed over the reconfigured banks and the bypass system was removed allowing water to flow through the reconfigured lagoon. The lagoon area was hydroseeded. The temporary lagoon was backfilled. The bypass manhole and 30-inch metal culvert were left in place.

Water management was the biggest challenge of this subcontract. Difficulties meeting the discharge criteria for zinc, lead, and dissolved oxygen were encountered. The zinc and dissolved oxygen criteria were relaxed after obtaining background concentrations similar to the treated wastewater. Lead treatment required using a flocculation and sedimentation process instead of filtration. Floculating clay was added directly to the tanks and mixed internally. The contaminants that were bound to clay particles settled to the bottom of the tank after flocculation. The resultant clear water was sampled, found to meet discharge criteria, and was discharged to Dillenbaugh Creek. When treatment was complete, the sediment in the tank was discharged to a small on-site lined cell. The sediment was solidified with CKD and hauled off-site to Arlington, Oregon, for disposal in a hazardous waste landfill.

To minimize water accumulation in the lagoon during the dewatering process, an interception trench was dug on the southwest end of the lagoon and equipped with a pump. Water was pumped from the trench and allowed to infiltrate away from the lagoon. This action reduced the quantity of water infiltrating into the lagoon and greatly minimized treatment costs.

A total of 3440 tons of sediment was stabilized with 371 tons of CKD. The stabilized sediment (3811 tons) was taken to Arlington, Oregon, for disposal. Approximately 609,000 gallons of water was removed from the lagoon and treated.

4.7 TANK AND PIPE REMOVAL

Tank and pipe removal work was performed by the subcontractor Echeco Environmental Services, Blackfoot, Idaho. The four tanks on-site were reportedly 1,000-, 6,000-, 6,000-, and 10,000-gallon in size and contained diesel, creosote, creosote and process residuals, respectively.

During the building demolition work, Iconco removed the process residuals tank. This tank, located west of the treatment works building, had a capacity of 20,000 gallons. The creosote tank under the railroad trestle had a 10,000-gallon capacity. The diesel tank located in front of the kilns had a capacity of 500 gallons.

These tanks had been formerly pumped to remove their contents and cleaned as part of the earlier (late 1980s) removal action. Subsequent site flooding had filled these tanks with water. All tanks were emptied prior to removal and the water used for dust suppression on contaminated soil.

After the tanks were removed, an access was cut and the residual sludge removed. The diesel, creosote, and process residuals tank contained 5 gallons, 10 gallons, 300 gallons, and 700 gallons of sludge, respectively.

A previously unidentified 10,000-gallon tank was found west of the kiln boiler room. The tank was exposed and found to contain approximately 3,000 gallons of black liquid. The liquid was sampled and found to be a thick fuel oil. No contaminants were found in the oil. The tank was pumped by Phillips Environmental to remove the fuel oil. The tank was removed and an access was cut in the tank. Approximately 500 gallons of sludge was removed from the tank.

Sludge removed from the tanks was taken to the stockpile of contaminated soil and mixed with soil for off-site disposal at a hazardous waste landfill.

The tanks were decontaminated using brushes, pressure washers, and cloths. Several wipe samples were taken from the decontaminated steel according to the project tank/pipe removal specifications. These samples were analyzed for halogenated hydrocarbons and PAHs. Sample data indicated the tanks were decontaminated appropriately. The tanks were cut into pieces and taken off-site to a steel recycler.

4.8 FACILITY SOIL REMOVAL

The facility soil removal work was performed by the subcontractor Echeco Environmental Services, Blackfoot, Idaho. Soil was excavated to predetermined engineered design depths around the former treatment works building and kilns. The soil was stockpiled in an area directly in front of the former kilns in a pile approximately 15 to 20 feet high and 150 feet long. During soil

excavation in the surface impoundment area, a 4-inch-diameter iron pipe was encountered which drained a small amount of black oil into water in the surface impoundment. The oil was soaked up using absorbent pads. The line was left in place.

In almost all places in the treatment works and kiln area the bottom of the completed excavation was visually observed to be a clean brown clay. The sidewall of the excavation near the north gate was observed to be stained. Since this area was under the newly constructed haul road, it could not be practically excavated. The volume of stained soil in this area was small compared to that which was removed and was left in place.

The excavation behind the kiln encountered piling during the excavation. Soil was removed between the pilings to depth. The bottom of this excavation was observed to be a clean blue clay.

As part of the facility soil removal, a residential lot (Mr. Schlindler's property) and the U Joint parking lot were excavated and backfilled. These areas were initially scheduled as part of the residential soil removal but, due to their size and equipment requirements, were completed as part of the facility soil removal scope of work. Mr. Schlindler's property was found to contain 6 to 12 inches of wood debris and wood foundations above the soil. This debris was removed and the underlying soil removed. Soil and debris from these two properties was disposed on the landfill on the ACC facility. These properties were then backfilled with gravel.

During excavation of the U Joint property, a water line to an out building was broken. The line was buried shallow and consisted of metal pipe and a flexible plastic pipe. The pipe was repaired. A 4-inch shallow PVC sewer line from the outbuilding was also damaged during excavation. The line was replaced with a new 6-inch PVC pipe meeting city codes back to the U Joint building where it was tied into the existing 6-inch sewer line.

A total of 18,137 cubic yards of soil on the ACC facility was excavated and stockpiled for off-site disposal. Approximately 2,036 cubic yards of soil from the two residential properties was excavated and hauled to the ACC landfill.

4.9 RESIDENTIAL SOIL REMOVAL/RESTORATION

Residential soil removal and restoration work was performed by the subcontractor Smith Environmental, Portland, Oregon. Soil in 26 residential lots was excavated to a depth of approximately 8 inches. Figure 3-1 shows the areas excavated. Addresses of the lots excavated and their owner at time of cleanup are listed below:

Dionizio Sanchez
337 SW James St.
Chehalis, Washington 98532
Parcel No. 3980 (lot Q)

Westland Resources Corp.
41 SW Pacific Ave
Chehalis, Washington 98532
Parcel No. 3899 (lot D)

Glen Aylesworth
317 SW James St.
Chehalis, Washington 98532
Parcel No. 3981 (lot R)

Martin Schlindler
78 SW Chehalis Ave
Chehalis, Washington 98532
Parcel No. 3984-1 (lot S)

Kathleen Hogan
222 SW John St.
Chehalis, Washington 98532
Parcel No. 4000 (lot T)

Catherine Schlindler
256 SW John St.
Chehalis, Washington 98532
Parcel No. 3998-1 (lot U)

Frank Mason
46 SW Chehalis Ave
Chehalis, Washington 98532
Parcel No. 3959 (lot G)

Thompson
340 SW Lewis St.
Chehalis, Washington 98532
Parcel No. 3960 (lot H)

Roland McCann
59 SW Pacific Ave
Chehalis, Washington 98532
Parcel No. 3962-1 (lot I)

Mark Koreis
318 SW James St.
Chehalis, Washington 98532
Parcel No. 3963 (lot N)

Westland Resources Corp.
44 SW Chehalis Ave
Chehalis, Washington 98532
Parcel No. 3897-1 (lot C)

Neva Kathleen Ross
277 SW Lewis St.
Chehalis, Washington 98532
Parcel No. 3914 (lot F)

Lois Wright
36 SW Pacific Ave.
Chehalis, Washington 98532
Parcel No. 3915 (lot E)

Chehalis Avenue Apartments
366 SW 3rd St.
Chehalis, Washington 98532
Parcel No. 5173-2 (lot W, X)

Charles Lyons
85 SW Chehalis Ave.
Chehalis, Washington 98532
Parcel No. 5173-3 (lot V)

Dan Vandelkolk
274 SW Lewis St.
Chehalis, Washington 98532
Parcel No. 3944 (lot K)

Geoffrey McNeil
252 SW James St.
Chehalis, Washington 98532
Parcel No. 3954 (lot Z)

Geoffrey McNeil
260 SW James St.
Chehalis, Washington 98532
(Lot Y)

Lothar Peischl
340 SW James St.
Chehalis, Washington 98532
Parcel No. 3964 (lot M)

Emma Baker
272 SW James St.
Chehalis, Washington 98532
(Lot Q)

Ray Podmore
48 SW Chehalis Ave.
Chehalis, Washington 98532
Parcel No. 3966 (lot L)

CMC Hartland
SW John at Chehalis Ave.
(Lot V)

Don Jones
33 SW Pacific Ave
Chehalis, Washington 98532
Parcel No. 3897 (lot B)

Robert Pikerton
40 SW Chehalis Ave.
Chehalis, Washington 98532
Parcel No. 3898 (lot A)

Lawrence Jamerson
288 SW Lewis Ave.
Chehalis, Washington 98532
Parcel No. 3943-2 (lot J)

Prior to the excavation, soil in each lot to be excavated was sampled at depth to verify that CPAH and PCP contamination was below the action level. This was found to be true in all cases. A series of background samples was also taken to confirm PAH concentrations were not elevated.

The lots were cordoned off using caution tape. House doors and windows were kept shut, and foot traffic through the work zone was prevented to the extent practical. Dust was kept to a minimum by applying water to dry areas. Dump trucks were kept in a clean zone and loaded with residential soil from a Bobcat working in the yard. Yard equipment was decontaminated before entering city streets. The streets were periodically washed to remove dirt. Personnel working in yards wore Level D PPE.

Soil excavated from yards was loaded into dump trucks and placed near the north end of the ACC landfill. Approximately 2,500 cubic yards of soil was excavated from residential lots. When excavation in a lot was complete, the lot was filled with clean imported topsoil and sodded.

Design of the residential yard remedial action included drawings showing which plants were to be removed or left in place. This design was reviewed and approved by the homeowners. Plants that were removed were replaced in kind except in cases where the homeowner desired something different. In those cases, the homeowners desires were accommodated as long as there was no additional cost.

4.10 TRANSPORTATION AND DISPOSAL

Transportation and disposal work was performed by the subcontractor Advanced Environmental Technical Services (AETS), formerly Chemical Waste Management, Inc., Tukwila, Washington. AETS loaded soil excavated from the treatment works area and immediately south of the kilns into a fleet of trucks. A maximum of approximately 30 trucks per day was used to transport the soil from ACC to the hazardous waste landfill in Arlington, Oregon. AETS set up a scale on-site and filled the trucks to a minimum of 23 tons. The trucks were also weighed to confirm they weren't overweight. Two excavators were used to load and manage the excavated soil. Soil was hauled from the site at a rate varying from 400 tons per day to a maximum of approximately 1,000 tons per day, depending upon the number of trucks available.

Wet soil needed to be stabilized prior to loading to prevent free liquid from draining from the soil. Dryer soil was mixed with the wet soil when available. When no dry soil was available, cement kiln dust was brought in bulk trucks and blown into a bowl cut in the top of the soil pile. The CKD was mixed with the wet soil using the excavator.

Approximately 32,416 tons of soil, including stabilizing agent (CKD), was removed from the ACC site and taken to Arlington, Oregon, for disposal. Fifteen hundred tons of soil was stabilized using 104 tons of CKD.

During loading of the stockpiled soil, the underlying 30-inch stormdrain was damaged from the backhoe bucket. Upon clearing soil away from the stormdrain, it was determined that a 40-foot section of the drain had been slightly damaged (cracked). At one location, a hole approximately 1 foot long and 4 inches wide was found. Wilder Environmental, a local stormdrain repair contractor, was contacted to repair the drain. The 40-foot-long area was formed up and filled with concrete and woven wire fabric to form a 1-foot-thick patch covering the drain.

On 29 November 1995, shortly after the last of the contaminated soil was removed, the site and surrounding area flooded. The site was covered by 6 feet of water. No problems due to the flood occurred.

4.11 FACILITY BACKFILLING AND GRADING

Echeco Environmental from Blackfoot, Idaho, was contracted to perform the facility backfill and grading work. First, the excavated areas in the treatment works were filled to an elevation approximately 2 feet below street level. This area was filled with 6-inch round stone and fill. The round stone was used stabilize the soft soil and provide a stable sub-base Water in the excavated areas was pumped to a low area on the site prior to filling with stone.

Kiln brick and mortar-containing-asbestos was pushed into the deep excavation south of the former kiln. The debris was placed in a layer approximately 2 to 4 feet thick and covered with 4 feet of fill. Minor kiln debris left in the former kiln area was covered with 2 to 3 feet of fill.

The landfill was cleared and grubbed. Large plants and trees were cut up and mulched. A earthen embankment was built between the northwest corner of the landfill and the railroad tracks to isolate the standing water on-site from the drainage ditch to expedite dewatering. Soil cut from the landfill was placed into the mill area. The landfill was rough graded and covered with 1 foot of pit-run gravel.

The soil underneath the former mill had no strength. Six-inch round stone was mixed with the soil to provide stability. The stone was added to the soil up to the edge of the standing water that eventually formed a small on-site pond/wetland habitat.

After the mill and treatment area had been stabilized and cut to proper subgrade, geotextile was placed over these areas. The geotextile was used to provide additional stability to the subgrade and keep the soil from pumping through the clean imported fill. These areas were then covered with 1 foot of pit run.

After all areas had been covered and graded, 6 inches of topsoil was placed over the fill and graded. This area was then hydroseeded and fertilized.

Three surveys were performed. Prior to any earth removal, a baseline grade survey was completed. After rough grading, a second survey was performed. The third survey was completed after the final cover of topsoil was placed. The as-built drawing of the site is provided in Appendix A.

Approximately 26,800 tons of 6-inch round stone was used to stabilize soft soil. The quantity of cover soil used was 40,100 tons. 17,200 tons of topsoil was used. Rough grading required moving approximately 17,300 cubic yards of soil.

On 7 February 1996 through 12 February 1996, work had to be shutdown due to flooding of the site a second time. No damage occurred to the site. However, construction trailers and project records inside trailers were damaged. Miscellaneous electronic equipment was also damaged. The trailers were removed from the site and dismantled by the supplier to dry. New trailers were brought on-site to replace those damaged by the floods.

On 24 April 1996, the site flooded a third time after several days of heavy rains. Site soil was too soft to support equipment and work was shut down for several days. Earthwork resumed on 7 May 1996, and was completed on 11 May 1996.

SECTION 5

FINAL INSPECTIONS

Final inspections were performed for all phases of the work. Appendix B contains the Certificates of Substantial Completion and punchlists for the contracts listed below:

Work Phase	Contractor
Well Abandonment	Cascade Drilling
General Facility Support.	EP Johnson.
Debris Removal	EP Johnson
Drum Removal	AETS
Structure Demolition	Iconco
Stormdrain Reline	Gelco
Lagoon Restoration	OHM Remedial Services
Tank/Pipe Removal	Echeco Environmental
Facility Soil Removal	Echeco
Residential Soil Removal	Smith Environmental
Transportation and Disposal	Chemical Waste Management
Facility Backfill/Grading	Echeco

SECTION 6

PERFORMANCE STANDARDS ATTAINMENT CERTIFICATION

All performance standards as presented in the ROD, except for those standards associated with performance monitoring, have been attained as a result, or were met during the implementation of the remedial action. The basis for this certification is provided in Section 3.

Performance monitoring was initiated in June 1996. The performance monitoring tasks, as well as the operation and maintenance tasks, are detailed in the Operation and Maintenance Plan. These tasks are anticipated to occur up to a period of 5 years, at which time final certification of performance standards attainment may be issued.

_____

Lawrence A. Costich, PE
QA Manager

_____

Larry D. Vanselow, PE
Construction Manager

SECTION 7

OPERATION AND MAINTENANCE ACTIVITIES

The operation and maintenance activities to be performed at the site will include quarterly site inspections as well as annual surface water and groundwater sampling. Corrective measures will be implemented when conditions warrant. The specific monitoring and maintenance tasks are presented in the Operation and Maintenance Plan.

Site visits will occur annually and following 25-year, 24-hour storm events. The site visits will include inspections of the site security, drainage system, erosion and slope stability, and vegetation maintenance.

Site inspection reports and analytical results will be compiled and submitted to the EPA as annual progress reports. These reports will detail laboratory results, general site conditions, and any corrective actions taken.

SECTION 8

PROJECT COSTS

The total cost for this final remediation phase of the American Crossarm & Conduit site was $9,206,000. A breakdown of the costs is provided below:

Work Phase	Contractor	Cost ($)
Remedial Design	Roy F. Weston, Inc.	424,000
Remedial Action		
Project Support	Roy F Weston, Inc.	911,000
Well Abandonment	Cascade Drilling	15,000
General Facility Support	EP Johnson.	216,000
Debris Removal	EP Johnson	45,000
Drum Removal	AETS	48,000
Structure Demolition	Iconco	621,000
Stormdrain Reline	Gelco	345,000
Lagoon Restoration	OHM Remedial Services	923,000
Tank/Pipe Removal	Echeco	39,000
Facility Soil Removal	Echeco	236,000
Residential Soil Removal	Smith Environmental	425,000
Transportation and Disposal	Chemical Waste Management	3,652,000
Facility Backfill/Grading	Echeco	1,306,000

SECTION 9

SCHEDULE

9.1 DESIGN

The design was completed in phases to allow an expedited cleanup to be performed. The design began in May 1994 and was completed in October 1995.

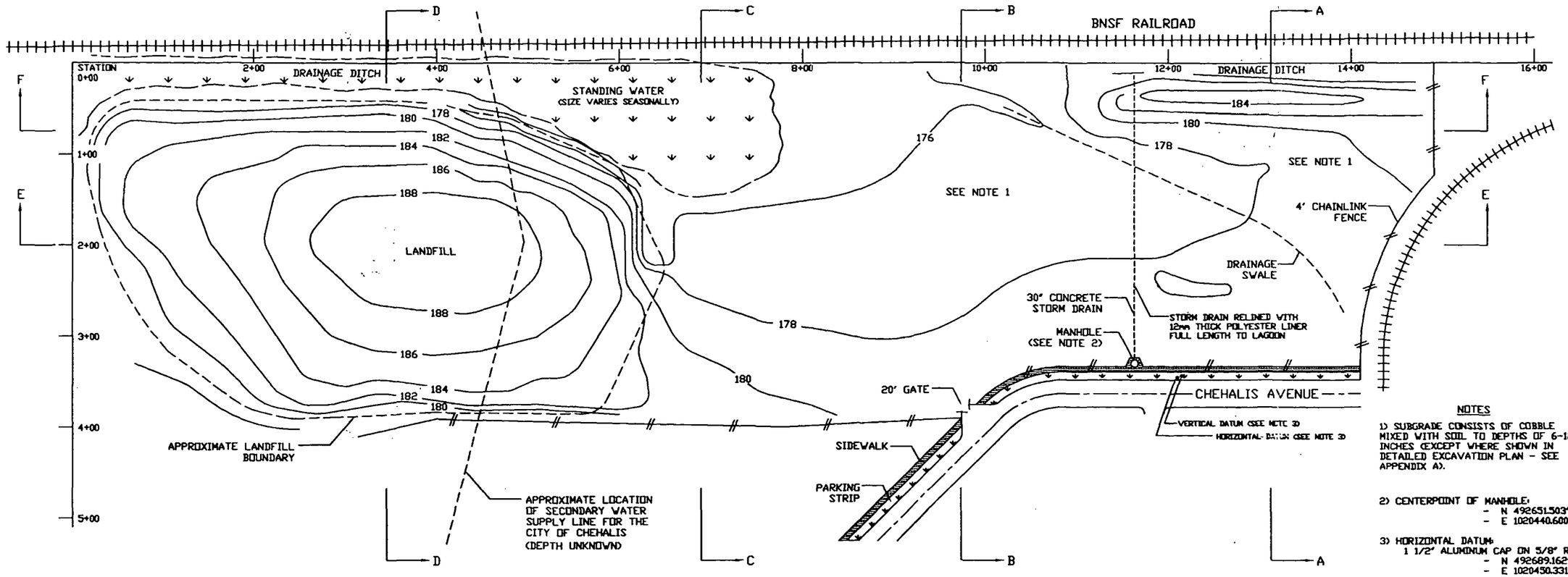
9.2 REMEDIAL ACTION

The remedial action was broken into several subcontracts to allow the cleanup efforts to begin on an expedited schedule. As soon as one design phase was completed, it was bid, and a contract was awarded shortly thereafter. Construction on that phase of the work began upon contract award. The construction began in September 1994 and was completed in May 1996.

A schedule showing the design and construction phasing is provided in Appendix C.

APPENDIX A

AS-BUILT SITE DRAWING



NOTES

1) SUBGRADE CONSISTS OF COBBLE MIXED WITH SOIL TO DEPTHS OF 6-12 INCHES (EXCEPT WHERE SHOWN IN DETAILED EXCAVATION PLAN - SEE APPENDIX A).

2) CENTERPOINT OF MANHOLE:
- N 492651.503'
- E 1020440.600'

3) HORIZONTAL DATUM:
1 1/2" ALUMINUM CAP ON 5/8" REBAR
- N 492689.162'
- E 1020450.331'

VERTICAL DATUM:
R/R SPIKE IN POWER POLE
- EL 181.28

4) CONTOUR ELEVATIONS IN FEET.

N

SCALE
(IN FEET)
0 60 120 240

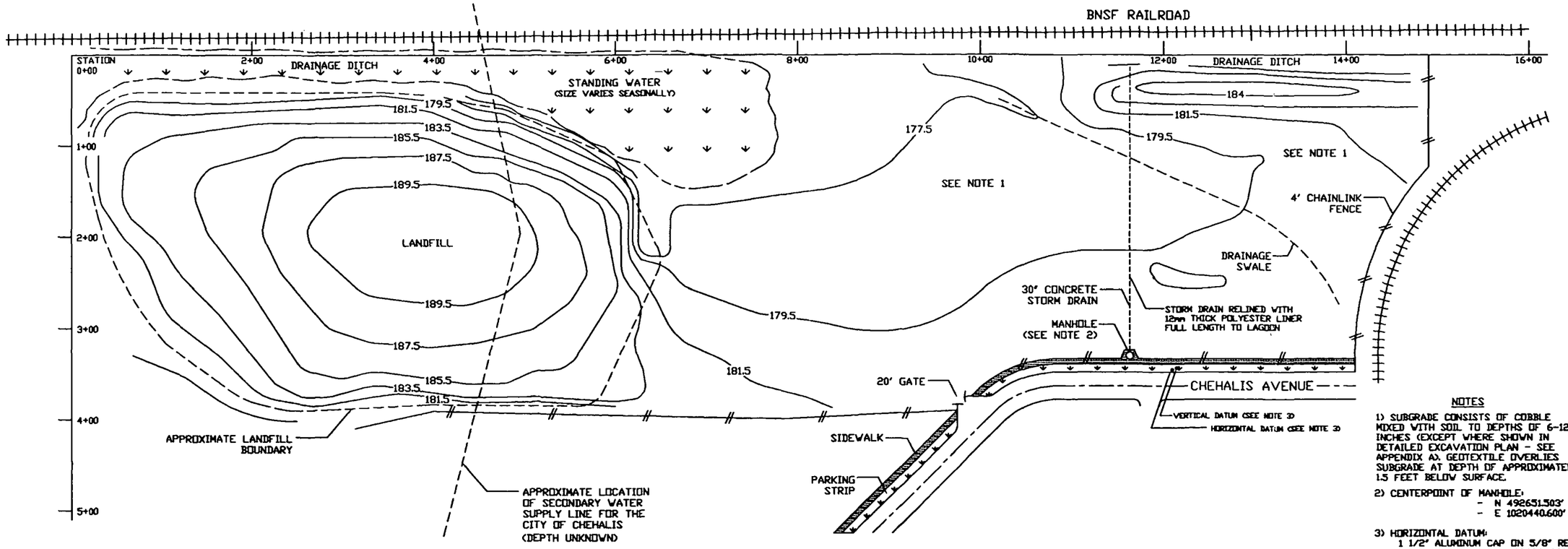
NO.	DATE	APPR.	REVISION

AMERICAN CROSSARM & CONDUIT
SUPERFUND SITE
SITE PLAN (AS-BUILT) SUBGRADE

WESTON MANAGERS ENGINEERS/CONSULTANTS
SEATTLE WASHINGTON

CHECKED		DATE	CLIENT APPROVALS
DES. ENG.			
PROJ. ENG.	LDV		
PROJ. MGR.	SRF		
APPROVED			
APPROVED			ISSUED FOR

DRAWN	KEN LAUZEN
DATE	JUNE 14, 1996
SCALE	SEE SCALE
W.O. NO.	4000-300-001-7000



NOTES

1) SUBGRADE CONSISTS OF COBBLE MIXED WITH SOIL TO DEPTHS OF 6-12 INCHES (EXCEPT WHERE SHOWN IN DETAILED EXCAVATION PLAN - SEE APPENDIX A). GEOTEXTILE OVERLIES SUBGRADE AT DEPTH OF APPROXIMATELY 1.5 FEET BELOW SURFACE.

2) CENTERPOINT OF MANHOLE:
- N 492651.503'
- E 1020440.600'

3) HORIZONTAL DATUM:
1 1/2" ALUMINUM CAP ON 5/8" REBAR
- N 492689.162'
- E 1020450.331'

VERTICAL DATUM:
R/R SPIKE IN POWER POLE
- EL. 181.28

4) CONTOUR ELEVATIONS IN FEET.

N

SCALE
(IN FEET)
0 60 120 240

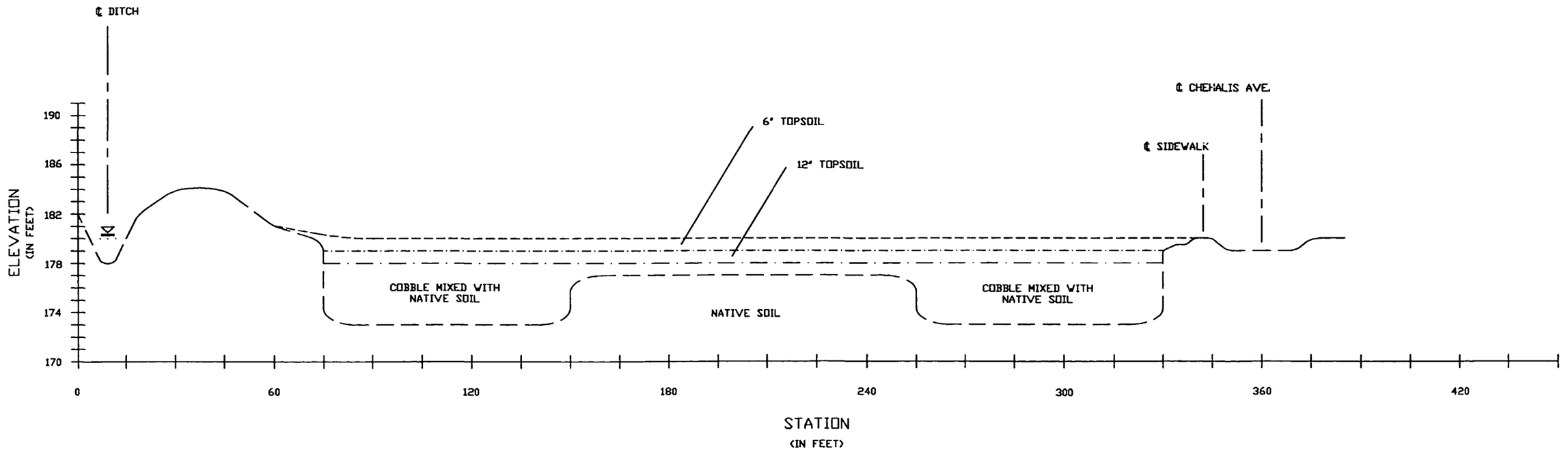
NO.	DATE	APPR.	REVISION

AMERICAN CROSSARM & CONDUIT
SUPERFUND SITE
SITE PLAN (AS-BUILT) FINAL GRADE

WESTON MANAGERS DESIGNERS/CONSULTANTS
SEATTLE WASHINGTON

CHECKED	DATE	CLIENT APPROVALS	DATE
DES. ENG.			
PROJ. ENG. LDV			
PROJ. MGR. SRF			
APPROVED			
APPROVED		ISSUED FOR	DATE

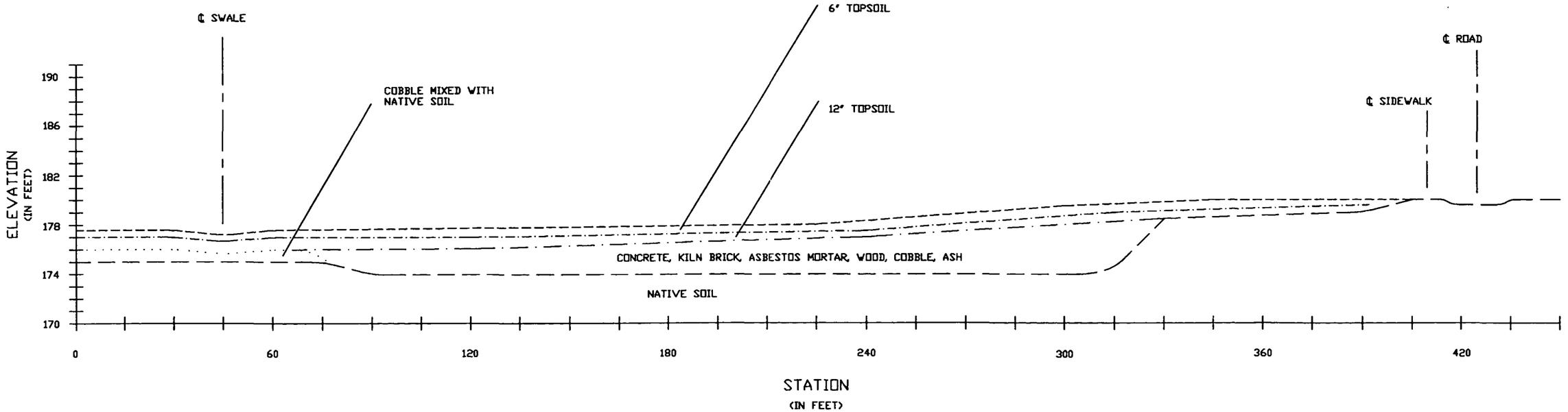
DRAWN KEN LAUZEN	DATE JUNE 14, 1996
SCALE SEE SCALE	W.O. NO. 4000-300-001-7000



SECTION A-A

NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION	AMERICAN CROSSARM & CONDUIT SUPERFUND SITE	CHECKED	DATE	CLIENT APPROVAL	DATE	SECTION A-A
									DES. ENG.				
									PROJ. ENG. LDV				
									PROJ. MGR. SRF				
									APPROVED				
									APPROVED				
								SEATTLE WESTON WASHINGTON					

DRAWN KEN LAUZEN	DATE JUNE 18, 1996	DWG. NO.	REV. NO.
SCALE	W.O. NO. 4000-300-001-7000	SHT. ___ OF ___	



SECTION B-B

NO.	DATE	APPR.	REVISION

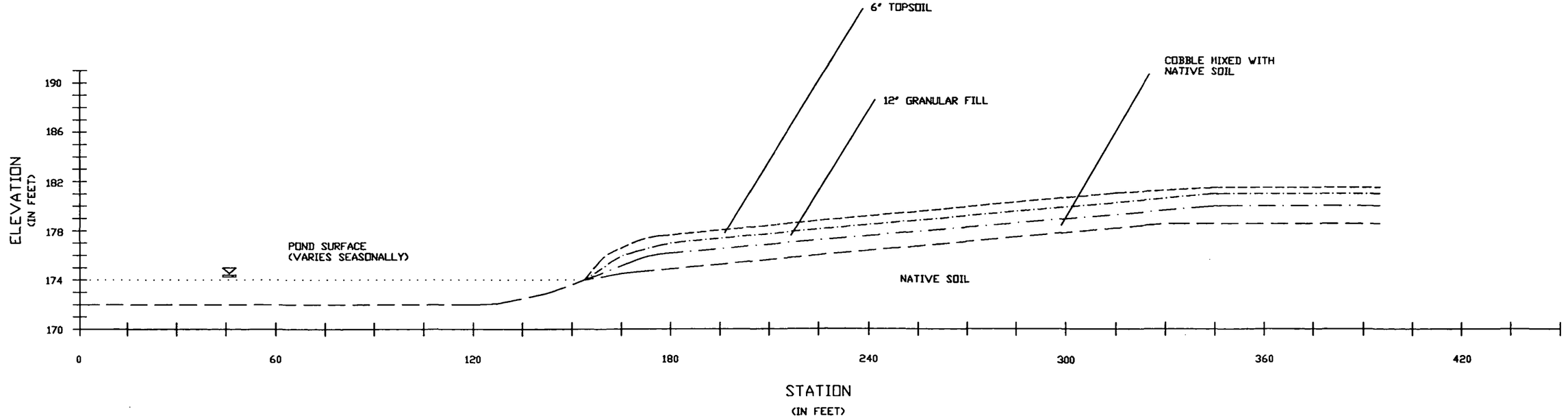
AMERICAN CROSSARM & CONDUIT
SUPERFUND SITE

WESTON
SEATTLE

CHECKED		DATE	CLIENT APPROVAL	DATE
DES. ENG.				
PROJ. ENG.	LDV			
PROJ. MGR.	SRF			
APPROVED				
APPROVED			RELEASED FOR	DATE

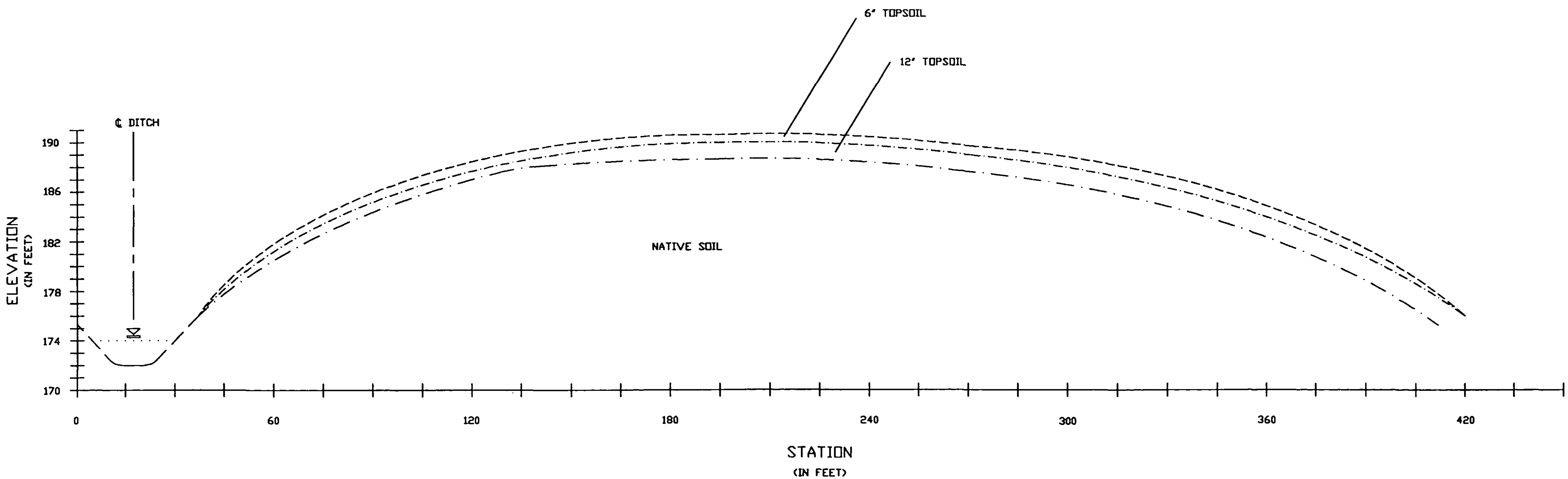
SECTION B-B

DRAWN KEN LAUZEN	DATE JUNE 18, 1996	REV. NO.
SCALE	W.O. NO. 4000-300-001-7000	SHT. OF



SECTION C-C

NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION	AMERICAN CROSSARM & CONDUIT SUPERFUND SITE	CHECKED	DATE	CLIENT APPROVALS	DATE	SECTION C-C
									DES. SUP.				
									PROJ. ENG. LDV				
									PROJ. MGR. SRF				
									APPROVED				
									APPROVED		ISSUED FOR	DATE	
								SEATTLE WESTON ENGINEERING, CONSULTANTS WASHINGTON					DRAWN KEN LAUZEN; DATE JUNE 18, 1996; DWG. NO.; REV. NO.; SCALE; W.O. NO. 4000-300-001-7000; SHT. OF



SECTION D-D

AMERICAN CROSSARM & CONDUIT
SUPERFUND SITE

WESTON

SEATTLE

LDV

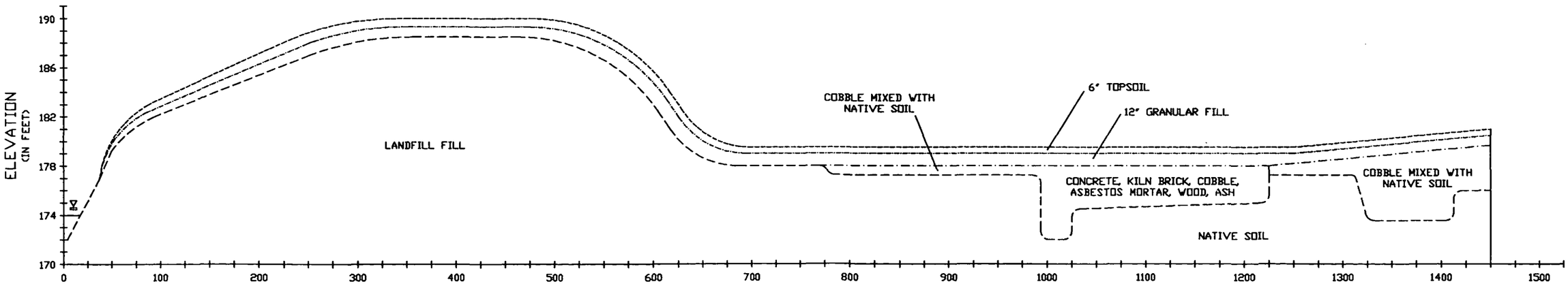
SRF

SECTION D-D

KEN LAUZEN

JUNE 18, 1996

4000-300-001-7000



STATION
(IN FEET)

SECTION E-E

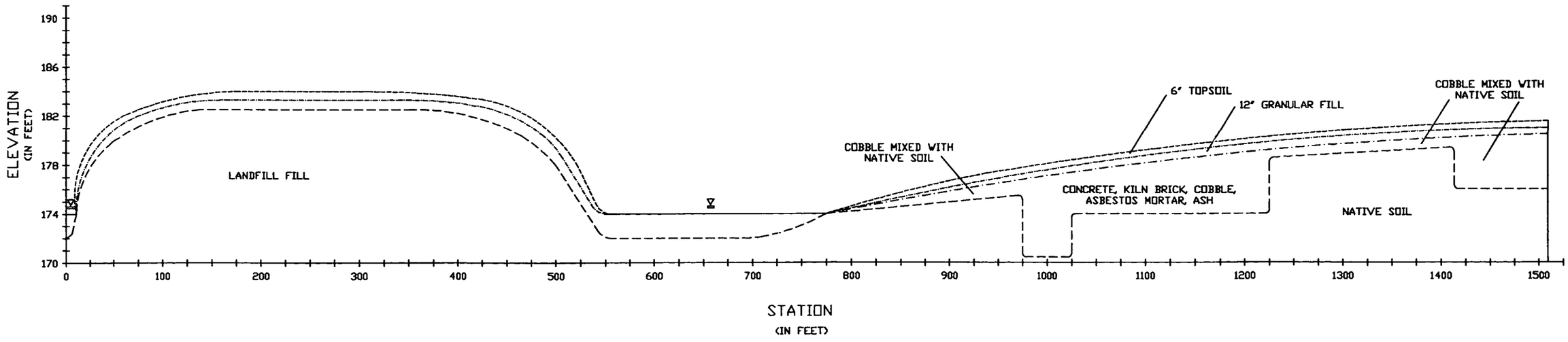
AMERICAN CROSSARM & CONDUIT
SUPERFUND SITE

WESTON
SEATTLE

PROJ. ENG. LDV
PROJ. MGR. SRF

SECTION E-E

DRAWN KEN LAUZEN
DATE JUNE 18, 1996
W.O. NO. 4000-300-001-7000



SECTION F-F

NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION

AMERICAN CROSSARM & CONDUIT
SUPERFUND SITE

WESTON
SEATTLE WASHINGTON

CHECKED	DATE	CLIENT APPROVAL	DATE
SECT. CHIEF			
PROJ. ENG. LDV			
PROJ. MGR. SRF			
APPROVED			
APPROVED		ISSUED FOR	DATE

SECTION F-F

DRAWN KEN LAUZEN	DATE JUNE 18, 1996	DWG. NO.	REV. NO.
SCALE	W.O. NO. 4000-300-001-7000	SHT.	OF

APPENDIX B

CERTIFICATES OF SUBSTANTIAL COMPLETION

Roy F. Weston, Inc.
Gateway Tower, 57th Floor, Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

25 May 1995

Mr. Lee Marshall
Work Assignment Manager
U.S. Environmental Protection Agency
Region X, #HW-113
1200 Sixth Avenue
Seattle, WA 98101

WO 4000-30-01-3400-04
DCN 4000-30-01-AAIN

Subject: ACC Remedial Action
Drum Removal—Final Inspection and Closeout
Contract No. 68-W9-0046
Work Assignment No. 46-36-0R91

Dear Mr. Marshall:

Roy F. Weston, Inc. (WESTON®) has completed the final inspection on the drum removal work done by Chemical Waste Management, Inc. The final inspection was conducted on Tuesday, 23 May 1995.

The inspection included a visual verification of the items identified in the inspection punch list during the pre-final inspection. All items in this punch list were found to have been corrected and in compliance with contract documents. The attached punch list indicates the dates the remaining drums were removed.

Please feel free to contact me at (206) 521-7690 should you have any questions regarding this information.

Sincerely,

ROY F. WESTON, INC.

Ewe Leng Lim, EIT
Quality Assurance Project Engineer

95-691A.LTR
ELL/smr
Attachment
cc: M. Ruef (Ecology)
S. Fuller (WESTON)
L. Vanselow (WESTON)
L. Costich (WESTON)
E. Gustafson (WESTON)
PMO file
Chron file

ROY F. WESTON, INC.
SUITE 5700
700 FIFTH AVENUE
SEATTLE, WASHINGTON 98104-5057
206-521-7600 • FAX: 206-521-7601

10 October 1994

Lee Marshall
US Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

WO 4000-30-01-3400-10
DCN 4000-30-01-AAAT

Subject: Well Abandonment Final Inspection
ACC Remedial Action
Contract No. 68-W9-0046
Work Assignment No. 46-36-OR91

Dear Mr. Marshall:

Roy F. Weston, Inc. (WESTON®) will conduct a final inspection for the Well Abandonment task at the American Crossarm and Conduit site on Monday, 17 October. This inspection will begin at 10:00 AM. The items to be inspected include those listed on the attached punch list which was developed during the pre-final inspection on 10 October 1994, as well as the contractor's overall performance of work.

Please feel free to contact Larry Costich at 521-7647 should you have any questions regrading this information.

Sincerely,

ROY F. WESTON, INC.

Lawrence A. Costich, PE
Quality Assurance Technical Manager

Larry D. Vanselow, PE
Construction Manager

Attachment
cc: Michael Ruef (Department of Ecology)
Steve Fuller (WESTON)
Project File
Chron File

Roy F. Weston, Inc.
Gateway Tower, 57th Floor, Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

5 September 1995

Mr. Lee Marshall
Work Assignment Manager
U.S. Environmental Protection Agency
Region X, HW-113
1200 Sixth Avenue
Seattle, WA 98101

WO 4000-30-01-3400-08
DCN 4000-30-01-AALK

Subject: Structure Demolition Final Inspection and Closeout
ACC Remedial Action
Contract No. 68-W9-0046
Work Assignment No. 46-36-OR91

Dear Mr. Marshall:

Roy F. Weston, Inc. (WESTON®) conducted the final inspection for the structure demolition task at the American Crossarm & Conduit site on Wednesday, 30 August. All deficiencies noted during the pre-final inspection were found to have been corrected and in compliance with the contract documents. The punch list for this task noting the dates in which deficiencies were corrected is attached for your review. A Certificate of Substantial Completion was issued to the contractor, ICONCO, Inc., on 5 September.

Please feel free to contact Larry Costich at 521-7647 should you have questions regarding this information.

Sincerely,

ROY F. WESTON, INC.

for Lawrence A. Costich, PE
Quality Assurance Technical Manager

Larry D. Vanselow, PE
Construction Manager

95-1103B.LTR
LAC/djr
Attachment
cc: Michael Ruef (Department of Ecology)
Steve Fuller (WESTON)
Ewe Lim Leng (WESTON)
PMO file
Chron file

Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

17 May 1996

Mr. Dan McNair
Echeco Environmental Services, Inc.
P.O. Box 476
Blackfoot, Idaho 83221

WO 4000-30-01-3400-13
DCN 4000-30-01-AAOH

Subject: Certificate of Substantial Completion
ACC Remedial Action: Facility Soil Removal
Contract No. 68-W9-0046
Work Assignment No. 46-36-0R91

Dear Mr. McNair:

A final inspection of the facility backfill and grading portion of work at the American Crossarm and Conduit site in Chehalis, Washington, was performed on 15 May. All items noted during the pre-final inspection were found to be in conformance to the Contract Documents. A copy of the Certificate of Substantial Completion for the referenced work is enclosed. Please sign the certificate in the space provided, and return to WESTON.

Please call Larry Vanselow at 206/521-7692 should you have any questions regarding the certificate or project closeout requirements.

Sincerely,

ROY F. WESTON, INC.

Larry Vanselow/for

Lawrence A. Costich, PE
QA Technical Manager

Enclosures

cc: Lee Marshall (EPA)
Steve Fuller (WESTON)
Larry Vanselow (WESTON)
Project File
Chron File

96-481.sc

Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

19 December 1995

Mr. Dan McNair
Echeco Environmental Services, Inc.
PO Box 476
Blackfoot, Idaho 83221

WO 4000-30-01-3400-11
DCN 4000-30-01-AANF

Subject: Certificate of Substantial Completion
ACC Remedial Action: Facility Soil Removal
Contract No. 68-W9-0046
Work Assignment No. 46-36-0R91

Dear Mr. McNair:

A final inspection of the facility soil removal at the American Crossarm & Conduit site in Chehalis, Washington, was performed on 15 November. All items noted during the pre-final inspection were found to be in conformance to the Contract Documents. A copy of the Certificate of Substantial Completion for the reference work is enclosed. Please sign the certificate in the space provided, and return to WESTON.

Please call Larry Vanselow at 206/521-7692 should you have any questions regarding the certificate or project closeout requirements.

Sincerely,

ROY F. WESTON, INC.

Lawrence A. Costich, PE
QA Technical Manager

95-1563.LTR
LAC/cag
cc: Lee Marshall (EPA)
Steve Fuller (WESTON)
Larry Vanselow (WESTON)
Eric Gustafson (WESTON)
Ewe Leng Lim (WESTON)
Project file
Chron file

Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

1 November 1995

Mr. Michael Cunningham
Smith Environmental Services Corporation
PO Box 5007
Portland, Oregon 97208

WO 4000-30-01-3400-04
DCN 4000-30-01-AAMI

Subject: Certificate of Substantial Completion
ACC Remedial Action: Residential Soil Removal
Subcontract #R-0699-G6

Dear Mr. Cunningham:

A final inspection of the residential soil removal at the American Crossarm & Conduit site in Chehalis, Washington, was performed on 31 October 1995. All items not in conformance with the Contract Documents have been noted on the attached punch list. A copy of the Certificate of Substantial Completion for the referenced work has also been furnished. Please sign the certificate in the space provided and return with the Application for Final Payment. Failure to return this certificate may result in a delayed payment.

Final project closeout is contingent on satisfactory acceptance of all outstanding work, record documents, and closeout submittals. Please call Larry Vanselow at (206) 521-7692 should you have any questions regarding this matter.

Sincerely,

ROY F. WESTON, INC.

Lawrence A. Costich, PE
QA Technical Manager

95-1347.LTR
Enclosure
cc: Lee Marshall (EPA)
Steve Fuller (WESTON)
Larry Vanselow (WESTON)
Eric Gustafson (WESTON)
Ewe Leng Lim (WESTON)
Project file
Chron file

File

Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

1 November 1995

Dan McNair
Echeco Environmental Services, Inc.
PO Box 476
Blackfoot, ID 83221

WO 4000-30-01-3400-04
DCN 4000-30-01-AAMJ

Subject: Certificate of Substantial Completion
ACC Remedial Action: Tank/Pipe Removal

Dear Mr. Cunningham:

A final inspection of the tank/pipe removal at the American Crossarm & Conduit site in Chehalis, Washington, was performed on 31 October. All items not in conformance with the Contract Documents have been noted on the attached punch list. A copy of the Certificate of Substantial Completion for the referenced work has also been furnished. Please sign the certificate in the space provided and return with the application for final payment. Failure to return the certificate may result in a delayed payment.

Final project closeout is contingent on satisfactory acceptance of all outstanding work, record documents and closeout submittals. Please call Larry Vanselow at 206/521-7692 should you have any questions regarding this matter.

Sincerely,

ROY F. WESTON, INC.

Lawrence A. Costich, PE
QA Technical Manager

95-1350.LTR
Enclosure
LAC/cag
cc: Lee Marshall (EPA)
Steve Fuller (WESTON)
Larry Vanselow (WESTON)
Eric Gustafson (WESTON)
Ewe Leng Lim (WESTON)
Project File
Chron File

Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

19 December 1995

Mr. Steve White
Chemical Waste Management, Inc.
1120 Andover Park East
Tukwila, Washington 98188

WO 4000-30-01-3400-20
DCN 4000-30-01-AANE

Subject: Certificate of Substantial Completion
ACC Reme dial Action: Transportation and Disposal
Contract No. 68-W9-0046
Work Assignment No. 46-36-0R91

Dear Mr. White:

A final inspection of the soil transportation and disposal effort at the American Crossarm & Conduit site in Chehalis, Washington, was performed on 21 November. All items noted during the pre-final inspection were found to be in conformance to the Contract Documents. A copy of the Certificate of Substantial Completion for the reference work is enclosed. Please sign the certificate in the space provided, and return to WESTON.

Please call Larry Vanselow at 206/521-7692 should you have any questions regarding the certificate or project closeout requirements.

Sincerely,

ROY F. WESTON, INC.

Lawrence A. Costich, PE
QA Technical Manager

95-1564
Enclosure
LAC/cag
cc: Lee Marshall (EPA)
Steve Fuller (WESTON)
Larry Vanselow (WESTON)
Eric Gustafson (WESTON)
Ewe Leng Lim (WESTON)
Project file
Chron file

Roy F. Weston, Inc.
Gateway Tower, 57th Floor, Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

28 April 1995

Mr. Lee Marshall
U.S. EPA, Region 10
1200 Sixth Avenue
Seattle, WA 98101

WO No: 04000-030-001-3400-01/07
DCN 4000-030-001-_AAHJ_

Subject: ACC Remedial Action
General Support Facility / Debris Removal
Final Inspection and Closeout
Contract No. 68-w9-0046
Work Assignment No. 46-27-0N91

Dear Mr. Marshall:

Roy F. Weston, Inc. (WESTON) completed the final inspection on the work done by the contractor E.P. Johnson Inc. for the General Facilities Support area. The final inspection was conducted on Thursday, 27 April 1995. The following people were in attendance: Eric Gustafson, WESTON; Ewe Leng Lim, WESTON; Jim Swayze, EPJ; Jim Harrison, EPJ.

The inspection included a visual assessment of the ACC General Support Facilities site in accordance with the Inspection Punch List noted during the pre-final inspection. All items in this punch list with the exception of items #7 and #9 were found to have been corrected and in compliance with contract documents. The attached punch list of deficiences indicates the dates which deficiences were corrected or will be corected.

Please feel free to contact Larry Costich at 206-521-7647 should you have any questions regarding this information.

Sincerely,
ROY F. WESTON, INC.

for Lawarence A. Costich, PE
Quality Assurance Technical Manager

Attachment
cc: Michael Ruef (Dept. of Ecology)
Steve Fuller (WESTON)
Larry D. Vanselow, PE
Construction Manager

Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

19 December 1995

Mr. Pat Anderson
GELCO Services, Inc.
1705 Salem Industries Drive NE
Salem, Oregon 97303

WO 4000-30-01-3400-06
DCN 4000-30-01-AAND

Subject: Certificate of Substantial Completion
ACC Remedial Action: Storm Drain Relining
Contract No. 68-W9-0046
Work Assignment No. 46-36-0R91

Dear Mr. Anderson:

A final inspection of the storm drain relining at the American Crossarm & Conduit site in Chehalis, Washington, was performed on 15 November. All items noted during the pre-final inspection were found to be in conformance to the Contract Documents. A copy of the Certificate of Substantial Completion for the reference work has been enclosed. Please sign the certificate in the space provided, and return to WESTON.

Please call Larry Vanselow at 206/521-7692 should you have any questions regarding this certificate.

Sincerely,

ROY F. WESTON, INC.

Lawrence A. Costich, PE
QA Technical Manager

95-1561.LTR
Enclosure
LAC/cag
cc: Lee Marshall (EPA)
Steve Fuller (WESTON)
Larry Vanselow (WESTON)
Eric Gustafson (WESTON)
Ewe Leng Lim (WESTON)
Project File
Chron File

APPENDIX C

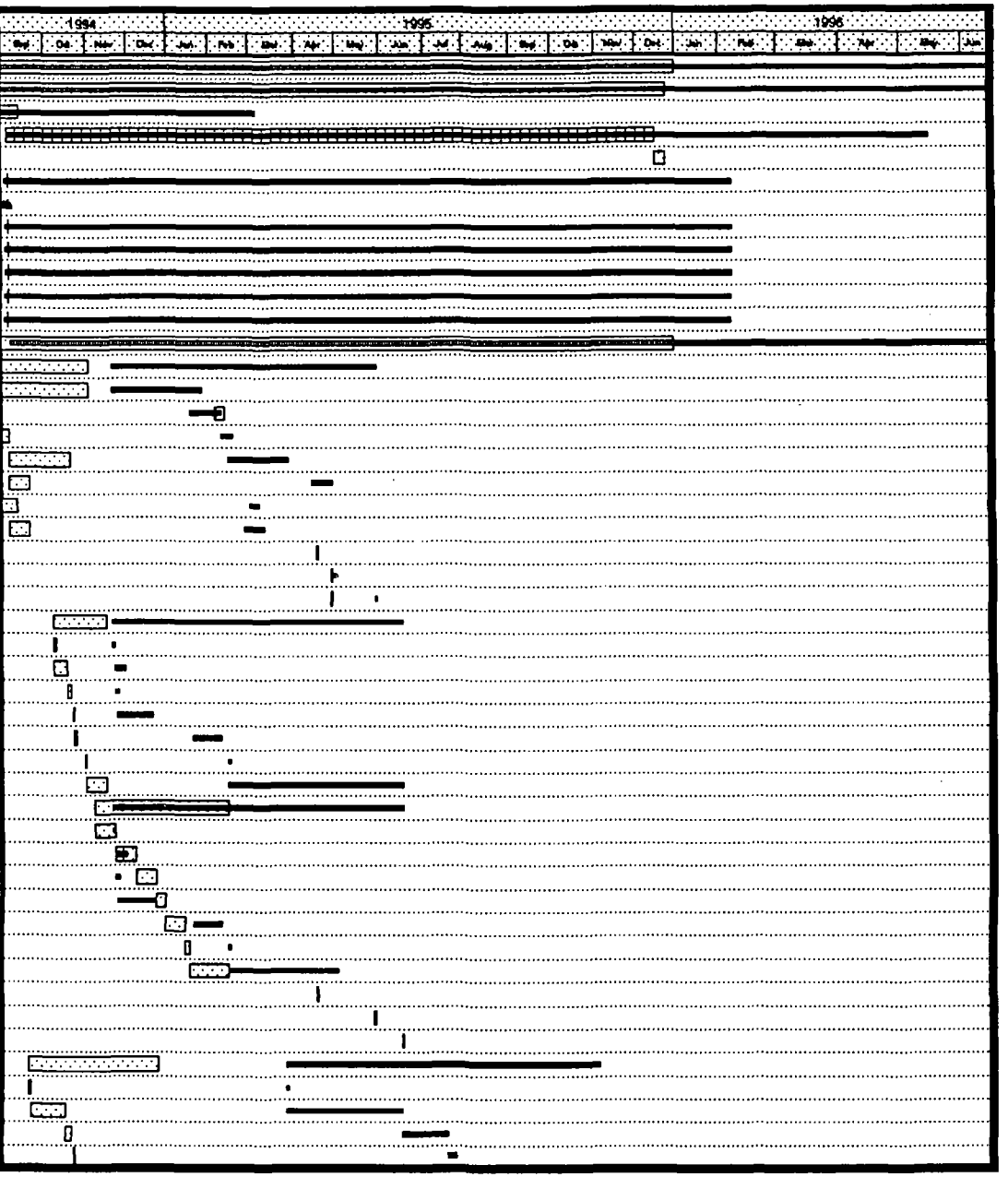
DESIGN AND CONSTRUCTION PHASING

American Crossarm & Conduit

Remedial Action

#4000-030-001-

Task No.	Task Name	Start Date	Durtn (Days)	End Date
	REMEDIAL ACTION	15-Aug-94	597.2	16-Sep-96
1000	PROJECT PLANNING/MANAGEMENT	15-Aug-94	597.2	16-Sep-96
1100	Initial Planning/WP Developmnt	15-Aug-94	140	6-Mar-95
1200	Ongoing Project Management	7-Sep-94	456	15-May-96
1300	Work Assignment Closeout	14-Jun-96	94	16-Sep-96
2000	COMMUNITY RELATIONS	6-Sep-94	361	7-Feb-96
2000-01	CRP (In-Active)	6-Sep-94	0	6-Sep-94
2000-02	Fact Sheets	6-Sep-94	361	7-Feb-96
2000-03	Public Meetings	6-Sep-94	361	7-Feb-96
2000-04	Interagency Coordination	6-Sep-94	361	7-Feb-96
2000-06	On-Site/On-Call CR	6-Sep-94	361	7-Feb-96
2000-05	Access Agreements	6-Sep-94	361	7-Feb-96
3400	CONSTRUCTION MANAGEMENT	9-Sep-94	493	21-Jun-96
3400-01	General Facility Support	18-Nov-94	132	29-May-95
	Submit RFP to Contractors	18-Nov-94	45	26-Jan-95
	Receive EPA's Concurrance	19-Jan-95	15	8-Feb-95
	Mobilization	9-Feb-95	6	16-Feb-95
	Support Area Preparation	15-Feb-95	30	28-Mar-95
	Utility Hookups	14-Apr-95	10	27-Apr-95
	Background Air Monitoring	2-Mar-95	5	8-Mar-95
	Install Decon Facilities	27-Feb-95	10	10-Mar-95
	Pre-final Inspection	18-Apr-95	1	18-Apr-95
	Substantial Completion	1-May-95	1	1-May-95
	Final Inspection	29-May-95	1	29-May-95
3400-03	Drummed Liquid Removal	18-Nov-94	145	16-Jun-95
	Submit RFP to Contractors	18-Nov-94	1	18-Nov-94
	Receive Contractors Response	21-Nov-94	5	29-Nov-94
	Evaluate Contractors Proposals	21-Nov-94	2	22-Nov-94
	Receive EPA's Concurrance	22-Nov-94	18	19-Dec-94
	Award Contract	20-Jan-95	14	8-Feb-95
	Site Mobilization	15-Feb-95	1	15-Feb-95
	Drummed Liquid Removal	15-Feb-95	87	16-Jun-95
3400-04	Drummed IDW Solids Disposal	18-Nov-94	145	16-Jun-95
	Submit RFP to Contractors	18-Nov-94	1	18-Nov-94
	Receive Contractors Response	21-Nov-94	5	29-Nov-94
	Evaluate Contractors Proposal	21-Nov-94	2	22-Nov-94
	Receive EPA's Concurrance	22-Nov-94	18	19-Dec-94
	Award Contract	20-Jan-95	14	8-Feb-95
	Site Mobilization	15-Feb-95	1	15-Feb-95
	Dispose IDW Solids on Site	15-Feb-95	55	2-May-95
	Pre-final Inspection	18-Apr-95	1	18-Apr-95
	Final Inspection	26-May-95	1	26-May-95
	Closeout Report	16-Jun-95	1	16-Jun-95
3400-05	Lagoon Restoration	28-Mar-95	154	2-Nov-95
	Submit RFP to Contractors	28-Mar-95	1	28-Mar-95
	Receive Contractor's Response	28-Mar-95	57	15-Jun-95
	Evaluate Contractors Proposals	16-Jun-95	23	20-Jul-95
	Receive EPAs Concurrance	21-Jul-95	4	26-Jul-95



Baseline | Actual | Milestone

14-Jun-96

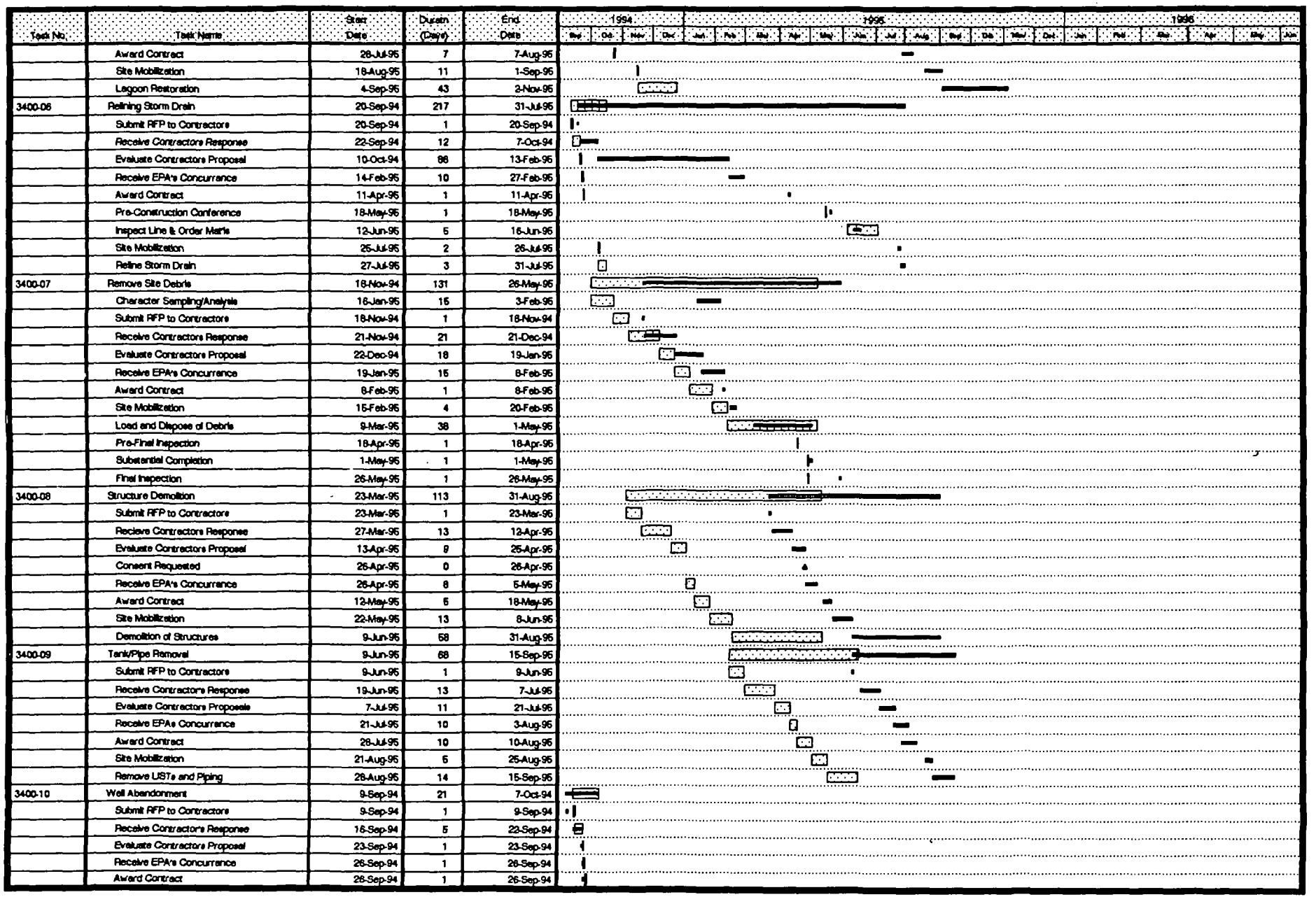
ACCBASE3.5T0

American Crossarm & Conduit

Remedial Action

#4000-030-001-

Task No.	Task Name	Start Date	Durtn (Days)	End Date
	Award Contract	26-Jul-95	7	7-Aug-95
	Site Mobilization	18-Aug-95	11	1-Sep-95
	Lagoon Restoration	4-Sep-95	43	2-Nov-95
3400-06	Relining Storm Drain	20-Sep-94	217	31-Jul-95
	Submit RFP to Contractors	20-Sep-94	1	20-Sep-94
	Receive Contractors Response	22-Sep-94	12	7-Oct-94
	Evaluate Contractors Proposal	10-Oct-94	86	13-Feb-95
	Receive EPA's Concurrance	14-Feb-95	10	27-Feb-95
	Award Contract	11-Apr-95	1	11-Apr-95
	Pre-Construction Conference	18-May-95	1	18-May-95
	Inspect Line & Order Mat'ls	12-Jun-95	5	16-Jun-95
	Site Mobilization	25-Jul-95	2	26-Jul-95
	Reline Storm Drain	27-Jul-95	3	31-Jul-95
3400-07	Remove Site Debris	18-Nov-94	131	26-May-95
	Character Sampling/Analysis	16-Jan-95	15	3-Feb-95
	Submit RFP to Contractors	18-Nov-94	1	18-Nov-94
	Receive Contractors Response	21-Nov-94	21	21-Dec-94
	Evaluate Contractors Proposal	22-Dec-94	18	19-Jan-95
	Receive EPA's Concurrance	19-Jan-95	15	8-Feb-95
	Award Contract	8-Feb-95	1	8-Feb-95
	Site Mobilization	15-Feb-95	4	20-Feb-95
	Load and Dispose of Debris	9-Mar-95	38	1-May-95
	Pre-Final Inspection	18-Apr-95	1	18-Apr-95
	Substantial Completion	1-May-95	1	1-May-95
	Final Inspection	26-May-95	1	26-May-95
3400-08	Structure Demolition	23-Mar-95	113	31-Aug-95
	Submit RFP to Contractors	23-Mar-95	1	23-Mar-95
	Recieve Contractors Response	27-Mar-95	13	12-Apr-95
	Evaluate Contractors Proposal	13-Apr-95	9	25-Apr-95
	Consent Requested	26-Apr-95	0	26-Apr-95
	Receive EPA's Concurrance	26-Apr-95	8	5-May-95
	Award Contract	12-May-95	5	18-May-95
	Site Mobilization	22-May-95	13	8-Jun-95
	Demolition of Structures	9-Jun-95	58	31-Aug-95
3400-09	Tank/Pipe Removal	9-Jun-95	68	15-Sep-95
	Submit RFP to Contractors	9-Jun-95	1	9-Jun-95
	Receive Contractors Response	19-Jun-95	13	7-Jul-95
	Evaluate Contractors Proposals	7-Jul-95	11	21-Jul-95
	Receive EPAs Concurrance	21-Jul-95	10	3-Aug-95
	Award Contract	26-Jul-95	10	10-Aug-95
	Site Mobilization	21-Aug-95	5	25-Aug-95
	Remove USTs and Piping	28-Aug-95	14	15-Sep-95
3400-10	Well Abandonment	9-Sep-94	21	7-Oct-94
	Submit RFP to Contractors	9-Sep-94	1	9-Sep-94
	Receive Contractors Response	16-Sep-94	5	22-Sep-94
	Evaluate Contractors Proposal	23-Sep-94	1	23-Sep-94
	Receive EPA's Concurrance	26-Sep-94	1	26-Sep-94
	Award Contract	26-Sep-94	1	26-Sep-94



Baseline Actual Milestone

14-Jun-96

ACCBASE3.5T0

American Crossarm & Conduit

Remedial Action

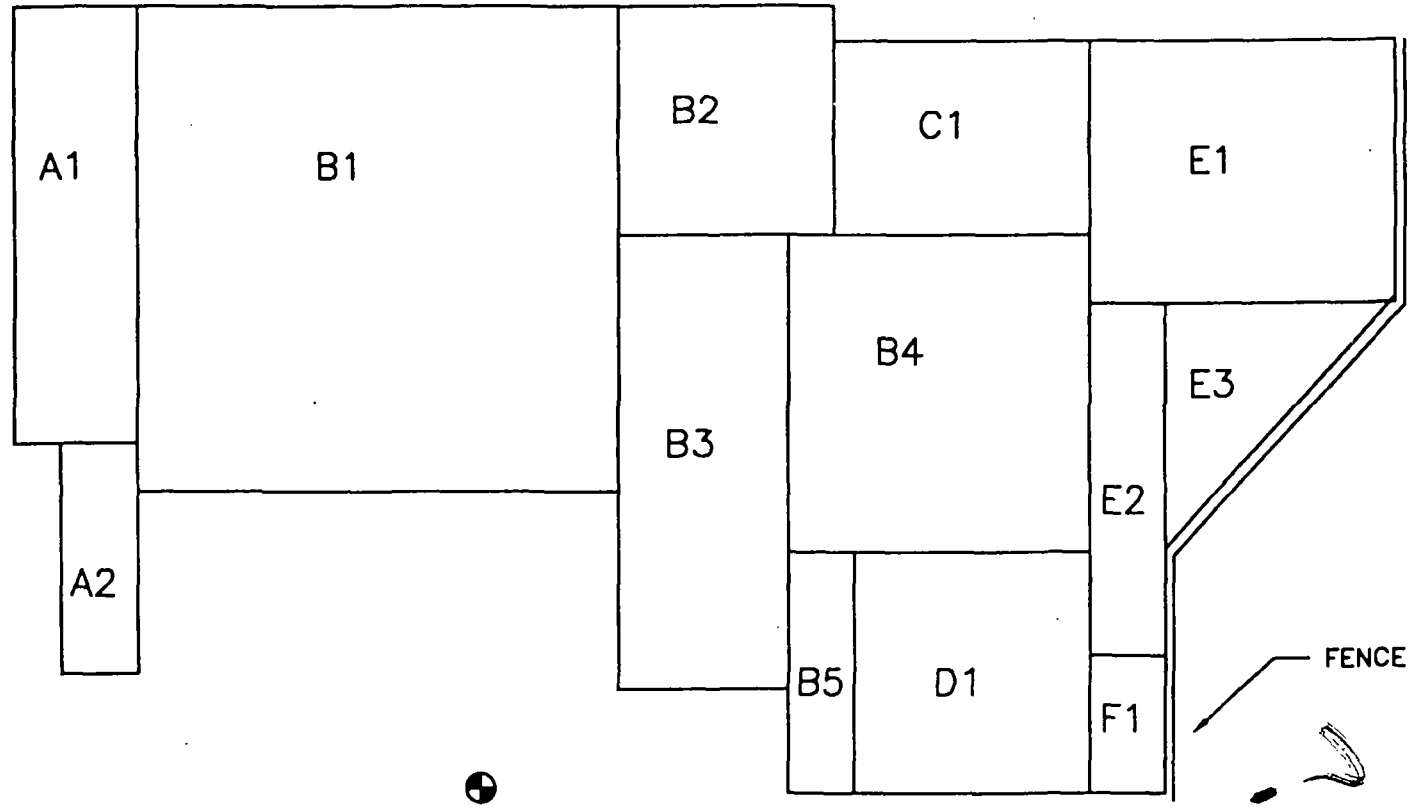
#4000-030-001-

Task No.	Task Name	Start Date	Durtn (Days)	End Date
	Site Mobilization	26-Sep-94	1	26-Sep-94
	Abandon Wells	29-Sep-94	7	7-Oct-94
3400-11	Facility Soil Removal	9-Jun-95	114	20-Nov-95
	Submit RFP to Contractors	9-Jun-95	1	9-Jun-95
	Receive Contractor's Response	19-Jun-95	13	7-Jul-95
	Evaluate Contractor's Proposal	7-Jul-95	11	21-Jul-95
	Receive EPA's Concurrance	21-Jul-95	10	3-Aug-95
	Award Contract	28-Jul-95	10	10-Aug-95
	Site Mobilization	11-Aug-95	10	24-Aug-95
	Excavate & Remove Soil	25-Aug-95	61	20-Nov-95
3400-12	Resident Soil/Removal/Backfill	30-Jun-95	86	31-Oct-95
	Submit RFP to Contractor	30-Jun-95	1	30-Jun-95
	Receive Contractor's Response	10-Jul-95	15	28-Jul-95
	Evaluate Contractor's Proposal	31-Jul-95	5	4-Aug-95
	Receive EPA's Concurrance	7-Aug-95	5	11-Aug-95
	Award Contract	14-Aug-95	10	25-Aug-95
	Site Mobilization	28-Aug-95	2	29-Aug-95
	Remove Soil/Restore	30-Aug-95	44	31-Oct-95
3400-13	Facility Backfill/Grading	3-Jan-95	378	14-May-96
	Prepare 30% Design	10-Apr-95	15	28-Apr-95
	Internal Review Process	28-Apr-95	9	10-May-95
	Submit 30% to EPA for Review	15-May-95	1	15-May-95
	Preparation of 90% Design	22-May-95	19	16-Jun-95
	Submit 90% to EPA for Review	19-Jun-95	1	19-Jun-95
	Incorporate Cmts/Final Review	28-Jul-95	5	3-Aug-95
	100% Complete	29-Jun-95	1	30-Jun-95
	Submit RFP to Contractors	3-Oct-95	2	4-Oct-95
	Contractors Response	12-Oct-95	22	10-Nov-95
	Evaluate Proposals	10-Nov-95	17	6-Dec-95
	Receive EPA's Concurrance	6-Dec-95	6	15-Dec-95
	Award Contract	15-Dec-95	6	22-Dec-95
	Site Mobilization	3-Jan-95	4	6-Jan-95
	Backfill/Grade/Vegetate	6-Jan-96	122	14-May-96
3400-20	Transportation & Disposal(T&D)	21-Apr-95	147	17-Nov-95
	Submit 100% to EPA for Review	21-Apr-95	1	21-Apr-95
	Incorporate Cmts/Final Review	24-Apr-95	2	25-Apr-95
	Invitation to Bid/Pre-bid Conf	17-May-95	17	9-Jun-95
	Receive EPA's Concurrance	21-Jul-95	4	26-Jul-95
	Award Contract	28-Jul-95	15	17-Aug-95
	Site Mobilization	24-Aug-95	13	12-Sep-95
	Transportation & Disposal	25-Aug-95	60	17-Nov-95
3400-14	Site Demobilization	14-May-96	39	21-Jun-96
	Punch List	14-May-96	1	14-May-96
	Demob	14-May-96	4	17-May-96
5000	O & M Plan	21-Jun-96	1	21-Jun-96
7000	CCR	21-Jun-96	1	21-Jun-96
6000	Final Inspection	15-May-96	1	15-May-96

Baseline | Actual | Milestone

14-Jun-96

ACCBASE3.5T0



AREA	L (N-S)	W (E-W)	D
A1	48	171	6
A2	29	89	6
B1	190	180	6
B2	84	90	2
B3	66	176	3.5
B4	118	121	2
B5	26	95	2
C1	100	76	10
D1	92	95	10
E1	120	102	5
E2	30	137	5
E3	90	95	5
F1	30	53	7

SITE EXCAVATION PLAN
AS-BUILT

WESTON
MANAGERS DESIGNERS/CONSULTANTS

NOTES

1. EXCAVATION DEPTH (D) WAS MEASURED FROM ORIGINAL GROUND SURFACE
2. DIMENSIONS IN FEET

Excavation Depths

Figure
3-2

96-558W.FIG

Comparison of background data to the residential lot data using a two-sided t-test found no significant difference (a = 0.05). This indicates that the depth of excavation was adequate to remove any residential risk associated with the ACC site above background levels.

Excavation, removal and disposal of the residential soil on the ACC facility and capping was completed to protect human health and the environment such that the residual cancer risk would not exceed 1 x 10^{-5}. Soil excavation was performed on the most highly contaminated surface and subsurface soil as determined by sampling performed during the RI. The approach taken was to excavate to the design depths or until the clean native clay (unweathered or visually free from stain or oxidation) was observed, whichever came first.

Excavated soil from the ACC facility was transported to a Resource Conservation and Recovery Act (RCRA) approved off-site hazardous waste disposal facility operated by Chemical Waste Management in Arlington, Oregon. The areas excavated and depths of excavation are provided in Figure 3-2. In general, the bottom of the excavations in the treatment and kiln areas were visually observed to be a clean light brown clay. The area behind the kilns were excavated to depth at which point a clean blue clay was encountered. The light brown clay and blue clay visually signified that the stained contaminated soil had been removed down to clean soil.

The excavation depths were determined for specific areas on the ACC facility. Those objectives were developed through an alternative optimization evaluation performed in the feasibility study. Based on this evaluation, 70% of the total contamination could be removed by excavating 25% of the soil. This approach optimizes the balance between contamination removal, treatment, and cost, consistent with WAC 173-340-360(5)(d).

Human health and the environment are protected since the majority of the contaminated soil on the ACC facility was removed and the remaining low level residual contamination was isolated by capping the site with clean soil and a vegetated cover [WAC 173-340-740(6)(d)]. The remedy also includes monitoring and institutional controls to ensure protectiveness (WAC 173-340-410 and WAC 173-340-440).

After demolition of the mill structures, a small area of surface soil was found that had creosote contamination associated with leaks and drips from a former creosote drip tank located in the former mill. The area was approximately 20 feet wide by 20 feet long and was located under the northwest corner of the mill. The soil was excavated from this area and segregated from the PCP contaminated soil. This soil was manifested and disposed by Chemical Waste Management as a different wastestream.

Wastewater generated from decontamination and other on-site activities was either used for dust suppression on the contaminated soil or was filtered to meet City of Chehalis POTW permit requirements and discharged to the public-owned treatment works (POTW). Most of the decontamination water was used for dust suppression.

Table 3-3 shows the PCP and PAH air sampling results (excursions) during project work. PM_{10} excursions occurred periodically. Dust was controlled on-site throughout the project by the addition of water. However, some excursions may have been the result of off-site unrelated activity (i.e., vehicle traffic, locomotive exhaust, etc.). A complete listing of the PM_{10} data as well as the PCP and PAH data was provided in the monthly air monitoring reports (WESTON, 1995: Monthly Air Monitoring Reports, American Crossarm & Conduit Remedial Action, March 1995 through November 1995).

Table 3-3—Air Sampling Results (Excursions)

Date	Concentrations (ug/m3) [a]	
	PCP	PAH
28 March 1995	0.055 (Sta 2) 0.102 (Sta 3)	-
29 March 1995	0.053 (Sta 1) 0.087 (Sta 2) 0.060 (Sta 3)	0.0012 (Sta 4: Dibenz(a,h)anthracene)
14 August 1995	0.084 (Sta 2)	-
15 August 1995	0.099 (Sta 2)	-
13 September 1995	0.138 (Sta 2) 0.103 (Sta 3)	-
14 September 1995	0.128 (Sta 2)	-
27 September 1995	-	0.0013 (Sta 1: Benzo(a)pyrene)
28 September 1995	0.074 (Sta 1)	0.0022 (Sta 1: Benzo(a)pyrene)
9 October 1995	0.069 (Sta 1)	-
1 November 1995	0.054 (Sta 2)	0.0024 (Sta 1: Benzo(a)pyrene) 0.0026 (Sta 2: Benzo(a)pyrene) 0.0026 (Sta 3: Benzo(a)pyrene)
2 November 1995	0.067 (Sta 2) 0.100 (Sta 3)	0.0022 (Sta 1: Benzo(a)pyrene) 0.0027 (Sta 2: Benzo(a)pyrene) 0.0026 (Sta 3: Benzo(a)pyrene)

[a] excursion concentrations (station number)

- indicates no excursion

After the final soil cover was placed and the area hydroseeded, another round of air monitoring samples was taken on 23, 25 and 26 April 1996, to determine post-remediation air quality. This air monitoring found no detectable concentrations of PCP or PAHs listed in Table 3-2.

3.1.6 Facility Backfill, Cover, and Grading

As specified in the ROD, ash from incineration of contaminated materials (soil, wood, debris and other miscellaneous items contaminated from flooding in 1988 and 1989) were consolidated with the Chehalis Avenue residential soil. This ash was determined by Ecology and EPA to be noncontaminated. The consolidated soil and ash were used to backfill excavations under the treatment works and surface impoundment.

The ROD also required the entire facility to be covered with clean topsoil, properly sloped and contoured and revegetated with grass. Covering the entire facility with clean soil and revegetation protects human health by eliminating soil ingestion, dermal contact, and dust inhalation pathways.

Surveys and base maps were generated by the subcontractor to determine initial site conditions. Subsequent subgrade and final grade surveys were performed to ensure the site met the design grades as necessary. Some adjustments of final grade were made in the field based on constructability issues (see Section 4.11).

Fill and topsoil were tested periodically to ensure these products met specifications. Trees, fence, and vegetative cover submittals were approved prior to installation.

3.1.7 Institutional Controls Implementation

The ROD required the implementation of institutional controls to restrict access to the entire facility. Deed notices and restrictions will be imposed to limit future use of the property, ensure that the cover and contamination below are not disturbed, and that actions are consistent with the remedy objectives. Deed and access restriction assure that the potential threats of the area are known and that the inadvertent excavation of the remaining low-level contaminated soil is avoided until it is eliminated through natural attenuation.

3.1.8 Site Debris Removal

Several piles of wood debris existed on-site. This wood had to be removed prior to demolition and soil excavation. Ten samples of wood from the various piles was collected and analyzed for PCP TCLP to determine if it was a hazardous waste. The TCLP criteria is 100 mg/L. Wood exceeding this value would require disposal in a hazardous waste landfill. Table 3-4 shows the results of the analysis. Based on these results, it was determined that the wood debris was not hazardous waste and could be disposed at a construction debris landfill. The wood was removed to within 6 inches of the ground and hauled to the Stafford Creek Landfill for disposal. Wood within 6 inches of the ground was left on site due to its potential for contamination as a result of contacting the soil. This wood was incorporated into the site as fill.

Table 3-4—Wood Debris Sample Data

Sample Number	PCP TCLP Concentration (mg/L)
WD-DP-T	1.1
WD-DP-R	0.8
WD-DP-Q-J	0.13
WD-DP-F-U	0.41
WD-DP-E	0.002
WD-DP-K-L	0.001
WD-DP-M	0.002
WD-DP-N-O	0.75
WD-DP-B-C-D	0.005
WD-DP-A	0.12

3.2 IMPLEMENTATION OF CQAP

The Construction Quality Assurance Plan (CQAP) outlined specific observations and tests that would be used to monitor the methods and protocols used during the remedial activities. Quality assurance methods were developed to ensure that the activities were accomplished in accordance with the specifications, drawings, and procedures and subsequently that the project was being performed in compliance with the performance standards.

Implementation of the CQAP was obtained through:

- Formation of the Independent Quality Assurance Team (IQAT) whose members were responsible for examining the materials, procedures, and equipment used during the remedial construction, and verify that the CQAP is implemented.
- Weekly meetings between the remedial contractor, IQAT, and/or regulatory officials to review the construction activities, discuss modifications to the remedial design, and develop corrective actions as needed.
- Presence of an on-site IQAT resident observer to monitor operations, verify that acceptable quality control methods and protocols were implemented, ensure corrective actions were taken as needed.
- IQAT and EPA review of project documentation including work plans, specifications, project drawings, records of operations, and required submittals.

3.3 QUALITY ASSURANCE AND PROJECT OVERSIGHT

Project oversight was accomplished through the following:

- The hiring of a construction engineer; experienced with remedial construction at hazardous waste sites, to oversee the project and ensure the construction activities conform with the CQAP.
- The formation of the IQAT to continually track the progress of the remedial action. The IQAT team consisted of members from the remedial action design team, the remedial contractor, and staff under the on-site engineer.
- Periodic inspection by a QA engineer to review and document daily site activities of the remedial contractor and subcontractors.
- Periodic visits by EPA Region 10 personnel.

Quality assurance procedures were developed in the CQAP. The Addenda to the CQAP outlined specific procedures and QA/QC protocols necessary to achieve quality for each work assignment.

Sampling protocol was periodically observed by EPA and IQAT and was considered to be acceptable. EPA also reviewed analytical results and conducted laboratory QA audits to confirm compliance with the CQAP.

Upon completion of one phase of the work, a pre-final inspection was performed by WESTON's QA team. A punchlist of items to be completed was prepared. This list of items was completed by the subcontractor and the final inspection performed. Table 3-5 provides the dates these inspections were performed for each phase of the project.

Minimal floating product was observed in the excavations. No floating product was found in the 10 foot deep excavation under the treatment works. A small quantity of dark thick oil (< 1 gallon) was seen floating on the water in the 10-foot-deep excavation under the surface former impoundment. This oil was soaked up using oil absorbent pads. The pads were disposed off-site at the hazardous waste landfill used for soil disposal.

3.1.4 Sediment Removal

Contaminated sediment in the stormwater discharge lagoon was removed by excavation. Contaminated sediment from the stormsewer drain was removed and the stormdrain cleaned. The sediment was dewatered, blended with CKD and transported to the RCRA hazardous waste landfill operated by Chemical Waste Management in Arlington, Oregon. The sewer was relined using an *in situ* form process (see Section 4.5) in such a manner that results in no reduction of flow capacity and the lagoon contoured to provide containment capacity for the city of Chehalis stormwater discharges. Dillenbaugh Creek water contamination will be eliminated by the removal of the source of potential contamination in lagoon sediment that presented a potential risk to terrestrial and aquatic wildlife.

Wastewater generated from lagoon and sediment dewatering was specified to be treated to meet Ambient Water Quality Criteria (AWQC) and then discharged to Dillenbaugh Creek. AWQC were specified for the primary lagoon contaminants which consisted of PCP, lead, cadmium and zinc. Water quality criteria were also specified for dissolved oxygen, temperature, pH and turbidity.

Difficulties were encountered in meeting the criteria for dissolved oxygen and zinc. Creek samples were analyzed to determine background dissolved oxygen. The creek samples were found to be lower than both the criteria and the water treatment samples. The zinc concentrations in street stormwater runoff (which discharges to Dillenbaugh Creek) was also analyzed and found to be equivalent to that in the water treatment samples. As a result of these data, the criteria for zinc were relaxed to that found in stormwater discharge, and the dissolved oxygen was relaxed to that found in creek background samples.

3.1.5 Air Emissions

The performance standards for air emissions require air monitors to be set up at work area boundaries to assure ambient dust levels and contaminant concentrations did not adversely affect surrounding residents.

Dust control measures were implemented to minimize generation of fugitive dust during demolition. Water spray was used to prevent migration of dust particles from the site. Respirators were worn by personnel during activities which generated fugitive dust. Ambient air sampling was conducted for PCPs, PAHs, and PM_{10} particulate to quantify airborne levels of contaminants. Sampling was conducted in accordance with the prescribed methodologies in the Ambient Air Monitoring Plan. WESTON observed the sampler calibrations and verified sample

volume calculations. The air sampling results were all below the site specific action levels for PAHs, PCPs, and PM_{10}. This is indicative of effective dust suppression.

An ambient air monitoring program was implemented at the site to document ambient air quality prior to, during, and subsequent to remedial activities. The monitoring program accomplished this objective by identifying the most likely airborne migration directions and collecting data using real-time particulate monitors and time-integrated ambient air sampling methods. Four PUF and three PM_{10} air monitoring stations were set up around the perimeter of the site. The stations sampled the air to determine airborne concentrations of PAHs, PCPs, and inhalable particulate matter of 10 microns diameter or less (PM_{10}).

Action levels were developed for airborne concentrations of PAHs, PCPs, and PM_{10} as shown in Table 3-2. Exceedance of the action levels required implementation of dust suppression techniques. Weekly air monitoring reports were prepared by WESTON during major, excavation, structure demolition, and backfilling operations.

Table 3-2—Ambient Air Monitoring Action Levels

Concentration (m/m^3)	Action Level[1]
Benzo(a)anthracene	0.01
Benzo(a)pyrene	0.001
Benzo(b)fluoranthene	0.01
Benzo(g,h,i)perylene	0.01230
Benzo(k)fluoranthene	0.01
Chrysene	1.0
Dibenzo(a,h)anthracene	0.001
Indeno(1,2,3-cd)pyrene	0.01
Pentachlorophenol	0.052
PM_{10}	150

[1] Action levels were taken from EPA Region III "Risk Based Concentration Table," February 1995.

WESTON conducted baseline and post-remediation ambient air sampling at the ACC site. Air sampling was also completed during periods of greatest activity throughout construction. No air sampling was performed during April through July due to lack of intrusive activity. The objective of the baseline ambient air monitoring was to adequately quantify airborne concentrations of PCPs, PAHs, and PM_{10} prior to commencing intrusive site activities. The post-remedial action monitoring was designed to quantify airborne concentrations of these same contaminants upon completion of the remedial action. Air sampling completed during the work was used to monitor for off-site releases.