915119

EBASCO

REM III PROGRAM

REMEDIAL PLANNING ACTIVITIES AT SELECTED UNCONTROLLED HAZARDOUS SUBSTANCE DISPOSAL SITES

FINAL DESIGN REPORT
REMEDIAL DESIGN
WIDE BEACH DEVELOPMENT SITE
WIDE BEACH, NEW YORK
TOWN OF BRANT
ERIE COUNTY, NEW YORK

FEBRUARY 1989

VOLUME I OF II

EPA CONTRACT 68-01-7250

EBASCO SERVICES INCORPORATED

EPA WORK ASSIGNMENT NUMBER: 86-2L46
EPA CONTRACT NUMBER: 68-01-7250
EBASCO SERVICES INCORPORATED

RECEIVED
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REMEDIAL ACTION
HAZARDOUS
WASTE REMEDIATION

FINAL DESIGN REPORT
REMEDIAL DESIGN
WIDE BEACH DEVELOPMENT SITE
WIDE BEACH, NEW YORK
TOWN OF BRANT
ERIE COUNTY, NEW YORK

FEBRUARY 1989

VOLUME I OF II

NOTICE

The information in this document has been funded by the United States Environmental Protection Agency (USEPA) under the REM III Contract No. 68-01-7250 to Ebasco Services Incorporated (Ebasco). This document has been formally released by Ebasco to the USEPA. However, this document does not represent the USEPA's position or policy and has not been formally released by the USEPA.

EBASCO SERVICES INCORPORATED

160 Chubb Avenue, Lyndhurst, NJ 07071-3586, (201) 460-1900

EBASCO

February 10, 1989
RMOII-89-43

Mr. M Shaheer Alvi, P.E.
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26 Federal Plaza
New York, New York 10278

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US Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

SUBJECT: REM III PROGRAM - EPA CONTRACT NO.: 68-01-7250
WORK ASSIGNMENT NO.: 86-2L46
WIDE BEACH DEVELOPMENT SITE
REMEDIAL DESIGN
FINAL DESIGN REPORT

Gentlemen:

Ebasco Services Incorporated (Ebasco) is pleased to submit three (3) copies of the Final Design Report for the Wide Beach Development site. This submittal has been prepared under Task 8 of the Final Work Plan for Remedial Design submitted to EPA in April, 1988.

This Final Design Submittal contains the following documents:

a. Volume I - Technical Specifications (Division 1 to 3)
b. Volume II - Technical Specifications (Division 10 to 16)
c. Drawings - DWG. No. WB-01 to WB-33 - Total 38 sheets
d. Appendix A to E

This submittal incorporates comments received January 10-18, 1989, from USEPA, USACOE, and NYSDEC, on the Pre-Final (95%) Report, PCB Dechlorination System and the Pre-Final Review Meeting, January 26, 1989.

If you have any questions regarding this report, please do not hesitate to call Joe Lozada at (201) 460-6056.

Very truly yours,

Dev R Sachdev

Dev R Sachdev, PhD, P.E.
Regional Manager - Region II

cc: S Alvi - EPA, N.Y. (1 set)
H King - EPA, N.Y. (3 sets)
J Taylor - EPA, Wash., DC (1 set)
J Daly - USACOE, Kansas City, MO (10 sets + 1 reproducible)
S Iverson - USACOE, N.Y. (5 sets)
S Scharf - NYSDEC, Albany, N.Y. (3 sets)
S Stanish - NYSDOH, Albany, N.Y. (1 set)
R Fellman - ZPMO
W Mendez - ZPMO
J Porrovecchio - Lyndhurst

EPA WORK ASSIGNMENT NUMBER: 86-2L46
EPA CONTRACT NUMBER: 68-01-7250
EBASCO SERVICES INCORPORATED

FINAL DESIGN REPORT
REMEDIAL DESIGN
WIDE BEACH DEVELOPMENT SITE
WIDE BEACH, NEW YORK
TOWN OF BRANT
ERIE COUNTY, NEW YORK

VOLUME I OF II

FEBRUARY 1989

Prepared by:

J. P Lozada

J. Lozada
Site Manager
Ebasco Services Incorporated

Approved by:

Dev R. Sachdev 2/10/89

Dev Sachdev, PhD, PE
Regional Manager - Region II
Ebasco Services Incorporated

REMEDIAL WORK
WIDE BEACH SITE
TOWN OF BRANT
ERIE COUNTY, NEW YORK

BIDDING SCHEDULE

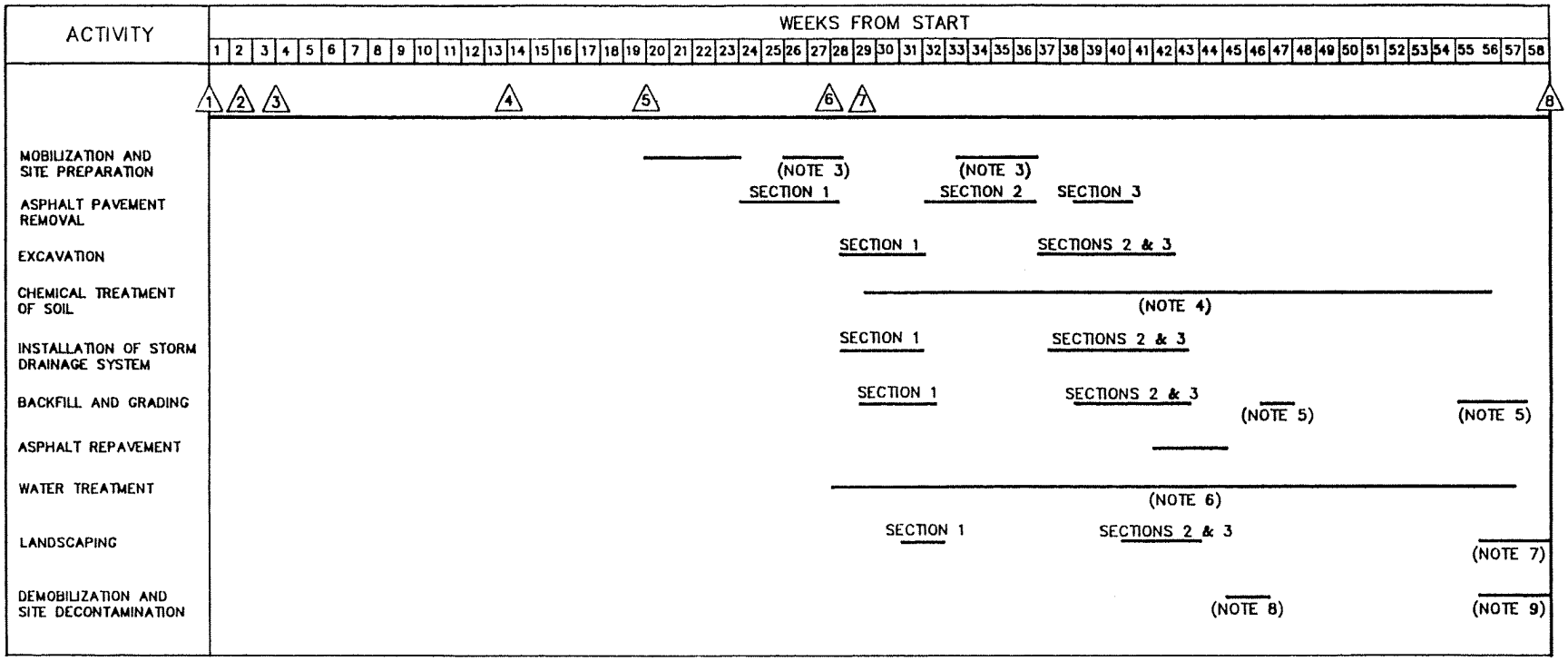
Item No.	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
1	Health and Safety	Lump Sum			$_____
2	Security and Communication	Lump Sum			$_____
3	Mobilization and Site Preparation	Lump Sum			$_____
4	Clearing and Grubbing	Acre	7	_____	$_____
5	Excavation of Asphalt Pavement				
	A. 4" Thickness	sy	12,500	_____	$_____
	B. 2" Thickness	sy	9,000	_____	$_____
6	Excavation of Contaminated Soils	cy	19,000	_____	$_____
7	Excavation of Contaminated Drainage Works	Lump Sum			$_____
8	On/Off-Site Laboratory Sampling				
	A. Collected Surface Water Runoff (Off-Site)	ea	60	_____	$_____
	B. Solid Wastes (Off-Site)	ea	100	_____	$_____
	C. On-Site Laboratory for Post-Excavation Soil, Excavated Asphalt Pavement and Misc. Materials, and Treated Soil/Aqueous Waste from PCB Dechlorination Process	week	28	_____	$_____

REMEDIAL WORK
WIDE BEACH SITE
TOWN OF BRANT
ERIE COUNTY, NEW YORK

BIDDING SCHEDULE

Item No.	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
9	Storm Drainage System	Lump Sum			$_____
10	Backfill and Grading				
	A. Using Treated Soil	cy	19,000	_____	$_____
	B. Using Soil Borrow	cy	3,500	_____	$_____
	C. Using Crushed Stone	cy	3,500	_____	$_____
11	Asphalt Repavement				
	A. 2" Binder Course	sy	11,000	_____	$_____
	B. 2" Top Course	sy	22,000	_____	$_____
12	Dewatering	Gal	300,000		$_____
13	Aqueous Waste Treatment System	Lump Sum			$_____
14	PCB Dechlorination Process	Ton	21,000	_____	$_____
15	Off-site Transportation and Disposal	Ton	1,000	_____	$_____
16	Landscaping	Lump Sum			$_____
17	Demobilization	Lump Sum			$_____
	Total of Items 1 through 17				$_____

WIDE BEACH DEVELOPMENT SITE
PROJECT SCHEDULE



PROJECT MILESTONES:

1. CONTRACT AWARD
2. PRE-CONSTRUCTION CONFERENCE
3. NOTICE TO PROCEED
4. PRE-WORK CONFERENCE
5. MOBILIZATION
6. AQUEOUS WASTE TREATMENT SYSTEM OPERATIONAL
7. PCB DECHLORINATION SYSTEM OPERATIONAL
8. COMPLETION

NOTES:

1. DURATIONS FROM NOTICE TO PROCEED TO START OF INDIVIDUAL ACTIVITIES PROVIDE FOR RESPECTIVE ENGINEERING, DESIGN, EQUIPMENT PROCUREMENT, AND THE USACE REVIEW OF SUBMITTALS WITH 30-DAY TURNAROUND.
2. FOR CONSTRUCTION SEQUENCE DESIGNATED BY SECTIONS 1, 2, AND 3, SEE DRAWING WB-21.
3. DENOTES ACTIVITIES IN PREPARING THE CONTAMINATED SOIL STOCKPILE AREA INCLUDING CLEARING AND GRUBBING; ROUGH GRADING; INSTALLING PERIMETER FENCE, LINER BASE; AND RUNOFF CONTROL.
4. DURATION OF CHEMICAL TREATMENT OF SOIL IS ESTIMATED BASED ON THE TOTAL SOIL VOLUME OF 19,000 C.Y., PROCESSING RATE OF 100 C.Y./DAY., AND A CONTINUOUS OPERATION (24 HOURS PER DAY AND 7 DAYS PER WEEK).
5. DENOTES FILLING AND GRADING OF TREATED SOIL SURPLUS IN SELECTED ON-SITE LAYDOWN AREAS.
6. DURATION OF WATER TREATMENT DEPENDS ON THE RAINFALL CONDITION DURING CONSTRUCTION.
7. DENOTES LANDSCAPING OF STOCKPILE AREAS AND AREAS USED FOR OTHER SITE FACILITIES.
8. DENOTES DEMOBILIZATION AND DECONTAMINATION RELATED TO SITE WORK.
9. DENOTES DEMOBILIZATION AND DECONTAMINATION RELATED TO SOIL TREATMENT.

DEPARTMENT OF THE ARMY
Kansas City district, Corps of Engineers
757 Federal Building
Kansas City, Missouri 64106

Specifications for Soil Excavation and Treatment
Wide Beach Development Site
Town of Brant, Erie County, New York

PART II - TECHNICAL PROVISIONS

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PART II

TECHNICAL PROVISIONS
ALL WORK INCLUDED IN DIVISIONS 1, 2, 3, 10, 11, 13, 15 & 16

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PART II

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PART II

TECHNICAL PROVISIONS
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DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01000
SPECIFICATION OUTLINE

PART 1 - GENERAL

1.1 Summary

1.1.1 The purpose of this Section is to describe the organization and format to which the Specification has been prepared. This Section is intended as an aid to facilitate the use of the Specification.

1.2 Specification Format

1.2.1 The Specification has been prepared in accordance with Construction Specifications Institute (CSI) Format.

1.2.2 The CSI format is subdivided into 16 major divisions. Divisions form the framework of this Specification and contain the technical requirements for the category of work within each Division. Divisions which are not applicable to this Specification are not used.

1.2.3 Sections within each division describe the specific requirements for different units of work based on trade or type of work. Sections within divisions are arranged in a five-digit numerical order in which the first two digits represent the division number. Page numbering is subordinate to section numbering.

1.2.4 Sections are sub-divided into three distinct groupings of related information as follows:

Part 1 - GENERAL: defines the administrative and procedural requirements unique to the section.

Part 2 - PRODUCTS: Details the quality and features of items required for the project.

Part 3 - EXECUTION: Details the incorporation of the products into the project.

Most sections contain all three sub-divisions, however, they are included only where needed. Within each part, paragraphs and subparagraphs are designated by a number-period system in which the first numeral represents the part number (e.g., 1.1, 1.1.1, 1.2, etc. for Part 1).

1.2.5 Many sections do not stand alone and are related to other portions of the contract documents. Some sections are specific extensions of, or are governed by the general requirements of

Division 1. Requirements of the Contract Documents shall apply as a whole, regardless of any overlapping of various portions of the Specification.

1.2.6 This Specification has been written in the imperative mood and, in some cases, in a streamlined form. The imperative language is directed to the Contractor, unless specifically noted otherwise.

1.3. Clarifications

1. 3.1 Most sections begin with a paragraph in Part 1 entitled "Summary" or "Scope of Work". These paragraphs provide a brief description of the work specified in that Section. These descriptions are not intended to be all-inclusive, but provide a brief clarification of the particular subject matter in the Specification.

1.3.2 Some technical sections contain a paragraph entitled "Related Sections" or "Related Work Specified Elsewhere". This paragraph lists some of the related work specified in other sections of the Contract Documents. These listings are not intended to be all-inclusive. They are presented as a means of aiding the Contractor in locating other Specification Sections containing work that has a close relationship with the work specified in that Section. The requirements of the Contract Documents, including all specifications, shall apply as a whole.

1.3.3 Reference standards are incorporated into the Specifications by reference number, title or other designations. The provisions of these standards become a part of the Specification in their entirety. When there is a conflict or discrepancy between a reference standard and the Specification or with another reference standard, the more stringent requirements shall apply.

1.3.4 In the event of a discrepancy between a drawing and the Specification, the Specification shall govern.

1.3.5 No typographical or other error on drawings shall relieve the Contractor from his responsibility to perform the intent of this Contract.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

SECTION 01005
DEFINITIONS, CODES AND ABBREVIATIONS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section lists and defines items, abbreviations, codes, terms, and symbols used, and may be used, in the Contract Documents.

1.1.2 Abbreviations may be similar but have different meanings. If clarification is required, the Contracting Officer should be consulted.

1.2 DEFINITIONS

1.2.1 As-Built Drawings

The Contract drawings, including any supplementary drawings prepared by the Contractor, reflecting the final as-built condition of the site.

1.2.2 Contract Drawings

Drawings which are issued for construction and any revision thereafter.

1.2.3 Exclusion Zone

The areas which contain, or are suspected of containing contaminated materials. All personnel entering the Exclusion Zone must wear prescribed levels of protective gear. An entry and exit check point must be established at the periphery of the Exclusion Zone to regulate the flow of personnel and equipment. The Exclusion Zone includes the area within the contaminated soil excavation limits, and the contaminated soil stockpile and staging area.

1.2.4 Contamination Reduction Zone

A buffer zone between the Exclusion Zone and the Support Zone to reduce the probability of contaminating the clean zone. The Contamination Reduction Zone contains personnel and equipment decontamination stations, and an area for the PCB-Dechlorination System and the Aqueous Waste Treatment System.

1.2.5 Support Zone

The area which is not contaminated and used to install the temporary site facilities and utilities, to stockpile clean materials, and to stage clean equipment.

1.2.6 Schedule of Values

A breakdown of an activity schedule and the associated value of services provided to allow approval of periodic progress payments.

1.2.7 TSD Facility(ies)

A treatment, storage, and disposal facility(ies) permitted pursuant to Title C of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended.

1.3 CODES AND STANDARDS

AASHO or AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AIHA	American Industrial Hygiene Association
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute
AMCA	Air Moving and Conditioning Association, Inc.
ANSI	American National Standards Institute (formerly ASA)
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CIPRA	Cast Iron Pipe Research Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
EPA	United States Environmental Protection Agency
FM	Factory Mutual Laboratories
NBS	National Bureau of Standards
NEIC	National Enforcement Investigation Center
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NFPA	National Fire Protection Association
NSC	National Safety Council
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
OSHA	United States Occupational Safety and Health Administration
SSPC	Steel Structures Painting Council
UL	Underwriters Laboratories, Inc.
USACE	United States Army Corps of Engineers
WPCF	Water Pollution Control Federation

1.4 TERMS

Government EPA	U.S. Environmental Protection Agency.
Contracting Office (CO)	Any person assigned such responsibility and authority by the United States Army Corps of Engineers (USACE) as specified in the Contract documents.
Contract	All project work covered by the Contract documents including General Conditions, Special Clauses, Technical Specifications (Division 1 through 16 as applicable) and all issued drawings.
Contracting Officer Representative (COR)	Representative of the Contracting Officer
State	State of New York

1.5 ABBREVIATIONS:

AWG	American or Brown and Sharpe Wire Gage
APR	Air Purifying Respirator
aux.	auxiliary
B.V.	butterfly valve
BZ	Breathing Zone
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CGI	Combustible Gas Indicator
CIP	cast iron pipe
CISP	cast iron soil pipe
CPR	Cardio-Pulmonary Resuscitation
CLP	Contract Laboratory Program
cu.	cubic
C.F.	cubic feet
CFS or cfs	cubic feet per second
CFM	cubic feet per minute
C.Y.	cubic yards
DL	dead load
DM	Dust Monitor
°C	degrees Centigrade
°F	degrees Fahrenheit
Dwg.	drawing
eff.	efficiency
el. or elev.	elevation
EPA	United States Environmental Protection Agency
FID	Flame Ionization Detector

ft.	feet
FOP	Field Operations Plan
fps	feet per second
gal.	gallons
GPD or gpd	gallons per day
GPM or gpm	gallons per minute
galv.	galvanized
GC/MS	Gas Chromatograph/Mass Spectrometry
HDPE	High Density Polyethylene
HP	horsepower
HASP	Health and Safety Plan
HSO	Health and Safety Officer
I.D.	inside diameter
inv.	invert
KIC	key indicator compound
L	length
LEL	Lower Explosion Limit
lin.	linear
L.F.	linear feet
LL	live load
MH	manhole
max.	maximum
m.	meters
mg	milligrams
mg/l	milligrams per liter
mm	millimeters
MGD or mgd	million gallons per day
min.	minutes or minimum
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NPL	National Priorities List
N.T.S.	not to scale
NYCRR	New York Code of Rules and Regulations
OVA	Organic Vapor Analyzer
O.D.	outside diameter
ppm	parts per million
%	percent
PCBs	polychlorinated Biphenyls
PCE	perchloroethylene
PID	photoionization Detector
PVC	polyvinyl chloride or polyvinyl chloride pipe
lbs.	pounds
PPD	pounds per day
plf	pounds per linear foot
psi, psig	pounds per square inch gauge (above atmospheric pressure
psf	pounds per square foot
POHC	principal organic hazardous constituent
POHC	principal organic hazardous constituent
RAM	real-time Air Monitoring

red.	reducer
RCRA	Resource Conservation and Recovery Act
REM	Remedial Engineering Management
SARA	Superfund Amendments and Reauthorization Act of 1986
SCBA	self-contained breathing apparatus
sch.	schedule
sec.	secondary or seconds
sq.	square
S.F.	square feet
S.Y.	square yards
std.	standard
Stl. W.G.	U.S. Steel Wire, Washburn and Moer, American Steel and Wire Co., or Roebling Gage
TCE	trichloroethylene
TCL	target compound list
TDH	total dynamic head
TVO	total volatile organics
TWA	time-weighted average
typ.	typical
USACE	United States Army Corps. of Engineers
USS Gage	United States Standard Gage
v	velocity
V	volume
VHO	volatile halogenated organics
VOC	volatile organic compounds
W.S.	wall sleeve
w/	with
yd.	yards

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

* * * * * *

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.1 Summary

1.1.1 This Section is intended to provide a comprehensive summary of the various elements of work, and describe their relationship to each other. This summary should be read in conjunction with other specifically referenced sections, and with the Contract Drawings. This section does not provide the technical detail of the referenced sections for particular work activities, but describes the work as a whole, providing an overall perspective to the separate tasks and their interrelationships. This Section shall be used in conjunction with all other sections to establish the total requirements of the work.

1.1.2 The work consists primarily of removing the asphalt pavement from the roadways, driveways, and drainage ditches to allow for the excavation of the PCB's contaminated soils, followed by on-site treatment using PCB dechlorination system. Contaminated surface water and waste water from the equipment and personnel decontamination will be collected and treated using on-site aqueous waste treatment system. The site will then be restored by backfilling the excavated areas, improving of the site drainage, resurfacing the disturbed roadways and driveways, and final landscaping of the site.

1.1.3 All soils having a PCB concentration greater than 10 mg/kg will be excavated and treated using an alkaline polyethylene glycol process. The PCB concentration of the treated soil shall be no greater than 2 mg/kg.

1.2 Related Information

1. Advertisement for Bids
2. Information for Bidders
3. Bid and Bid Bond
4. Agreement, Performance and Payment Bond
5. General Conditions and Supplements
6. Specifications
7. Drawings

1.3 Contract

1.3.1 The Contractor shall furnish equipment, labor and materials to perform all work stated in the Contract.

1.3.2 The Contract consists of all work described in the Specifications in Divisions 1, 2, 3, 10. 11, 13, 15, and 16 and shown on the Drawings, plus all provisions, conditions, terms, and requirements specified in the Bid Package, along with any addendums, modifications, amendments or changes issued to the contract.

1.3.3 The work is divided into eight (8) principal categories as outlined below. The referenced sections for each work category represent the principal construction elements only. However some of these referenced sections are applicable to other work categories, and shall be implemented where and whenever applicable. Most of the other sections, not referenced, are applicable for all eight categories of work, such as Measurement and Payment (Section 1025), Regulatory Requirements (Section 1060), Health and Safety (Section 1065), Construction Quality Control (Section 1410), etc.

- Removal of Asphalt Pavements from Roadways, Drainage ditches, and Driveways:

1. Pavement Removal	Section	02090
2. Dust Control	Section	01562
3. Erosion and Sediment Control	Section	01563
4. Equipment/Material Handling	Section	01600

- Excavation of PCB-Contaminated Soils

1. Excavation	Section	02220
2. Dust Control	Section	01562
3. Erosion and Sediment Control	Section	01563
4. Spill Control	Section	01564
5. Equipment and Material Handling	Section	01600

- Aqueous Waste Treatment

1. Aqueous Waste Treatment System	Section	11305
2. Chemical Quality Control	Section	01420
3. Chemical Testing Laboratory	Section	01430

- Chemical Treatment of PCB-Contaminated Soils

1. PCB Dechlorination System	Section	11505
2. Chemical Quality Control	Section	01420
3. Chemical Testing Laboratory Services	Section	01430

- Fill in the Designated Areas

1. Backfill and Grading	Section	02221

- o Improvement of Site Drainage

1. Storm Drainage System	Section	02720
2. Erosion and Sediment Control	Section	01563
3. Concrete Reinforcement	Section	03200
4. Structural Concrete	Section	03310

- o Repavement of Roadways and Driveways Reusing Excavated Asphalt Material

1. Paving and Surfacing	Section	02500

- o Revegetation

1. Landscaping	Section	02900

1.4. Work Covered by the Contract Documents

1.4.1 Removal of Asphalt Materials

Existing asphalt pavement for the roadways, drainage ditches, and driveways shall be excavated and removed to permit excavation of the contaminated soils below.

The roadways are paved to a thickness of four inches in two layers of two inches each, while the driveways are paved with a single layer of two inches.

The estimated area of the asphalt pavement which shall be removed is as follows:

4-in. (nominal) pavement	12,500 sq. yd.
2-in. (nominal) pavement	9,000 sq. yd.

The Contractor shall sequence the asphalt removal with the soil excavation so as to minimize exposure of the residents to contaminated soils, migration of the contaminants, and inconvenience to the residents.

A clean area with adequate drainage shall be provided for stockpiling excavated asphaltic materials for the reuse of same for repaving. A separate area for stockpiling of contaminated material shall be assigned to eliminate any migration of the contaminants to clean material.

1.4.2 Excavation of Contaminated Soils

The depth, excluding pavement's thickness, of soils that the Contractor shall excavate initially to remove all known PCB's contaminated soils (soil containing PCB greater than 10 mg/kg) are as follows:

	Minimum Depth (in)
Roadways	18
Drainage Ditches	36
Driveways	12
Front and Backyards	6
Open Lots	6
Wetland	8

The total estimated volume of soil excavations is approximately 19,000 cu.yd., however, additional excavation may be required based on the results of post-excavation soil sampling.

The limits of excavation are shown on Drawings WB-07 to WB-13.

The locations and sizes of landscaping items in the excavated areas shall be recorded and preserved as practicable. All utilities above and below grades that can be affected by the excavation activities shall be identified and protected from damage.

All and any PCB-contaminated materials that are not amenable to the on-site chemical treatment (vegetation, trees, stumps, large rocks, etc.) shall be disposed of at an approved off-site disposal facility(ies).

Post-excavation soil sampling shall be performed by the Contractor to verify that the depth and the horizontal extent of excavated areas satisfy the soil removal criterion.

1.4.3 Aqueous Waste Treatment

The work associated with the aqueous waste treatment consists of the following:

a. Design and fabricate Aqueous Waste Treatment System (AWTS) equipment consisting of:

   i parallel plate separator
   ii sand filter
   iii chemical feed systems
   iv sump pump
   v discharge pump
   vi sludge pump
   vii control panel

b. Mount equipment on AWTS trailer
c. Pipe and wire equipment on trailer
d. Performance test AWTS trailer
e. Set AWTS trailer at Wide Beach Site
f. Run power and piping to AWTS trailer

g. Set sump pumps at run-off collection area of contaminated soil pile
h. Pipe and wire sump pumps to AWTS trailer
i. Treat contaminated rain water as needed during operating phase of Wide Beach remediation
j. Disassemble and decontaminate trailer and ancillary equipment
k. Remove from site

1.4.4 Chemical Treatment of PCB-Contaminated Soils

The work associated with PCB dechlorination processing of PCB contaminated soils consists of the following:

a. Design, procedure and fabricate PCB Dechlorination Process System equipment. This equipment consists of:

    i Soil Reactor Subsystem
    ii Heater Subsystem
    iii Tank-Subsystem
    iv Reagent Recovery Subsystem
    v Soil Reslurry Tank Subsystem
    vi Centrifuge Subsystem
    vii Soil Preparation/Soil Loading Subsystem
    viii Electrical and Power Distribution Subsystem
    ix Laboratory

b. Mount equipment on trailers
c. Pipe and wire subsystems
d. Performance test the PCB Dechlorination Process System
e. Set PCB Dechlorination Process System trailers at Wide Beach Site
f. Run power and piping to subsystem trailers
g. Feed and process PCB contaminated soil to PCB Dechlorination Process System
h. Disconnect and decontaminate subsystem trailers
i. Remove PCB Dechlorination Process System from site

The rate of on-site chemical treatment may affect the progress and scheduling of construction activities. It is the responsibility of the Contractor to balance and coordinate the construction activities for optimum work performance and cost effectiveness, and to meet the overall schedule.

1.4.5 Improvement of Site Drainage

The current drainage system at the Wide Beach Development consists of ditches typically on each side of the roadways, catch basins, and storm drains. The system is largely ineffective due to minimal site relief and damaged storm drains. During the wet season, ponding of water exists for long

periods. An improved drainage system shall be provided by the Contractor in conjunction with the site soil excavation, filling, and grading.

The improved drainage system integrates individual yard drainage, culverts, catch basins, and storm drains to improve the site drainage. The preliminary plan and sections of the improved drainage system are provided, however it is the Contractor's responsibility to provide the detailed design and the final drainage system drawings.

1.4.6 Fill in the Designated Areas

The Contractor shall maximize use of the treated soil from the on-site chemical treatment plant for the backfill operations of the designated areas as shown on the Contract drawings. The Contractor shall utilize imported clean soil, as needed, to ensure continuous site activities and to minimize inconvenience to the residents.

The excavated areas of the frontyards, backyards, and open lots shall be backfilled, compacted, and graded to improve drainage.

Backfilling, grading and compaction for roadways and driveways shall be to the lines and grades shown on the Contract drawings.

The excavated drainage ditches shall be backfilled, compacted and graded to conform with the improved drainage plan. Provision for erosion and sediment control shall be implemented by the Contractor.

The excavated areas of the wetlands shall be backfilled and restored to a degree compatible with the surrounding areas.

1.4.7 Repavement of the Roadways and Driveways

Upon completion of final filling, grading and compaction, the Contractor shall repave the roadways and driveways with asphalt course(s) conforming to the requirements of the New York State Department of Transportation (NYSDOT) specifications. The Contractor shall utilize the excavated asphalt in his repaving activities.

The Contractor shall conduct repaving activities in such a manner so as to minimize inconvenience to the residents.

The limit of pavements and thickness of the pavement courses for the roadways and driveways shall be as shown on the Contract drawing.

1.4.8 Revegetation

Landscaping features excavated or damaged during site activities shall be restored or replaced by equivalent plants. Restoration shall include seeding, fertilizing and planting as needed to provide soil stabilization and restore the area to a condition equivalent to that which existed prior to construction activities.

1.5 Other Related Work Included in this Contract

1.5.1 Permits and General Requirements

The Contractor shall be responsible for obtaining all permits, and providing all temporary utilities, equipment and temporary facilities required to perform the site work and on-site chemical treatment in accordance with the contract documents.

o Temporary Utilities:

Power and power distribution system;
Clean water supply and distribution system;
Telephone lines and equipments.

o Temporary Facilities:

Personal hygiene facilities;
Emergency medical facilities;
Safety equipment and supply storage;

Separate full service office trailer for the Contracting Officer;
Separate full service office trailer for the EPA/NYDEC personnel;
Personnel and Equipment Decontamination facilities;
Support Zone and Contractor's administration trailers.

1.5.2 Site Specific Plans

The Contractor shall prepare and submit to the Contracting Officer, for his approval,and shall be responsible for implementing the following plans:

	SECTION
o Site Safety and Health Plan	01065
o Quality Management Plan	01400
o Construction Quality Control Plan	01410

	SECTION
o Chemical Quality Control Plan	01420
o Environmental Protection Plan	01560
o Erosion and Sediment Control Plan	01563
o Material Handling Plan	01600

1.5.3 Mobilization (Section 01505)

1.5.4 Security (Section 01540)

The Contractor shall provide and maintain 24 hour security for the duration of the work (Section 1540).

1.5.5 Off-Site Transportation (Section 01640)

The Contractor shall be responsible for transportation and disposal, at an approved off-site facility, of contaminated materials generated on-site. Such materials may consist of effluent from the on-site chemical treatment system, decontamination liquids, disposable protective clothing, and other excavated materials that are not amenable to on-site chemical treatment.

1.5.6 Demobilization (Section 01505)

At the end of the Project, the Contractor shall be responsible for decontaminating all materials and equipment prior to removing from site. The site shall be left in a clean condition. All stockpiles of surplus clean or treated soil shall be removed and the areas shall be graded.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION

3.1 Duration of the Contract:

The Contractor shall commence, prosecute, and complete the entire work specified in this Contract in accordance with special clauses SC-1 of this Contract.

3.2 Contractor

3.2.1 The Contractor is advised that the work will be performed at a hazardous site. The Contractor is responsible for developing a Site Safety and Health Plan (SSHP) for his operations. Section 01065, Health and Safety Requirements,

establishes the minimum requirements for development of the Contractor's SSHP. The Contractor shall implement this plan taking precautions necessary to protect the public and work force personnel from potential hazards. The Contractor shall be especially mindful of safety, hazards, and inconvenience unique to remedial construction in residential areas. The Contractor shall utilize personnel with approved hazardous waste training (Refer to Section 01065 - Health and Safety Requirements for training requirements).

3.2.2 The Contractor shall be responsible for excavating, containing, treating, disposing and/or handling waste liquids, waste deposits, contaminated material, site soil, sediments, and other materials which may be hazardous as specified in this Contract. For each element of work and for the total of all work under this contract, additional work may be required if additional material must be handled. This additional work will be approved and paid for at the contract price specified in the Variation in Estimated Quantity Contract clause (FAR 52.212-11).

3.2.3 For any work performed in close proximity to the properties of businesses, utilities or other parties, the Contractor shall utilize every precaution to protect the property, utility lines, trees, walls and other structures from damage. Any damage that the Contractor may inflict shall be repaired or replaced in a prompt manner as directed by the Contracting Officer.

3.2.4 The Contractor shall take all measures required to minimize adverse impacts from execution of the work on residences and businesses adjacent to the site and shall not interfere with their operations.

3.2.5 The Contractor shall meet all safety and health requirements as listed in Section 01065 of this specification.

3.3 Contractor's Use of Premises

3.3.1 The Contractor shall minimize the use of the site area for storage. Storage and laydown areas are to be agreed upon and approved by the Contracting Officer.

3.3.2 The Constractor shall assume full responsiblity for the protection and safe keeping of products under this Contract that are stored on-site during the construction activities.

3.3.3 The Contractor shall be responsible for coordinating his/her activities with scheduled project activities. The Contractor will not be compensated for work required to relocate any material or equipment that interferes with the scheduled project activities.

3.4 Other Requirements

3.4.1 The Contractor is referred to the following utility companies and agencies concerning information regarding underground utilities, hookups, structures and other facilities they may own or operate which may be encountered in the execution of the work:

- o National Fuel
- o New York Telephone
- o Niagara Mohawk Power Corporation
- o Lotus Bay Sewer District of the Town of Brant

This partial listing is intended as an aid to the Contractor and may not be complete. It is the responsibility of the Contractor to notify owners and operators of underground utilities when construction, excavation, demolition or other work may affect such facilities.

3.4.2 The Contractor is responsible for using special care and or special considerations which may be necessary for proper execution of the work, but which may not be identified in this subsection. The Contractor shall comply with the entire requirements of the Contract Documents and shall exercise special care wherever required for proper execution of the intended work of this contract.

3.5 Primary Consideration

The operation of the primary construction components are interrelated in that the rate of on-site chemical treatment system capacity may affect progress and scheduling of construction activities. It is the responsibility of the Contractors to balance, coordinate and schedule all construction activities for optimum work performance and cost effectiveness. The Contractor shall minimize inconvenience to the residents and ensure their safety.

3.6 General Sequence of Remedial Activities

The general sequence of remediation activities is given hereinunder to aid in identifying design considerations appropriate to each activity and interaction that may exist among various activities.

The work shall be planned, scheduled, and performed in stages to complete the work within the requirements of this contract document and the requirements of appropriate regulatory agencies.

3.6.1 Stage 1 - Project start-up

Project start-up shall include the following activities which are not necessarily in the following order:

1. Obtain the necessary permits, certifications and approvals;

2. Develop and submit for approval all required pre-work submittals including the design calculations and detailed drawings for the storm drainage system and repaved roadway and driveway;

3. Document the pre-remediation conditions of the site by taking photographs of the residential homes, yards, roadways, driveways, etc. In addition, the Contractor shall videotape the site with narration as to existing features and conditions, and shall provide a copy of this tape to the Contracting Officer.

4. Provide required entrance medical examinations;

5. Provide baseline air monitoring;

6. Conduct site specific safety training;

7. Clear areas required for construction facilities, grade and compact access routes, stockpile timber;

8. Provide all required utilities.

9. Construct personnel decontamination facilities;

10. Construct contaminated soil stockpile area facilities and other material storae facilities.

11. Install temporary fence and signs to prevent unauthorized access to the Exclusion Zone.

12. Construct administration area;

    - o Emergency medical facilities
    - o Safety equipment and supply storage
    - o Separate full service offices for the Contracting Officer
    - o Site security
    - o Communications Control Center
    - o Site Document Control Center

13. Construct equipment decontamination facilities;

14. Construct the treatment area slab and install the approved on-site PCB-Dechlorination System;

15. Install the approved on-site Aqueous Waste Treatment System; and

16. Implement erosion and sediment control measures in accordance with the requirements of Section 01563;

3.6.2 Stage 2 - Remedial Operations

1. Remove and stockpile asphalt pavement;

2. Excavate, transport and Stockpile the contaminated soils from the area to the limits and depths shown on the Contract drawings;

3. Treat the contaminated soils at the on-site chemical treatment plant;

4. Perform post-excavation soil sample tests;

5. Make necessary improvements to drainage system as specified;

6. Backfill and fill the designated areas to the lines and grades as shown and specified;

7. Provide final site grading;

8. Repave roadways and driveways;

9. Restore landscaping features and provide soil stabilization by means of seeding and mulching as specified and shown on the contract drawing.

3.6.3 Stage 3 - Demobilization

1. Decontaminate and remove from site all Contractor-owned equipment and facilities including the contaminated soil stockpile area facilities.

2. Dispose at an approved off-site disposal facility all wastes generated during and after construction which cannot be treated on-site.

3. Clean the exterior of residential homes under the direction of the Contracting Officer.

4. Phase out erosion and sediment control measures.

5. Remove all Contractor's access roads and parking areas from the work site except for the section of the access road specifically instructed to remain by the Contracting Officer.

6. Decommission all temporary utilities.

7. Provide exit medical examinations.

8. Leave clean site.

9. Obtain all necessary releases.

10. Remove all stockpiles and grade.

11. Document the remediated site conditions by photographing and videotaping. One copy of each photograph and videotape shall be provided to the Contracting Officer.

3.7 Compensation

Compensation for execution of the intended work as defined by the Contract Documents is specified in Section 01025 - Measurement and Payment.

* * * * * *

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

This section covers the methods and procedures which will be used to measure the Contractor's work and to provide payment to the Contractor for work performance. It is the responsibility of the bidder to make a thorough investigation of the drawings and specifications, and the site to determine the scope of work included in each bid item. Payments will be made to the Contractor based on the quantities of work as measured in accordance with the specified methods of measurement and the prices stipulated in the accepted bid as shown on the Bid Schedule. This method of payment will constitute complete compensation for all work shown on the drawings and provided in the specifications or other contract documents, and for all costs of accepting the general risks, liabilities and obligations expressed or implied. Payment under all items will include, but not be limited to, compensation for furnishing all plant, supervision, labor, equipment, overhead, profit, materials and services, and performing all work required to accomplish and complete the work specified under each item and all other work required.

1.2 Submittals (Section 01300)

1.2.1 Schedule of Values: The Contractor shall prepare and submit, to the Contracting Officer, within 10 days after award of contract, a schedule of values for all lump sum items.

1.2.2 Monthly Invoices: At the end of each month, the Contractor shall survey and compute the quantities of completed work for that month and submit a monthly invoice for review and approval. The calculation package shall be prepared in sufficient detail to allow the Contracting Officer to verify the value of completed work. Progress payments will be made for lump sum items based on approved invoices and on the approved schedule of values, which reflect the percentage of completed work.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 Health and Safety (Section 01065) - Bid Item No. 1

3.1.1 Scope of Work

Work shall include, but not be limited to:

Furnishing, installing and maintaining health and safety equipment and facilities and providing health and safety related services as specified in Section 01065 - Health and Safety Requirements and as detailed below:

3.1.1.1 Providing pre- and post- construction medical examinations as specified in Section 01065;

3.1.1.2 Providing safety equipment and protective clothing for site personnel, including maintenance of equipment on a daily basis; replacement of disposable equipment as required; decontamination of clothing, equipment, and personnel; and all other Health and Safety activities or costs not paid for under other pay items in this contract. Safety equipment requirements are specified in Section 01065.

3.1.1.3. Providing, installing, operating and maintaining on-site emergency medical facilities and first aid stations as specified in Section 01065. This includes all furnishings, equipment, supplies and maintenance of all medical equipment, and includes all other Health and Safety items and services for which payment is not provided under other pay items in this contract.

3.1.1.4. Providing, installing, maintaining of all on-site personnel hygiene facilities as specified in Section 01065. This includes all furnishings, fixtures and equipment; furnishing, installing and maintaining the sanitary lines from the facilities to an on-site storage tank; proper disposal of collected waste; and all other personnel hygiene items and services for which pay items are not provided elsewhere in this contract.

3.1.1.5. Providing, installing, operating and maintaining all decontamination facilities specified in Section 01065 including all furnishings; decontamination pad and sump; showers; decontamination water supply; and all other items and services required for the implementation of the requirement of the Health and Safety Plan for which pay items are not provided elsewhere in this contract.

3.1.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award of contract, a schedule of values for the lump sum Health and Safety Requirements.

3.1.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.2 Security and Communication (Section 01540) - Bid Item No.2

3.2.1 Scope of Work

Work shall include, but not be limited to, furnishing, installing, and maintaining the on-site security and communication center as specified in Section 01540. The requirements include providing a PA System, a 2-way radio station and 8 handsets, temporary security trailer, barricade, and services of security officer and guards, and all other items required for the security plan for which payment is not provided under other pay items in this contract.

3.2.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award of contract, a schedule of values for the lump sum Security and Communication Requirements.

3.2.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.3 Mobilization & Site Preparation (Sections 01505, 01510, and 01563) - Bid Item No. 3

3.3.1 Scope of Work

Work shall include, but not be limited to:

- o All work required to furnish, install and maintain all signs, support facilities, access roads, culverts, parking areas, and all temporary utilities as defined in Sections 01505 and 01510.

- All work required to furnish, install and maintain an office trailer with phone and utilities for the Contracting Officer and his staff as defined in Section 01510.

- All work required for complete preparation of stockpile and staging areas and any required fencing as defined in Section 01510.

- All work required to furnish, install and maintain the soil erosion and sediment controls as defined in Section 01563.

- All direct invoiced cost from bonding companies and government agencies for permits and costs of insurance, equipment mobilization, and personnel mobilization/recruiting.

- All work required to provide field engineering as defined in Section 01050.

- All other items and services required for mobilization and site preparation for which pay items are not provided elsewhere in this Contract.

3.3.2 Measurement

Contractor shall provide to the Contracting Officer, 10 days after award, a schedule of values for the lump sum Mobilization and Site Preparation.

3.3.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.4 Clearing and Grubbing (Section 02100) - Bid Item No. 4

3.4.1 Scope of Work

Work shall include but not be limited to:

All work required to clear, grub, stockpile timber, and dispose of all materials within the clearing and grubbing limits shown on drawings and defined in Section 02100. All other clearing and grubbing items and services for which pay items are not provided elsewhere in this contract.

3.4.2 Measurement

Measurement shall be by the net area in acres cleared and grubbed. The area shall be measured in the horizontal plane.

3.4.3 Payment

Payment will be in accordance with the unit price for each measured acre.

3.5 Excavation of Asphalt pavement (Section 02090) - Bid Item No. 5

3.5.1 Scope of Work

Work shall include, but not be limited to:

- The provision of all materials, labor, and equipment required to excavate and remove asphalt pavement materials as shown and specified;
- Excavating, removing, transporting, and stockpiling of all asphalt pavement materials as shown and specified;
- All other items and services required for the excavation and removal of asphalt pavement materials for which pay items are not provided elsewhere in this contract.

3.5.2 Measurement

The quantity of asphalt paving materials removed shall be measured and computed to the nearest square yard for each specified thickness. Regardless of quantities excavated and removed, the measurement for payment shall be made to the specified pay limits shown on the Contract drawings, except that quantities outside the specified limits directed by the Contracting Officer to be removed will be included. Excavation and removal of asphalt paving materials resulting from the Contractor's improper construction operations, as determined by the Contracting Officer, will not be included for measurement and payment.

3.5.3 Payment

Payments will be in accordance with the unit price for each measured square yard of removed asphalt paving material for each specified thickness shown on the Contract drawings.

3.6 Excavation of contaminated soils (Section 02220) - Bid Item No. 6

3.6.1 Scope of Work

Work shall include but not be limited to:

- o The provision of all materials, labor, and equipment required to execute the work as shown and specified;
- o Excavation of contaminated soils to the limit and depth shown and specified on the Contract Drawings, hauling, and stockpiling;
- o Additional excavation of contaminated soil, if any, as determined by the post-excavation sampling and as directed by the Contracting Officer.
- o Over-excavation of contaminated soils necessitated by the field conditions and approved by the Contracting Officer.
- o All other items and services required for excavation, hauling and stockpiling contaminated soils for which pay items are not provided elsewhere in this contract.

Related work not included:

The following are work related to this item but included elsewhere in the Contract and shall not be considered part of this scope:

- o Removal of existing catch basins
- o Off-site transportation and disposal
- o Excavation for the storm drainage system
- o Post-excavation sampling

3.6.2 Measurement

The volume of contaminated soils excavated and removed within the specified limits shall be measured and computed to the nearest cubic yard by the method of average cross-sectional end areas. The upper limit shall be the original ground surface as it existed prior to the start of soil excavation. The lower and lateral limits shall be as shown on the Contract drawings except for additional excavation as directed by the Contracting Officer. Excavation and removal of soil materials resulting from the Contractor's improper construction operations, as determined by the Contracting Officer will not be included for measurement and payment.

3.6.3 Payment

Payments will be made in accordance with the unit price for each measured cubic yard of contaminated soils.

3.7 Excavation of Contaminated Drainage Works (Section 02220) - Bid Item No. 7

3.7.1 Scope of Work

Work shall include but not be limited to:

- Excavation of existing catch basins indicated as DI (Drop Inlet) on the Contract Drawings;
- Excavation of existing culverts under the roadways and driveways as shown on the Contract Drawings;
- Removal of sediments from the two (2) existing storm drains leading to the wetland as shown on the Contract Drawing;
- All other items and services required for excavation and removal of existing drainage works for which pay items are not provided elsewhere in this Contract.

3.7.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award, a schedule of values for the lump sum Excavation of Contaminated Drainage Works.

3.7.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.8 On/Off-Site Laboratory Sampling (Section 01420) - Bid Item No. 8

3.8.1 Scope of Work

Work shall include but not be limited to all materials, labor, and equipment to sample and test the following as specified in Table 01420-3:

- Post excavation soil samples for total PCBs,
- Excavated asphalt pavement for total PCBs,

- o Collected surface water runoff for SPDES parameters,
- o Aqueous Waste from the PCB dechlorination process (Process-Specific test methods),
- o Solid wastes tested for samitary (Subtitle D) landfill-specific test parameters,
- o On-site air monitoring samples for particulate PCBs, and
- o Treated soils for total PCBs.

Analyses for the QA/QC duplicates and field blanks specified in Table 01420-3 will be performed by the USACE-MRD and are not part of this pay item.

3.8.2 Measurement

For the off-site laboratory analysis of the collected surface water runoff and solid waste samples, measurement shall be by the number of samples collected and tested. For the remaining on-site laboratory samples, measurement shall be by the number of weeks of laboratory operation.

3.8.3 Payment

Payment for laboratory sampling will be in accordance with the unit price for each measurement specified in Paragraph 3.8.2.

3.9 Storm Drainage System (Section 02720) - Bid Item No. 9

3.9.1 Scope of Work

Work shall include but not be limited to:

- o All materials, labor, and equipment required to design and install drain pipes including the outlet protection as shown and specified on the Contract Drawings;
- o All materials, labor, and equipment required to design and install new culverts under roadways including the inlet and outlet protection as shown and specified on the Contract Drawings;
- o All materials, labor, and equipment required to design and install catch basins including frames and covers as shown and specified on the Contract Drawings;
- o All other items and services required to complete the required storm drainage system for which pay items are not provided elsewhere in this Contract.

3.9.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award, a schedule of values for the lump sum Storm Drainage System.

3.9.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.10 Backfill and Grading (Section 02221) - Bid Item No. 10

3.10.1 Scope of Work

Work shall include but not be limited to:

- All work required to transport, place, compact, and grade, using the treated soil from the on-site chemical soil treatment system, as specified on the Contract Drawings;
- All work required to furnish, place, compact, and grade, using soil borrow from approved off-site source(s), as specified on the Contract Drawings;
- All work required to furnish, place, comapct and grade, using crushed stone from approved off-site source(s) as specified on the Contract Drawings; and
- All other items and services required for backfill, filling, and grading for which pay items are not provided elsewhere in this Contract.

3.10.2 Measurement

Measurement shall be by surveyed cross-section which defines the lower limit, the neat line, and the upper limit of the fill after compaction and grading. Average-end area method shall be used to determine cubic yardage.

3.10.3 Payment

Payment for backfill and grading will be in accordance with the unit price for each measured cubic yard at its final in-place density.

3.11 Asphalt Repavement (Section 02500) - Bid Item No. 11

3.11.1 Scope of Work

Work shall include but not be limited to:

- All materials, labor, and equipment required to provide detailed design of the roadways and driveways;
- All labor and equipment required to recycle the excavated asphalt pavement materials for repavement;
- All new materials, labor, and equipment required to furnish recycled hot-mix asphalt concrete of specified types;
- All labor and equipment required to pave the roadways and driveways to the limits and depths as specified and shown on Contract Drawings;
- All other items and services required for recycling and repaving for which pay items are not provided elsewhere in this Contract.
- Other areas not specified in this Contract and repaving due to unsuitable conditions resulting from the Contractor's improper construction operations, as determined by the Contracting Officer, will not be included for measurement and payment.

3.11.2 Measurement

Measurement for asphalt repavement shall be by the net area to the nearest square yard of the specified paving areas for each specified type.

3.11.3 Payment

Payment will be in accordance with the unit price for each measured square yard of the net paved area for each specified type.

3.12 Dewatering (Section 01563) - Bid Item No. 12

3.12.1 Scope of Work

Work shall include but not be limited to:

- Removal of all surface water from all work areas;
- Transporting of water to the aqueous waste treatment system; and

- o All other items and services required for the dewatering for which pay items are not provided elsewhere in this Contract.

3.12.2 Measurement

Measurement shall be based on the net volume of water in U.S. gallons removed and transported as specified in this Contract.

3.12.3 Payment

Payment will be in accordance with the unit price for each measured U.S. gallon of water removed and transported as specified in this Contract.

3.13 Aqueous Waste Treatment System (Section 11305) - Bid Item No. 13

3.13.1 Scope of Work

Work shall include but not be limited to:

- o All work required to transfer surface water from the collection pond in the contaminated soi stockpile area to the aqueous waste treatment area.

- o All work required to provide, install, operate, and maintain all aqueous waste treatment system equipment as defined in Section 11305.

- o All work required to treat on-site aqueous waste as defined by Section 11305 including meeting the NPDES discharge requirements and any other applicable regulations.

- o All other items and services required for aqueous treatment operations for which pay items are not provided elsewhere in this Contract.

- o All work required to dispose treated water to the on-site sanitary sewer system.

3.13.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award, a schedule of values for the lump sum Aqueous Waste Treatment System.

3.13.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and

payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.14 PCB Dechlorination System (Section 11505) - Bid Item No. 14

3.14.1 Scope of Work

Work shall include but not be limited to:

- o All work required to provide, install, and maintain all chemical treatment system equipment as defined in Section 11505;
- o All work required to treat on-site excavated contaminated soils as defined in Paragraph 2.6 of this Section including meeting the Contract treatment requirements and any other applicable regulations;
- o All other items and services required for chemical treatment operations for which pay items are not provided elsewhere in this Contract.

3.14.2 Measurement

Measurement shall be by the U.S. ton weight of treated soil adjusted for moisture content.

3.14.3 Payment

Payment will be in accordance with the unit price for each U.S. ton weight of treated soil accepted by the Contracting Officer.

3.15 Off-Site Transportation and Disposal (Section 01640) - Bid Item No. 15

3.15.1 Scope of Work

Work shall include but not be limited to:

All work required to transport and dispose contaminated materials from the work area at an approved off-site treatment/disposal facility as defined in Section 01640, and to acquire the necessary transportation permits and other items and services required for transporting and disposing contaminated materials at an approved off-site facility for which pay items are not provided elsewhere in this contract.

3.15.2 Measurement

Measurement shall be by the U.S. ton weight of material transported and disposed of at an approved off-site facility. The weight measurement shall be based on weighing records from the truck tally book.

3.15.3 Payment

Payment will be in accordance with the unit price for each U.S. ton weight of material transported and disposed of at an approved off-site facility.

3.16 Landscaping (Section 02900) - Bid Item No. 16

3.16.1 Scope of Work

Work shall include but not be limited to:

- o All materials, labor, and equipment required for final grading, seeding, and fertilizing to restore and maintain the site to a landscaped condition substantially similar to that prior to commencing the construction work;
- o All materials, labor, and equipment required to replace and maintain landscaping features excavated from the yard; and
- o All other items and services required for landscaping as specified in Section 02900 for which pay items are not provided elsewhere in this Contract.

3.16.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award, a schedule of values for the lump sum Landscaping Requirements.

3.16.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

3.17 Demobilization (Section 01505) - Bid Item No. 17

3.17.1 Scope of Work

Work shall include but not be limited to:

All work required to remove from the site all equipment, temporary utilities and supporting facilities, performance of necessary decontamination and repairs, and any other items and services required for complete demobilization as specified in Section 01505 for which pay items are not provided elsewhere in this contract.

3.17.2 Measurement

The Contractor shall provide to the Contracting Officer, 10 days after award, a schedule of values for the lump sum Demobilization Requirements.

3.17.3 Payment

Payment will be on a lump sum basis, but will be paid on a periodic and progressive basis, using the schedule of values to reflect the percentage of completed work. Invoicing and payments will be in accordance with Federal Acquisition Regulation (FAR) Clause 52.232-5 Payments Under Fixed Price Construction Contracts.

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SECTION 01050
FIELD ENGINEERING

PART 1 - GENERAL

1.1 Summary

1.1.1 The Contractor shall provide all materials, items, operations or methods specified, listed or scheduled on the Contract drawings or specifications, including all materials, labor, equipment and incidentals necessary and required to conduct proper surveys required to stake and layout the work.

1.1.2 The Contractor shall provide a Work Plan, a Chart of Project Organization and a Field Change Request procedure for documentation and approval of any and all changes to the design affected by the Contractor, irrespective of cause, prior to or during construction.

1.1.3 The Contractor shall perform a location survey to layout the roadways and driveways for repaving as shown on the Contract drawings and other surveys for measurement and payment of completed work.

1.1.4 The control points are shown on Drawings WB-03.

1.2 Related Sections

Section 01010 - Summary of Work
Section 01025 - Measurement and Payment
Section 01720 - Project Record Documents

1.3 Quality Control

All survey, layout and related work shall be performed and signed by a licensed land surveyor registered in the State of New York.

1.4 Submittals

1.4.1 The Contractor shall submit a detailed Field Change Request procedure and forms that he intends to use to document changes and non-conformances for the Contracting Officer's review and approval prior to start of construction.

1.4.2 Upon start of construction, the Contractor shall submit a Field Change Request form documenting any and all changes, non-conformances and deviations from the design and/or specifications for review and disposition by the Contracting Officer.

1.4.3 The Contractor shall submit name, address, telephone number and qualifications of the surveyor, crew chief, superintendent and all other persons who are proposed to perform surveys or survey related duties prior to start of any survey work for approval by the Contracting Officer. Upon request by the Contracting Officer, the Contractor shall submit documentation verifying accuracy of survey work.

1.4.4 The Contractor shall submit a certificate signed by the Surveyor, certifying that elevations and locations of site constructed features are in conformance, or non-conformance, with Contract Documents.

Any non-conformance shall be documented by a Field Change Request form and subject to review and acceptance by the Contracting Officer prior to final disposition (i.e., payment, corrective actions, etc.).

1.5. Project Record Documents

1.5.1 The Contractor shall maintain on site a complete and accurate log of control of survey work as it progresses.

1.5.2 Upon completion of the work, the Contractor shall submit Record Documents to the Contracting Officer under the provisions of Section 01720 - Project Record Documents.

PART 2 - PRODUCTS

2.1 General

2.1.1 All control surveys for elevation shall be $\pm$ .01 feet and for horizontal, control angles shall be to the nearest twenty (20) seconds $\pm$ 10 seconds and measured distances shall be to $\pm$ .01 feet.

2.1.2 All location and measurement surveys for elevation shall be to the nearest 0.1 feet $\pm$ 0.05 feet and for horizontal distances shall be to $\pm$ 0.1 feet.

2.2 Materials

2.2.1 The Contractor shall provide all materials as required to properly perform the surveys, including, but not limited to, instruments, tapes, rods, measures, mounts and tripods, stakes and hubs, nails, ribbons, and other reference markers. All material shall be of good professional quality and in first-class condition.

2.2.2 All lasers, transits, and other instruments shall be calibrated and maintained in accurate calibration throughout the execution of the work. Calibration certificates shall be submitted to the Contracting Officer prior to the use of any instrument.

PART 3 - EXECUTION

3.1 General

The Contractor shall exercise extreme care during the execution of all phases of the work to minimize any disturbance to existing property and to the landscape in the areas surrounding the work site.

3.2 Inspection

The Contractor shall verify with the Contracting Officer locations of site survey control points prior to starting work. The Contractor shall promptly notify the Contracting Officer of any discrepancies discovered. The Contractor shall also verify layouts periodically during construction.

3.3 Survey Reference Points

3.3.1 Contractor shall protect survey control points prior to starting site work and provide permanent reference points during construction. The Contractor shall not relocate site reference points without prior written approval from the Contracting Officer.

3.3.2 The Contractor shall promptly report to the Contracting Officer the loss, damage, or destruction of any reference point or relocation required because of changes in grades or other reasons. The Contractor shall replace dislocated survey control points based on original survey control at no additional cost to the Contracting Officer.

3.4 Survey Requirements

3.4.1 The Contractor shall reference survey and site reference points to the provided control monuments and record locations of survey control points, with horizontal and vertical data, on Project Record Documents.

3.4.2 The Contractor shall establish lines and levels, locate and layout by instrumentation and similar appropriate means the roadways and driveways to be repaved, the new storm drainage system to be installed, and other site features to be constructed as shown on the Contract drawings. Cross-sections shall be taken before, during, and after excavation at 50 ft intervals at a minimum. The Contractor shall provide necessary stakes for cut, fill, placement, and grading operations and stakes for right-of-way, property lines where necessary, utility locations, slopes, and invert elevations.

3.4.3 The Contractor shall obtain working or construction lines or grades as needed. The Contractor's base line shall indicate relationship to legal right-of-way.

3.4.4 The Contractor shall furnish all materials and accessories (i.e., grade markers, stakes, pins, spikes, etc.) required for the proper location of grade points and line.

3.4.5 All marks given, including existing property markers, shall be carefully preserved and, if destroyed or removed without the Contracting Officer's approval, they shall be reset, if necessary, at the Contractor's expense.

3.4.6 The cost to the Contractor of all work and delays occasioned by giving lines and grades, or making other necessary measurements, will be considered as having been included in the unit and lump sum prices for items of work.

3.4.7 All work not done with the methods and equipment as submitted by the Contractor and approved by the Contracting Officer shall be removed and replaced by the Contractor at his own expense unless instructed otherwise by the Contracting Officer.

3.4.8 It shall be the duty of the Contractor to keep the Contracting Officer informed of the times and places at which he intends to work in order that the Contracting Officer may have an ample opportunity to furnish and/or to check the lines and elevations with a minimum of inconvenience to the Contracting Officer or delay to the Contractor.

3.5 Surveys for Measurement and Payment

3.5.1 The Contractor shall perform surveys, in a manner acceptable to the Contracting Officer, to determine quantities of unit cost work and percent of completed lump sum work including surveys to establish measurement reference lines and shall notify the Contracting Officer prior to starting work.

3.5.2 The Contractor's field superintendent shall sign Surveyor's field notes or shall keep duplicate field notes and shall calculate and certify quantities for payment purposes.

* * * * * *

SECTION 01060

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 Scope - This section identifies the regulatory requirements and guidelines pertinent to the work specified in this contract.

1.1.2 The Contractor shall conduct all work involved in this project in accordance with Federal, New York State and local laws and regulations.

1.1.3 The Contractor shall be responsible for obtaining all permits required for offsite work involved in this project and coordinating with local agencies on substantive permit requirements for onsite work.

1.1.4 Applicable Statutes - The principal legislation controlling the performance of this contract is the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Other statutes that govern the performance of this contract work include:

Federal:

OSHA - Occupational Safety and Health Act

TSCA - Toxic Substances Control Act

RCRA - Resource Conservation and Recovery Act

Clean Water Act

Clean Air Act

Rivers and Harbors Act

Coastal Zone Management Act

State:

New York State Solid Waste Management Law

Environmental Conservation Law

New York Freshwater Wetlands Act

New York Coastal Zone Management Act

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 REGULATORY REQUIREMENTS

The latest versions and revisions of the following regulations shall be considered by the Contractor as the minimum requirements for conducting the work involved. The Contractor shall be responsible for evaluating and implementing all procedures as identified within these regulations and other appropriate regulations and laws to conduct and complete the intended contract work.

3.1.1 Permits

a) The Contractor shall be responsible for obtaining all permits, which are necessary to execute the work in accordance with Federal, State and local requirements, for activities performed outside the confines of the site area. See Section 3.1.3.

b) Pursuant to 40 CFR 300.68(a)(3), Federal, State and local permits are not required for remedial action being undertaken within the confines of the site area. Nevertheless, the Contractor shall perform all tests and compile reports and compliance documentation to satisfy regulatory agencies that the work will be performed in conformance with the applicable permit requirements. This documentation shall be submitted for the Contracting Officer's approval prior to commencement of any remedial action. See Section 3.1.3.

c) Some of the permits that may need to be applied for if offsite activities are involved include:

40 CFR 124 and 270 - EPA permits for hazardous waste management facilities

40 CFR 761 - Approvals to store and incinerate

Section 10 of Rivers and Harbors Act - Approvals to work in navigable waters

Section 404 of Clean Water Act - Approvals for placement of dredged or fill material in waters of the U.S.

6 NYCRR 200-254 - Air emission permits

6 NYCRR 373 - New York permits for hazardous waste management facilities

6 NYCRR 700-758 - Permits for discharge to surface waters - If discharge to surface waters outside of site boundary is necessary, the Contractor shall be prepared to apply for a permit to excavate wetlands not previously identified. The Contractor should be aware of an EPA policy under development that would extend the effective definition of "site boundary" for surface waters discharges to areas immediately adjacent to the site property that are necessary to implement CERCLA remediation, even if the water body flows off-site.

ECL Article 24 - Approvals for work in freshwater wetlands - If excavation of wetlands areas beyond site boundary is necessary, the Contractor shall be prepared to apply for a permit to excavate wetlands not previously identified. The Contractor should make it clear to implementing state agency that such excavation is necessary to reduce contamination in sensitive areas and therefore is consistent with Wetlands protection requirements.

These and other permit requirements are contained in section 3.1.3.1 below.

3.1.2 The Contractor shall be responsible for alerting appropriate state and local agencies as to the timing and nature of site activities.

3.1.3 Regulatory and Statutory Requirements

3.1.3.1 Federal Regulatory and Statutory Requirements

a) 29 Code of Federal Regulations (CFR) 1904, 1910 and 1926 - Occupational Safety and Health Standards for Worker Protection at Hazardous Response Sites

b) 40 CFR 124 - Regulations on Procedures for Decision making (Compliance with RCRA Part B and NPDES Permit Requirements.)

c) 40 CFR 261 - General Standards for Hazardous Waste Management Facilities

d) 40 CFR 262 - Standards Applicable to Generators of Hazardous Waste. See Section 3.1.4.

e) 40 CFR 264 - Design, Operating and Closure Standards for Hazardous Waste Treatment, Storage and Disposal Facilities (proposed amendments scheduled to be promulgated December 1988). These standards apply to the storage of contaminated soil and debris prior to treatment.

f) 40 CFR 265 - Interim Status Design, Operating and Closure Standards for Hazardous Waste Treatment, Storage and Disposal Facilities. These standards apply to the chemical treatment system at Wide Beach (i.e., KPEG).

g) 40 CFR 270 - Federally-administered Hazardous Waste Permit Program for Hazardous Waste Facilities. (Proposed amendments scheduled to be promulgated by December 1988.)

h) 40 CFR 271 - Requirements for Authorization of State Hazardous Waste Programs.

i) Federal Coastal Zone Management Act of 1972 Requirements.

j) Federal Wetland and Floodplain Executive Orders (E.O. #11990 and 11988) and EPA's August 6, 1985 policy for CERCLA actions)

k) Rivers and Harbors Act, (Section 10) Requirements for dredging and excavating activities in navigable waters of the U.S.

l) 33 CFR 119, 209.120, 320-330 - U.S. Army Corps of Engineering Standards for dredge and fill activities in wetlands.

m) 40 CFR 230 - Clean Water Act (Section 404) Discharge of Dredged and Fill Materials Requirements.

n) 40 CFR 6 (App A) - Procedures for Floodplain Management and Wetlands Protection.

o) Clean Water Act - Water Quality Criteria (Section 304(a)(1) May 1, 1987). These criteria establish the 7.9×10^{-5} ug/l PCB remedial response level for surface waters at Wide Beach that was included in the Record of Decision (ROD).

p) 40 CFR 122 to 123, 125, 129 - National Pollution Discharge Elimination System (NPDES) Discharge Limitations and Permit Procedures.

q) 40 CFR 61, 63 and 62 - Clean Air Act National Emission Standards for Hazardous Air Pollutants (NESHAPS)

r) 40 CFR 761.125 - Toxic Substances Control Act - (TSCA) PCB Spill Cleanup Policy. This regulation establishes the 10 ppm soil excavation level for Wide Beach that was included in the ROD.

s) 40 CFR 761.60 - TSCA Requirements for Disposal of PCB Contaminated Wastes

t) 40 CFR 761.65 - TSCA Requirements for PCB Storage.

u) 40 CFR 761.79 - TSCA Requirements for Decontamination of Treatment Containers.

v) 40 CFR 268 - RCRA Land Disposal Restrictions for "California List" Wastes. These restrictions apply to liquid hazardous waste contaminated with PCBs above 50 ppm, among other contaminants.

3.1.3.2 State Regulatory and Statutory Requirements

a) 6 NYCRR 373 and 374 - General and Specific Standards for Design, Operation and Closure of Hazardous Waste Management Facilities and Permit Requirements. These standards apply to the on-site chemical treatment facilities.

b) 6 NYCRR 360 - Standards for Solid Waste Management Facilities

c) 6 NYCRR 200 - General Provisions
6 NYCRR 201 - Permits and Certificates
6 NYCRR 202 - Emissions Testing, Sampling and Analytical Determinations
6 NYCRR 211 - General Prohibitions
6 NYCRR 212 - General Process Emissions Sources

d) 6 NYCRR 256 and 257 - New York Ambient Air Standards

e) Clean Water Act Section 401 - Certification Standards for New York Review of Activities Affecting State Waters

f) 6 NYCRR 750-758 - New York State Pollution Discharge Elimination System (SPDES) Requirements

g) 6 NYCRR 701 (Appendix 31) and 702 - New York Ambient Surface Water Standards

h) New York Coastal Zone Management Plan

i) 6 NYCRR 500 - New York Flood Hazard Area Construction Requirements

j) Environmental Conservation Law (ECL) Article 24 - New York Freshwater Wetlands Act Requirements

k) ECL Article 34 - New York Coastal Erosion Law Requirements

3.1.3.3 Local Regulations

The Contractor shall perform all site mobilization activities (e.g. temporary utilities) and other activities in accordance with local water supply, power supply, telephone installation and sanitary service provision requirements. Appropriate permits shall be attained for all activities performed outside of the site area.

3.1.4 Waste Generator Status

The Contractor shall provide supporting documentation to complete hazardous waste manifests and obtain services of permitted treatment, storage and disposal (TSD) facilities. With regard to disposal of wastes from the Wide Beach Site Area, USEPA will be the waste generator as defined in 40 CFR 262. The Contractor shall not use any TSD facility that is not operating under appropriate Federal or State permits or authorization or other legal requirement. All TSD facilities that receive waste from the Wide Beach site shall meet the requirements of the current EPA CERCLA Off-Site Policy addressing the off-site disposal of Superfund hazardous waste. The Contracting Officer will act as USEPA's agent and sign hazardous waste manifests as provided and otherwise completed by the Contractor.

3.1.5 Regulatory Requirements for Offsite Waste Transportation

In addition to the requirements listed in Paragraph 3.1.3 and 3.1.4 of this Section and Paragraph 1.3 of Section 01640 - Off-Site Transportation and Disposal, the Contractor shall comply with the following when hazardous or non hazardous waste is transported offsite:

a) 49 CFR 100 to 179 - DOT Hazardous Materials Transport and Manifest System Requirements

b) 40 CFR 263 - Standard Applicable to Transporters of Hazardous Waste

c) 6 NYCRR 364 - Standards for Non Hazardous Waste Transport

d) 6 NYCRR 372 - Manifest Requirements for Generators and Transporters of Hazardous Waste

e) Posted weight limitations on roads and bridges

3.2 GUIDELINES

The Contractor shall comply with the guidelines contained in the following publications:

a) New York State Ambient Acceptable Levels (AAL) for Air Pollutants. (1986, Guide 1). These standards provide the 1.67 ug/m^3 remedial response level for PCPs in air that was included in the ROD.

b) USEPA, EPA order 1140 - Intermediate Training Level.

c) COE Engineering Regulation No. ER 1110-1-263, "Engineering and Design Chemical Quality Management - Toxic and Hazardous Waste".

d) COE Safety and Health Requirements Manual, EM 385-1-1, Revised October 1987.

Guidelines for chemical quality control are described in Section 01420.

3.3 STANDARDS

All workmanship and materials shall conform to State laws, local ordinances, utility company regulations, and applicable codes and other standards. In case of conflict with the Contract Documents, such laws and regulations shall apply wherever they may require workmanship or materials other than required by the codes and other standards. In the event of conflict between standards, the more stringent as determined by the Contracting Officer, shall apply. Applicable codes and standards shall include the pertinent requirements of the following organizations:

AASHTO - American Association of State Highway & Transportation Officials

ACI - American Concrete Institute

AIEE - American Institute of Electrical Engineers

ANSI - American National Standards Institute

ASME - American Society of Mechanical Engineers

ASTM - American Society of Testing Materials

NBS - National Bureau of Standards

NEC - National Electric Code

NYSDOT - New York State Department of Transportation

SECTION 01065
HEALTH AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 Summary

1.1.1 Hazard Assessment

The known contaminant found in all environmental media of the Wide Beach Development site is PCB's. Each of these isomers pose a potential health hazard as referenced in NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards.

The route of exposure most likely to yield a health effect to any resident and any worker on-site is inhalation of particulate matter. In addition to contaminated particulate matter, PCB's are capable of volatilizing into the atmosphere. The use of a direct reading total dust monitor (RAM) and a direct reading organic vapor (FID or PID) monitor shall be implemented by the Contractor to determine relative contaminant exposure.

Due to the wide spread nature of the contamination, there is a moderate potential for ingestion and high potential for skin contact of PCB's contaminated soil unless proper contamination avoidance and personnel hygiene procedures are observed.

1.1.2 This section describes the minimum health and safety requirements for remedial activities at the Wide Beach Site for the preparation of the Contractor's Site Safety and Health Plan (SSHP).

1.1.3 The responsibility of development, implementation and enforcement of the Site Safety and Health Plan (SSHP) lies with the Contractor and his health and safety personnel.

1.1.4 The SSHP developed by the Contractor shall include plans for accident prevention, personnel protection, emergency response/contingency planning air monitoring and hazardous chemicals on site. Also refer to Paragraph 5. - General Requirements.

1.1.5 The SSHP shall include but not be limited to:

a) Staff Organization, Qualifications, and Responsibilities (item 4.)

b) Level of protection (item 6.)

c) Safe Work Practices and Engineering Safeguards (item 7.)

d) Training (item 8.)

e) Medical Surveillance (item 9.)

f) Work zone categories (item 10.)

g) Personnel safety equipment and protective clothing (item 11.)

h) Personnel & equipment decontamination facilities (item 12.)

i) Personnel Hygiene (item 13.)

j) Emergency equipment and first aid requirements (item 14.)

k) Emergency response and contingency planning (item 15.)

l) Posted regulations, (item 16.)

m) Communication (item 17.)

n) Environmental and Personnel Monitoring (item 18.)

o) Accident Prevention Plan (item 19.)

p) Air Monitoring (item 20.)

q) Record Keeping and Reporting (item 21.)

1.2 Applicable Regulations/Publications

The Contractor shall comply, at a minimum, with the following:

1.2.1 Occupational Safety and Health Administration (OSHA), Standards and Regulations, 29 CFR 1910.

1.2.2 Occupational Safety and Health Administration (OSHA), Standards and Regulations: Hazardous Waste Operations and Emergency Response 29 CFR 1910.120.

1.2.3 Occupational Safety and Health Administration (OSHA), Safety and Health Regulations for Construction, 29 CFR 1926.

1.2.4 U.S. Army Corps of Engineers, Safety and Health Requirements Manual, EM 385-1-1, April 1981, revised October, 1987.

1.2.5 NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

1.2.6 U.S. Department of Health and Human Services, (DHHS) "NIOSH Sampling and Analytical Methods," DHHS (NIOSH) Publication 84-100.

1.2.7 ANSI, Practice for Respiratory Protection, Z88.2 (1980).

1.2.8 Federal Acquisition Regulation (FAR); 52.236-13, Accident Prevention.

1.2.9 ANSI, Emergency Eyewash and Shower Equipment, Z41.1 (1983).

1.2.10 ANSI, Protective Footwear, Z358.1 (1981).

1.2.11 ANSI, Physical Qualifications for Respirator Use, Z88.6 (1984).

1.2.12 ANSI, Practice for Occupational and Educational Eye and Face Protection, Z87.1 (1968).

1.2.13 ANSI Requirements for Industrial Head Protection, Z89.1 (1969).

1.3 Submittals

1.3.1 The Contractor shall submit at the Pre-Work Conference the Site Safety and Health Plan, as specified herein, to the Contracting Officer for his review. The Contractor shall make all necessary amendments required by the Contracting Officer and resubmit the SSHP to the Contracting Officer for his approval. This procedure shall continue until such time that the Contracting Officer gives his written final approval. Mobilization on-site will not be permitted until written approval of the SSHP has been received.

1.3.2 Daily safety logs shall be maintained by the Contractor and shall be submitted to the Contracting Officer daily. The logs shall include items specified in paragraph 1.24 Record Keeping and Reporting.

1.3.3 Training logs shall be maintained by the Contractor and submitted to the Contracting Officer either on request or on completion of the work.

1.3.4 Reports on air monitoring results shall be prepared and maintained by the Contractor and submitted to the Contracting Officer on a daily basis.

1.3.5 Weekly Safety Reports shall provide a summary of the range of work being done and shall include any incidents of:

a. Non-use or misuse of protective equipment;

b. Non-use of protective clothing;

c. Disregard of the buddy system, (not less than two workers working together);

d. Violation of eating, drinking, smoking and chewing regulations;

e. Any incident or injury resulting from non-compliance with the site safety program;

f. Job related injuries and illnesses.

1.3.6 A Closeout Safety Report shall be submitted by the Contractor to the Contracting Officer on completion of the work. This report shall summarize the weekly safety reports and provide an overview of the Contractor's performance with regard to the SSHP requirements. This report shall also include certification of final medical examination of on-site employees and equipment decontamination.

1.3.7 Medical Examinations: the name of the Occupational Physician and evidence of examinations of all on-site employees along with evidence of their ability to wear NIOSH/MSHA approved respiratory devise (as specified in ANSI Z88.2) shall be submitted to the Contracting Officer prior to allowing these employees on site.

1.3.8 Accident Reports

Accident reporting shall, as a minimum, comply with the requirements of EM 385-1-1. ENG Form 3394, or other forms approved by the Contracting Officer, shall be used for accident reports.

1.4 Staff Organization, Qualifications and Responsibilities

1.4.1 Certified Industrial Hygienist (CIH):

The Contractor's representative Safety Officer shall be a Certified Industrial Hygienist (American Board of Industrial Hygiene with a minimum of 4 years experience and having background) in the chemical hazardous waste industry and experience with hazards similar to these anticipated on this project. This person shall also have demonstrable expertise in air monitoring techniques and in development of respiratory protection programs for working in potentially toxic atmospheres. The CIH shall have a broad working knowledge of State and Federal occupational safety and health regulations and formal educational training in occupational safety and health.

It is not anticipated that this individual will be assigned to this site on a full time basis. The CIH may delegate the implementation and enforcement of the Health and Safety Plan and Air Monitoring program to the Health and Safety Officer defined below.

Regular on site supervision and continued evaluation of the effectiveness of the plans are to be performed by the Certified Industrial Hygienist.

The CIH will be responsible for the preparation, implementation and enforcement of the Site Health and Safety Plan and air monitoring program. The CIH shall also conduct the initial site-specific training (as a minimum) on site and provide regular support, as needed, by the Health and Safety Officer.

1.4.2 Health and Safety Officer (HSO):

The Contractor's representative Health and Safety Officer shall have a minimum of two years of hazardous waste experience and a working knowledge of current Federal and State occupational safety and health regulation and formal training in occupational safety and health. This person shall also have demonstrable experience in air monitoring techniques and the administration of respiratory protection programs.

The Health and Safety Officer shall be assigned to the work site on a full time basis for the duration of the project with functional responsibility for implementation and enforcement of the Site Safety and Health Plan and air monitoring program and shall report to the Certified Industrial Hygienist.

1.4.3 Safety Monitor(s)

The Contractor's safety monitor(s) shall be assigned to each active work area to monitor the health and safety of personnel in that area. The safety monitor(s) shall report to the Health and Safety Officer. The monitor(s) shall be proficient in the use of the monitoring equipment described in this specification. The safety monitor(s) shall receive from the CIH or his/her designee a minimum of eight hours of specialized training in the use and maintenance and of the monitoring and sampling equipment and interpretation of the data required to implement the Site Specific Health and Safety Plan. The training shall also include instructions as to when and how to notify Health and Safety Officer regarding monitoring data of concern. The CIH or his/her designee shall certify that personnel trained by him/her are proficient in the use of this equipment, by completing and signing training logs which shall identify the equipment demonstrated, outline of topics addressed in the training, date of training, and social security number of attendees.

1.4.4 Medical Consultant:

The Contractor is required to retain a medical consultant who is either a board certified or board eligible physician in occupational medicine. Certification information can be obtained from the American Board of Preventative Medicine. The physician shall have extensive experience in the area of Occupational Health and be familiar with the site hazards and remedial action projects. The Contractor shall submit a letter with his SSHSP which states that the medical consultant is aware of site conditions, proposed work plan and the hazard at Wide Beach job site.

1.5 General Requirements

1.5.1 This paragraph provides the basic general requirements for preparation of the Site Safety and Health Plan (SSHP).

The Contractor, via the Certified Industrial Hygienist shall be responsible for the development and implementation of the SSHP in accordance with the requirements of Paragraph 1.2. Applicable Regulations/ Publications above.

1.5.2 Site mobilization will not be permitted until the written Notice to Proceed has been received from the Contracting Officer.

1.5.3 Determination of the appropriate level of personnel safety equipment and procedures shall be made by the Contractor's Health and Safety Officer based on an initial site survey, results of previous investigations and continuous monitoring for increasing levels of contaminants during site activities.

As work progresses, the Health and Safety Officer shall specify personnel protection levels based on site activity and monitored contaminant levels in the breathing zone (BZ).

1.5.4 Should the Contractor seek modification of any portion or provision of the SSHP, such modification shall be requested in writing to the Contracting Officer, and, if approved, be authorized in writing by all who authorized the SSHP. The modification shall be appended to the SSHP. All on-site personnel shall be fully informed of the modifications and required actions.

1.5.5 Specifications and requirements delineated in this section are in addition to or an amplification of all applicable State and Federal regulations pertaining to this kind of work. Any revision or addition to these regulations must be reviewed by the Contractor for the applicability to his Site Specific Health and Safety Plan. In such case, the Contractor shall revise or add the new requirement to his SSHP and resubmit it to the Contracting Officer for review and approval.

1.5.6 Disregard for the provisions of these health and safety specifications shall be deemed just and sufficient cause for ordering cessation of all site work until the matter has been rectified to the satisfaction of the Contracting Officer.

1.5.7 The Site Safety and Health Plan shall include, but not be limited to, the requirements listed in subsection 1.1 Summary (Item 1.1.5) above.

1.6 Levels of Protection

1.6.1 The Contractor shall include in Site Specific Health and Safety Plan a list of tasks and specific levels of protection for each task to be performed. Levels of protection may be upgraded or downgraded during site activities, based upon air monitoring results, meteorologic conditions and the professional judgement of the Field HSO.

1.6.2 Initial Level of Protection - Prior to conducting on-site work activities or entering uninvestigated areas, an on-site Health and Safety Reconnaissance shall be performed. Field personnel entering the site shall be equipped with dust and organic vapor monitoring devices. In addition, and based on results of previous sampling results, personnel will wear Level D protective clothing and carry respirators. The level of respiratory protection may be upgraded to Level C if the monitoring equipment indicates a rise in contaminant levels in the breathing zone (BZ), thus necessitating use of respiratory equipment. Decision to upgrade or downgrade these levels of protection shall be the responsibility of the Field HSO.

Provided below are expected levels of protection for anticipated activities; interaction of these activities has not been considered. These consideration will be addressed by the Contractor in the SSHP.

a. Personnel involved with excavation activities on the site will initially require Level C protection.

b. Personnel involved with waste transfer and disposal operations involving the direct handling of high and low level contamination wastes will also require use of Level C protection.

c. All personnel working in the Contamination Reduction Zone (CRZ) will initially require Level D personnel protective equipment.

1.6.3 Provided below are levels of protection for anticipated site activities. Where more than one level is indicated, further definition shall by provided by the Contractor through

review of site hazards, prevailing site conditions, proposed operational requirements and monitoring in the Breathing Zone (BZ).

Activity	Personnel Protective Equipment	Modification/ Contingency
H&S Reconnaissance	D	C
Sampling Reconnaissance	C	D
Surveying Operations	D	C
Soil Sampling	D	C
Surface Water Sampling	D	C
Excavation (general)	C	D
Waste Transfer & Disposal (high level contamination)	C	D
Waste Transfer & Disposal (Low level contamination)	C	D
CRZ Activity	C	D
Decontamination-Personnel	C	C
Heavy Equipment	C	*
Sampling Equipment	C	D
General Clean Area Work	D	
Chemical Processing Facility	Refer to Section 1.20.8	

* In order to protect on-site personnel and the residents at Wide Beach, the following shall apply. If total dust levels during excavation activities exceed 5 mg/m^3 above background in the breathing zone and/or if organic vapor levels measured on the flame ionization detector (FID) exceed 5 ppm above background in the breathing zone, operations on-site shall cease until the cause of the elevated levels are evaluated and corrected as necessary. If control measures are needed to reduce total dust, and/or vapor levels below 5 mg/m^3 and/or 5 ppm, personnel applying such measures may require a higher level of protection. The proper level of protection and the resumption of activities shall be determined by the Contractor and his Health and Safety Officer (HSO).

1.7 Safe Work Practices and Engineering Safeguards

The Site Safety and Health Plan shall address the safe work practices and engineering safeguards to be employed for the work covered under this specification. These shall include but not be limited to, the following:

1.7.1 Definitions of personal protective clothing accounting for parts of the body which may come in contact with the contaminated material. Respiratory protection shall also be addressed in the SSHP.

1.7.2 The Contractor shall define the permit system in the SSHP. The protocol shall include monitoring air quality, determination of the level of protection required and an emergency contingency plan.

1.7.3 The plan shall describe protocols for loading and operating trucks on site and will include DOT requirements, covering such items as grounding, placarding, driver qualifications and the use of wheel blocks. Operation of other heavy construction equipment shall be in accordance with U.S. Army Corps of Engineering, Safety and Health Requirements Manual EM 385.1.1, and OSHA Construction Standards 29 CFR 1926.

1.8 Training:

1.8.1 The Contractor shall certify that all contractor and subcontractor personnel performing or supervising work for health, safety, security or administrative purposes, for maintenance or for any other site-related function, will receive additional Site Specific Health and Safety Training in addition to the required initial Site-Specific training. This training will be provided by the Contractor via the Health and Safety Officer. Proof of all site specific training will be documented and provided to the Contracting Officer.

1.8.2 The Contractor shall ensure that all personnel assigned to or entering the site shall have completed a minimum of forty (40) hours of general health and safety training on hazardous waste sites in addition to three (3) days of field experience in accordance with 29 CFR 1910.120(e). The training program shall be conducted by person(s) with the following qualifications: a minimum of 2 years background experience in the chemical hazardous waste industry, to include experience with the chemical and physical hazards expected at the Wide Beach Project; experience in air monitoring and sampling techniques; experience in hazard assessment techniques in order to develop accurate and adequate respiratory protection and PPE programs; familarity with State and Federal Occupational health and safety regulations.

The training program shall include, but not be lmited to the following areas:

a. Hazard analysis: chemical, physical;

b. Standard safety operating procedures;

c. Safety equipment;

d. Personal protection equipment to include care, use and proper fit;

e. Decontamination procedures;

f. Areas of restricted access and prohibitions in work areas;

g. Emergency procedures and evacuation plans;

h. Respiratory equipment training and qualitative fit-testing protocols;

i. Emergency First aid procedures and/or CPR;

j. Communications procedures on-site;

k. Hazardous materials handling procedures;

l. Air monitoring techniques;

m. Sample taking;

n. Hazardous material recognition;

o. The "buddy system" to be used at the site;

p. Provisions of OSHA Standard 1910 and 1926.

1.8.3 The Contractor shall ensure that on-site management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations shall receive the training specified in Section 8.2 above and at least eight (8) additional hours of specialized training on managing such operations at the time of job assignment.

1.8.4 The Contractor shall ensure that personnel who have received the training in item 8.2 and/or item 8.3 above shall receive eight (8) hours of refresher training annually on the items specified in Section 8.2 and other relevant topics.

1.8.5 The Contractor's Health and Safety Officer, or the Health and Safety Monitor shall be responsible for training visitors to the site, to inform them of the hazards associated with the site, to explain emergency procedures and instruct them in the use of protective gear required during the visit. No one (visitor or employee) will be permitted into the Exclusion or Contamination Reduction Zones without documented training and medical clearance.

1.8.6 The Contractor shall be responsible for, and shall guarantee that, personnel not successfully completing the required training and/or not having the required medical clearance are not permitted to enter the Exclusion Zone or the Contamination Reduction Zone.

1.8.7 The Contractor shall submit his training protocol curriculum and name/qualification of the instructor utilized with his SSHP.

1.9 Medical Surveillance

1.9.1 Details of the medical surveillance shall be included in the SSHP and shall include as minimum the requirements specified below:

a. The Contractor shall utilize the services of the occupational physician (see Paragraph 1.4., Health and Safety Personnel) to provide the medical examinations and surveillance specified herein.

b. A full medical surveillance examination shall be provided for each employee not more than 1 year prior to and upon completion of all activities at the Wide Beach site. This examination shall be administered prior to the employee performing other work involving hazardous material or within 30 days after the conclusion of the work at the Wide Beach site, whichever is sooner, unless specifically approved by the Contracting Officer.

1.9.2 The medical surveillance protocol to be implemented is the Occupational Physician's responsibility, but shall meet the requirements of USEPA, OSHA Standard 29 CFR 1910.120 and ANSI Z88.2 (1980). The medical surveillance protocol shall be as a minimum cover the following:

a. Medical and Occupational History;

b. General physical examination (including evaluation of major organ system);

c. Electrocardiogram;

d. Biological Blood profile (SMAC-21 or equivalent);

e. CBC;

f. Chest X-ray (performed no more frequently than every four years, except when otherwise indicated);

g. Serum lead and ZPP'

h. Pulmonary Function Testing (FVC and FEV1.0);

i. Urinalysis with microscopic examination;

j. Ability to wear respirator;

k. Visual Acuity;

l. Audiometric testing.

Additional clinical tests may be included at the discretion of the occupational physician.

1.9.3 The submitted medical surveillance program may be amended as conditions require, subject to the Contracting Officer's approval. The Contracting Officer's approval to the program and any amendments to it does not relieve the Contractor of his responsibility for its adequacy.

1.9.4 In addition, a non-scheduled medical examination may be conducted under the following circumstances after consulting with the Medical Consultant:

a. After acute exposure to any toxic or hazardous materials;

b. At the discretion of the Contracting Officer, the Safety Officer or occupational physician;

c. Upon receipt of a request for a medical examination from an employee with demonstrated symptoms of exposure to hazardous substances.

1.9.5 The ability of on-site employees to wear respiratory protection shall be certified by the Occupational Physician, based on criteria specified in ANSI Z88.2, Appendix A.4, and OSHA 1910.134.

1.9.6 The Contractor shall include protocols and requirements for heat and cold stress monitoring and protective measures in the SSHP. These shall include, as a minimum, work/rest schedules, based on ambient conditions and level of protection. Procedures to monitor and avoid heat/cold stress shall be followed in accordance with professional advice for heat stress and the guidance of the American Conference of Governmental Industrial Hygienists (ACGIH), in its TLV booklet 1988-1989. Such monitoring shall be performed by the Health and Safety Officer or his/her designee.

1.9.7 The Contractor shall maintain accurate records of medical surveillance in accordance with 29 CFR 1910.20.

1.9.8 Any employee who incurs lost-time due to occupational injury or illness during the period of the contract must be evaluated by the occupational physician. The employee's supervisor shall be provided with a written statement indicating the employee's fitness (ability to return to work) signed by the Occupational Physician, prior to allowing the employee to re-enter the work site. A copy of this written statement shall be submitted to the Contracting Officer. An accident report in accordance with 29 CFR 1910.20 and Army Corps of Engineers EM 385-1-1 02.A shall be completed; and copies of such reports shall be submitted to the Contracting Officer.

1.10 Work Zone Categories

Work and support zones shall be established in order to contain contamination within the smallest area possible. The Contractor shall ensure that each employee has the proper personal protective equipment for the task and zone in which he/she is to perform work. The Contractor shall include the delineated work/support zones as part of the SSHP for approval. Refer to WB-21 for initial identification of the work zones.

1.10.1 An Exclusion Zone (contaminated work areas) shall be outlined on drawings provided in the SSHP by the Contractor. The Exclusion Zone may require different levels of protective equipment. The required protective equipment for use by personnel working or entering the Exclusion Zones is specified in item 11 - Personnel Safety Equipment and Protective Clothing. Emergency equipment (such as escape packs, portable eyewashes, fire extinguishers) shall be kept in the Exclusion Zone in a plastic bag to protect them from contamination. The Contractor may change the Exclusion Zone with the written approval of the Contracting Officer. All personnel entering or exiting the Exclusion Zone shall pass through the Contamination Reduction Zone (item 1.10.2).

1.10.2 A Contamination Reduction Zone shall be established as the buffer between the Exclusion Zone and the Support Zone. The Contamination Reduction Zone shall be designated on the drawings by the Contractor. Other emergency equipment (i.e. - SCBA's, stretchers, emergency shower or eyewash, first aid kits) shall be kept in the Support Zone. The personnel protective equipment required for use by personnel working in this area is specified in subsection 11 - Personnel Safety Equipment and Protective Clothing. Decontamination equipment, supplies and stations shall be established in this area.

1.10.3 The Support Zone shall include the remaining areas of the job site. Change rooms, lunch and break areas, operational direction and support facilities, including supplies, equipment storage and maintenance areas, shall be located in this area.

1.11 Personal Safety Equipment and Protective Clothing:

1.11.1 The Contractor shall provide all on-site personnel with appropriate personal safety equipment and protective clothing. The Contractor shall also provide personal safety equipment and protective clothing for five visitors. The Contractor shall ensure that all safety equipment and protective clothing is properly used, kept clean and well maintained.

1.11.2 Personal safety and protective clothing shall be compatible with and provide protection against the chemical compounds found at the Wide Beach Project Site as follows. 29 CFR 1910.120, Appendix B, Part A. Protective equipment shall include that for both the excavation activities and the chemical processing facility.

1.11.2.1 Level D protection shall consist of the following:

a. Cotton coveralls and/or disposable coveralls;

b. Neoprene (or equivalent) steel toe/shank boots that meet or exceed ANSI 24.1.1;

c. Neoprene (or equivalent) outer gloves;

d. Safety glasses or goggles;

e. Hardhat.

1.11.2.2 Level C protection shall consist of the following:

*a. Uncoated or poly-coated Tyvek with hoods and booties attached;

b. Surgical inner gloves;

c. NIOSH/MSHA approved full-face air purifying respirator (APR) equipped with combination organic vapor/HEPA filter cartridges;

d. Face shield attached to hardhat for tasks where a potential splash hazard exists;

e. Escape self-contained breathing apparatus (SCBA) with at least a 5 minute capability; ("optional as applicable")

f. All items included in level D protection (11.2.1).

* Decision for personnel to wear uncoated or polycoated tyvek shall be made by the Contractor's HSO, and will be contingent upon site conditions, on-going site activities and the levels of PCB-containing particulate matter.

1.11.2.3 Level B protection shall consist of the following:

a. Saran-coated Tyvek with hoods and booties attached;

b. Full-face positive-pressure SCBA, or full-face supplied air respirator equipped with 5-minute escape capability;

c. Items b,d,f of level C protection (11.2.2).

1.11.2.4 Non-disposable clothing may be substituted for some items required for Levels B and C protection. These substitutes shall be described in the Contractor's SSHP.

1.11.3 Programs for respiratory protection shall be described and documented in the SSHP and shall be in conformance with 29 CFR 1910.134 and ANSI Z88.2.

1.11.4 On-site personnel unable to pass a qualitative respirator fit test as specified in 29 CFR 1910.134 and ANSI Z88.2 shall not be permitted to enter or work in the Exclusion Zone or Contamination Reduction Zone.

1.11.5 Each respirator shall be individually assigned and not interchanged among employees without cleaning and sanitizing. Cartridges shall be changed daily or upon breakthrough, whichever occurs sooner.

1.11.6 All prescription eyeglasses brought to the site shall be safety glasses. Contact lenses shall not be permitted on-site. Prescription lenses for on-site employees requiring vision correction shall be provided in spectacle kits designed by the manufacturer of the respirators.

1.11.7 All personnel protective equipment worn on site shall be decontaminated or properly disposed of at the end of each work day or when leaving the Exclusion Zone. The Health and Safety Officer shall ensure that all personnel protective equipment is decontaminated prior to being reissued.

1.12 Personnel and Equipment Decontamination Facilities:

1.12.1 The Contractor shall establish procedures for small equipment (i.e. - respirators, instruments) decontamination and personnel decontamination which shall be included in the SSHP. The Contractor shall provide and maintain personnel and equipment decontamination facilities as specified hereunder.

Personnel decontamination facilities shall include clean change rooms, lockers, shower facilities, laundry and lunch room for all personnel at the project site. Personnel shall use the shower facilities before changing into their street clothes at the end of their working shift and prior to leaving the site. Personnel shall wash hands, face and other exposed skin areas prior to work breaks and eating. The Contractor shall provide soap and shampoo for washing and showers, and towels and work clothes, (personnel showering shall include washing of hair). Work clothes shall be left in the change facility. Except for work within the Support Zone, no work clothing, shoes or boots shall be worn off or carried out of the project area. Soiled work clothes shall be laundered on-site or off-site by the Contractor. Boots, gloves and respirators shall be decontaminated by means of decontamination washdown procedures performed prior to the entering Support Zone. All required breathing devices shall be provided and maintained by the Contractor. Eating, chewing, smoking and drinking shall be prohibited except in facilities provided in the Support Zone.

1.12.2 Personnel Decontamination Facilities:

The Contractor shall provide Personnel Decontamination Facilities consisting of a personnel decontamination area, shower/change trailer and a laundry facility. Separate shower/change facilities shall be provided for male and female employees. These facilities shall be established and maintained by the Contractor.

1.12.2.1 Layout and Features:

The Contractor shall submit a drawing for the Contracting Officers' review and approval, showing the proposed layout of the facilities to be established. The features of the facilities shall include, but not be limited to, the following:

a. Smooth, watertight floors graded to the drain to facilitate daily cleaning;

b. Provisions for employees working in the Exclusion Zone to remove protective outer clothing and to wash hands, face, and other exposed skin prior to eating; and provisions to remove all clothing and "shower out" before leaving the site;

c. Provisions for Contamination Reduction Zone employees to remove protective outer clothing and washup before eating or shower before leaving site;

d. Hot and cold water system for showers, laundry and sinks;

e. Heating, ventilating, air conditioning and lighting systems;

f. Benches, tables, lockers and boot racks for clothing;

g. Chemical toilets;

h. Wastewater from laundry, showers and floor drain shall be piped to segregated collection system and handled as contaminated aqueous waste;

i. Inner protective clothing and towels shall be washed using laundry detergent or soap and chlorine bleach;

j. Pure, non-perfumed soap and shampoo shall be provided.

1.12.2.2 Personnel Decontamination Area

The personnel decontamination area is the initial area where surface contamination and outer protective clothing are removed. The area shall be partially covered (pavilion) to provide workers protection from the weather. This area shall include provisions for washing contamination and mud from boots, gloves, protective clothing and respirators. Boots and gloves shall be washed with a mixture of water and Alcanox or equivalent. Respirators shall be washed with a non-alcohol sanitizer solution. Containers for collection of contaminated tyveks, gloves, etc. shall be provided. Provisions for drumming the boot and glove washes and rinses shall be made. The contaminated tyveks, gloves and other residues from decontamination of personnel and equipment shall be disposed at an approved off-site facility.

1.12.2.3 Work Area Change Room

All dirty work area clothing shall be removed in this area. Benches plus tables and lockers for clothing and equipment shall be provided. A floor drain shall also be provided.

1.12.2.4 Shower Room

Sufficient shower heads shall be provided, along with a deck or mat for the walkways and a floor drain. Shower heads shall meet, as a minimum, the requirements of OSHA-29 CFR 1910.120.

1.12.2.5 Laundry/Utilities

The laundry/utilities area shall include a floor drain, boot rack for washed boots to drain, washer/dryer and hot water heaters, as appropriate. If an off-site laundry is approved by the Contracting Officer, it shall be notified in writing of the potential hazardous contaminants on the clothing so that appropriate precautions can be taken in handling and laundering.

1.12.2.6 Lunch Room

The lunch room shall be provided with a floor drain to allow for daily scrubbing of the tables and floor with detergent and chlorine bleach.

1.12.2.7 Clean Room

This area shall include lockers for employee's street clothes, benches and a security area for valuables as appropriate. A floor drain will be installed and daily scrubbing of the floor with detergent and chlorine bleach will be required.

1.12.2.8 Contaminated Aqueous Waste

The Contractor shall collect all contaminated aqueous waste and transport to the on-site Aqueous Waste Treatment System (refer to Section 11305).

1.12.3 Equipment Decontamination Stations:

1.12.3.1 The Contractor shall provide an equipment decontamination station within the Contamination Reduction Zone for removing soil from all vehicles and equipment leaving the work area. As a minimum, this station shall include a concrete pad and sump, high-pressure water wash area for equipment and vehicles and a steam- cleaning system for use after the mud and/or dirt has been cleaned from the equipment. The Contractor shall also provide storage tank(s) to collect the waste water resulting from the decontamination of the equipment and transport to the on-site Aqueous Waste Treatment System (refer to Section 11305). Provisions for collection and drumming of liquids generated during equipment decontamination shall be specified in the SSHP.

The Contractor's responsibility shall be to decontaminate and remove all equipment and the decon pad of the decontamination station. Decontamination of the equipment and pad shall be by steam cleaning at the end of construction work at a particular area prior to moving to another area, and at the completion of all work activities on site. The Contractor shall provide the Contracting Officer with test sampling results of the decon pad to ensure no contamination remains prior to off-site disposal. Refer to Section 01420 for sampling and testing requirements.

1.12.3.2 A designated clean area shall be established within the Contamination Reduction Zone for performing equipment maintenance. This area shall be used when personnel are required to come in contact with ground soil, i.e., crawling under a vehicle to change oil. All equipment within the Exclusion or Contamination Reduction Zones shall be decontaminated prior to maintenance work.

1.12.3.3 In general, any item taken into an Exclusion Zone must be assumed to be contaminated and must be carefully inspected and/or decontaminated before the item leaves the work area. Vehicles, equipment and materials brought into the Exclusion Zone shall remain in the Exclusion Zone until it is no longer needed. All contaminated vehicles, equipment and materials shall be cleaned and decontaminated to the satisfaction of the Health and Safety Officer and the Contracting Officer prior to leaving the work area and/or the site. All construction material shall be handled and brought onto the site in such a way as to minimize the potential for contaminants being carried off-site. Separate, clearly-marked parking and delivery areas shall be established in the Support Zone.

1.13 Personnel Hygiene:

1.13.1 The Contractor shall ensure that all on-site personnel entering the Exclusion Zone or the Contamination Reduction Zone, who are subject to exposure to hazardous chemical vapors, liquids or contaminated solids, shall observe and adhere to the personal hygiene-related provisions in this section. The SSHP shall address the procedures to be utilized for compliance with these provisions.

1.13.2 On-site employees found to disregard the personal hygiene-related provision of the SSHP shall be permanently barred from the site.

1.13.3 On-site personnel shall wear personal protective equipment and clothing as specified in subsection 11. - Personnel Safety Equipment at all times whenever entering the Exclusion Zone or the Contamination Reduction Zone.

1.13.4 Used disposable outerwear shall not be re-used and shall be placed inside designated disposal containers provided by the Contractor for that purpose in the Contamination Reduction Zone.

1.13.5 All personnel returning from the Exclusion or Contamination Reduction Zones shall thoroughly cleanse their hands, faces and other exposed areas before entering the eating area.

At the conclusion of each work shift, all personnel will shower and change into clean street cloths prior to existing the site.

1.14 Emergency Equipment and First Aid Requirements:

1.14.1 Each active work area shall be provided with approved emergency eye wash and shower units in accordance with ANSI Standard Z358.1, and 20A-80 B:C type dry chemical fire extinguisher. These units may be portable. Water shall be potable and tempered.

1.14.2 At least one "industrial" first aid kit, approved by the occupational physician, and a stretcher shall be provided and maintained, fully stocked at an easily accessible, uncontaminated, manned location. Should active work areas be isolated or separated as to make one first aid station impractical, then another first aid station shall be established as required in close proximity to the work, but not inside a hazardous work area.

1.14.3 The first aid station(s) shall be specially marked and provided with adequate water and other supplies necessary to cleanse and decontaminate burns, wounds or lesions. First aid stations shall be supplied with buffer solutions for treating acid and caustic burns.

1.14.4 The Contractor shall have at least one person certified in First Aid and CPR on the site at all times. These personnel may perform other duties, but must be immediately available to tender first aid or CPR when needed. First Aid and CPR Certification shall be by the American Red Cross or other approved agency.

1.14.5 Dry chemical fire extinguishers, as specified in 14.1 shall be provided at the Contractor's office, the Contracting Officer's office and at any other site location where flammable or combustible material may present a fire risk.

1.15 Emergency Response and Contingency Planning:

1.15.1 The plan involving the health and safety of the Wide Beach Community shall be written with the assumption that some, if not all, the residents will choose to remain in their homes during the remedial activities.

The option to relocate during this period of remediation shall be given to the residents of Wide Beach. Relocation shall not be considered as part of the Contractor's scope of work, but shall be the responsibility of the Contracting Officer. If, during or prior to the start of the remedial activities, resident(s) approaches the Contractor regarding relocation, said Contractor's only responsibility in this matter shall be to bring the request to the attention of the Contracting Officer.

1.15.2 The Community Public Health Plan submitted shall be based upon the construction/excavation sequence specified by the Contractor. However, if changes or modifications in the construction/excavation sequence are required, the Community Public Health Plan shall be altered and/or modified by the Contractor to reflect such changes.

1.15.3 In addition to the regulation to be posted as specified in general requirements, the Contractor shall develop and submit with the SSHP an Emergency Response and Contingency Plan. The

Emergency Response and Contingency Plan shall meet the requirements of 29 CFR 1910.120 (1). After approval, this plan shall be posted at all Support Zone offices and at all entrances to the Exclusion and Contamination Reduction Zones. This plan shall include but not be limited to:

a. Name, address and telephone number of the Occupational Physician and the Certified Industrial Hygienist;

b. Procedure for prompt notification of local health facilities and fire department for emergency assistance;

c. Procedure for evacuation of on-site residents and personnel in the event of a significant emission, explosion or fire;

d. Specific procedure for handling personnel with any skin or respiratory exposure to chemical or contaminated soil;

e. Procedures for treatment of personnel with injuries or stress related illnesses;

f. Procedure for notifying the Engineer Contracting Officer in case of accident or emergency;

g. Emergency phone numbers as follows:

o Brant Police Dept.	(716) 549-3600 or 911
o Brant Fire Dept.	(716) 549-3600
o Brant Rescue Service	(716) 549-3600
o Hamburg Emergency Flight Helicopter	(716) 549-3600
o Lake Shore Hospital (Irving)	(716) 934-2654
o Mercy Hospital (Buffalo)	(716) 826-7000
o EPA National Response Center	(800) 424-8802
o Poison Control Center	(800) 962-1253
o USEPA Emergency Response Region II	(201) 548-8730
o NYSDEC Hotline	(800) 457-7362
o NYSDEC Region 9 Office	(716) 847-4585

- o New York State Police (716) 373-2550
- o Erie County Health Dept. (716) 649-4225

The Contractor shall provide all phone numbers for the above and any additional numbers that are deemed necessary for emergency contacts.

1.15.4 Community Public Health

In order to ensure protection of public health, the Contractor shall submit an Emergency/Contingency Plan to be in effect during all excavation and chemical processing activities for the residents at Wide Beach. The Contractor, in submitting his Emergency/Contingency Plan, shall be aware that the Wide Beach resident community is an integral part of the Wide Beach Project site. The plan shall include, but not be limited to the following potential on-site emergency situations at which time all activities on-site shall cease and all moving equipment shall be secured for the following or suspected circumstances:

a. Hazardous Waste Spill

b. Fire/Explosion

c. Vapor Emissions (Major and Minor)

d. Particulate Emission

In addition, and for each emergency situation which could potentially arise and to which on-site personnel must immediately respond, the following shall be addressed as a minimum by the Contractor:

a. Definition of the emergency

b. Protective clothing and equipment

c. Immediate response actions

d. Communications network

1.15.5 The Contractor shall arrange for emergency medical care services at the medical facility(s) listed (1.15.1) and establish the emergency hospital route prior to any work on site. A primary hospital route map and directions is included as part of this document, Figure 1.15.3, 1.15.3a. The staff at the facility shall be advised of potential medical emergencies, including the possibility of contamination of skin and clothing by specific chemicals from the Wide Beach site. The Contractors shall establish procedures and facilities for emergency communication with health and emergency services.

1.15.6 Site support vehicles designated for use in transportation of injured or ill personnel shall be provided to the medical facility(s). All on-site employees shall be thoroughly familiar with the defined emergency routes to the medical facility(s).

1.15.7 In the event of any emergency associated with remedial activities, the Contractor shall, without delay, take diligent action to safeguard personnel and residents, remove or otherwise mitigate the cause of the emergency, alert the Contracting Officer and institute whatever measures might be necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency.

1.15.8 Submittal of the following by the Contractor shall include, but not be limited to the following emergency procedures:

- o Primary emergency contacts
- o (defined) Emergency routes for excavation
- o (defined) Emergency equipment entry and exit
- o (all) Fire hydrant locations flagged
- o (all) Excavation/trench locations defined and demarcated
- o Route direction and map to hospital

In addition, perimeter monitoring for all vapors and PCB-containing particulates shall be on a continuous basis to ensure that the residents of the Wide Beach Community and beyond are not, at any time, exposed to the contaminants on-site during remedial activities.

1.15.9 Transportation of Residents

The Contractor shall provide, in a safe and secured manner, daily and scheduled transportation in and out of the project site for Wide Beach residents. This transportation shall be provided for all necessary life activities and appointments, i.e., school, shopping, medical, dental, after-school, social, etc.

1.16 Posted Regulations:

1.16.1 The Contractor shall develop a series of posted regulations which shall be reviewed and approved by the Contracting Officer. These regulations shall address the on-site protocol regarding use of personal protective equipment, personal hygiene and provision for smoking and eating and fluid intake.

1.16.2 These protocols shall be posted on all on-site trailers, within the Contamination Reduction Zone, and at the entrance to the site and shall be reviewed with the Contractor's personnel.

1.17 Communications:

1.17.1 The Contractor shall provide hardline telephone communication at his site field office and the Contracting Officer's site office.

1.17.2 Emergency numbers, as listed in item 15.1-g above, shall be prominently posted near all on-site telephones.

1.17.3 The Contractor shall provide two-way radio site communication between the Communication Control Center and each of the site activity areas; the Safety Officer, the Contracting Officer and staff, the Contractor's supervisory personnel, the laboratory, and security and each active work location.

1.17.4 The Contractor shall provide air horns for use during all emergencies or if two-way radios should malfunction.

1.17.5 The use of hand signals shall be used during emergencies, as necessary.

1.17.6 The Security Officer shall supervise site communications and manage the Communication Control Center. The control center shall be located within the Security Officer's office.

1.18 Environmental and Personnel Monitoring:

1.18.1 The Contractor shall design, develop and implement an air monitoring program as specified in subsection 1.20 [illegible] - Air Monitoring of this specification, as part of the environmental monitoring to assure that site personnel will not be exposed to harmful levels of airborne toxic chemicals in either the vapor or particulate form. As a minimum, the Contractor's air monitoring program shall provide multi-stage detection and identification of contaminants.

1.18.2 Heat Stress Monitoring:

The climate combined with the requirements for personal protective equipment may create a heat stress situation. For monitoring the body's recuperative abilities to excess heat, one or more of the following techniques shall be used:

- Monitoring of personnel wearing impervious clothing should commence when the ambient temperature is 70 degrees F or above;
- Monitoring frequency should increase as the ambient temperature exceeds 85 degrees F;

- o Personnel shall be monitored for heat stress after every work period;

- o Monitoring shall be performed by a person with current first aid certification who is trained to recognize the symptoms of heat stress.

The heat stress monitoring shall include, but not be limited to, the following:

a. Heart Rate (HR)

b. Body temperature

c. Body water loss

d. Visual observation of skin, eyes, body movements

The Health and Safety Officer shall specify the work cycle period and the rest period based on this heat stress monitoring in accordance with 1988-1989 ACGIH TLV's.

1.18.3 Cold Stress Monitoring:

To guard against cold injury, the Contractor shall provide the appropriate insulated clothing and warm shelter for rest periods. The Health and Safety Officer shall monitor the physical condition of site personnel using one or more of the following techniques:

- o Personnel exposed to temperature below -10 degrees F with wind speed of less than five miles per hour shall have already have been medically certified as suitable for such exposure.

- o All personnel certified for the above shall adhere to the work warmup schedule as specified in the 1988-1989 ACGIH TLV's.

The Contractor shall be required to establish a work/warmup schedule to be used during the cold weather months in order to eliminate the symptoms and/or effects of cold stress. The Contractor shall use and adhere to the guidance of the 1988-1989 ACGIH TLVs and has Health and Safety Officer Section addressing cold stress. In addition, and to avoid the potential effects of cold stress, the following elements affectin personnel shall be accounted for but not limited to by the Contractor and his Health and Safety Officer:

- o work activity (sedentary, light, moderate, heavy)

- o personnal clothing (CARHARTTs, hats/hard hats/liners, gloves, boots/liners, thermals, outer/inner)
- o air temperature
- o wind velocity
- o wind chill factor

Accounting for these 5 factors, the Contractor and his Health and Safety Officer shall further devise a chart for prominent display in the Support Trailer to address the criteria to be used for the work/warmup scheule for personnel.

1.19 Accident Prevention Plan:

As part of the Contractor Health and Safety Plan, the Contractor shall have the responsibility of development, implementing and enforcement of a Site Specific Accident Prevention Plan (SSAPP) (EM385-1-1, Appendix Y, paragraph 01.a October 1987). Failure to provide the required SSAPP with the SSHP will result in delayed project start-up or other appropriate action by the Contracting Officer.

The Accident Prevention Plan shall address, at a minimum, the following requirements:

1. Administrative Section:

a. Administrative responsibilities for effecting the SSAPP (identification and accountability of the Contractor personnel responsible for accident prevention);

b Local Requirements which must be complied with such as noise control, traffic problems.;

c. Method the prime Contractor propose to control and coordinate work of his subcontractors, if any.;

d. Plans for layout of temporary roads and detours and the method the Contractor plans to use;

e. Plans for initial indoctrination, continued safety education, and training for the Contractor's employees.;

f. Plan for traffic control and marking of hazards to cover haul roads, utilities, restricted areas, roads intersection.;

g. Plans for maintaining continued job cleanup, safe access and egress.;

h. Plans for fire protection and dealing with emergencies ambulance service, fire, police.;

i. Plans for inspection of the jobsite by competent persons including reports to be kept, results of the inspections, and corrective actions taken.;

j. Procedures to be used for accident investigation.;

k. Description and sketch of temporary power distribution system.;

l. Description of safe clearance procedures.;

m. Description of office trailer anchoring system.;

n. Contingency plans for severe weather.

2. Activity Hazard Analysis Section:

a. An Activity hazard Analysis shall be developed for each Contract activity and operation occurring in each major phase of work;

b. The Contractor shall develop the plan to identify the sequence of work, the specific hazards anticipated, and the control measures. Hazard Analysis shall be job specific and shall address the following major points:

- o Activity being performed (identify major phases);
- o Sequence of work;
- o Hazards to be controlled in each activity.

1.20 Air Monitoring:

1.20.1 General Requirements:

1.20.1.1 The Contractor's Health and Safety Officer shall design, develop and implement an Air Monitoring Program to detect and quantify any volatilization of soil contaminants or release of soil particles associated with remedial work in the surrounding air. The program shall be submitted as part of SSHP for review and approval by the Contracting Officer.

1.20.1.2 Information gathered during air monitoring program shall be used by the Health and Safety Officer to determine appropriate safety and personnel protective measures to be implemented during remedial operations, to document on-site all employee exposures, and to assess off-site migration of contaminants released during remedial activities so that appropriate control measures and/or contingency plans can be implemented.

1.20.1.3 Information gathered during the air monitoring program shall be cataloged and included in the project records and safety and health log.

1.20.2 General Responsibilities:

1.20.2.1 The Contractor's Health and Safety Officer shall be responsible for establishing air monitoring strategies and protocols, using real time instrumentation and appropriate industrial hygiene sampling and analytical procedures in order to characterize and quantify the airborne release and transport of contaminants during remediation work. These strategies and protocols shall address appropriate air monitoring for vapors in the active work zones and PCB-contaminated particulates at the site perimeter.

1.20.2.2 The Contractor shall be responsible for establishing and documenting baseline (background) air quality conditions prior to commencement of work and for conducting continuous air monitoring during on-site work.

1.20.2.3 All air monitoring and meteorological equipment required shall be provided by the Contractor and shall be maintained and calibrated daily in accordance with NIOSH analytical methods, equipment manufacturers' recommendations and good industrial hygiene practice.

Such maintenance and calibration data shall be recorded and included in the project record documents.

1.20.2.4 All air monitoring and meteorological equipment shall be operated only by personnel trained in their specific use (i.e. Health and Safety Officer/Safety Monitor).

1.20.2.5 The Contractor shall utilize the action levels designated in Section 20.4.8 for all planned remedial activities at Wide Beach which shall also be inclusive of the expected activities at the chemical processing facility on-site. These action levels shall determine the levels of protection, i.e., Level D, C or B, be reflective of the adequacy of continuous air monitoring and determine stop work and/or emergency/contingency action.

1.20.2.6 The Contractor shall provide the support necessary for the sampling and analysis of all samples collected during the program, for the interpretation of the analytical results and for the recording, presentation and documentation of all results.

1.20.3 Meteorological Monitoring

1.20.3.1 The Contractor shall furnish and maintain a portable meteorological station for the continuous observation and recording of wind speed, wind direction, ambient air temperature, atmospheric pressure, atmospheric humidity and atmospheric precipitation. The equipment and its placement shall be in conformance with USEPA Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) Standards (for horizontal wind speed and direction) as specified in PSD regulations promulgated by EPA under the Clean Air Act Amendments of 1977 (Public Law (P.L.) 95-95) on August 7, 1980. The station shall also include a continuous readout temperature gauge and a rainfall gauge.

1.20.3.2 The meteorological station shall be positioned by the Health and Safety Officer to provide representative data on the overall atmospheric diffusion conditions at the site. Visual wind direction indicators will be centrally located at each active work area.

1.20.3.3 The calibration, audit, data reduction and document control of meteorological equipment and meteorological data shall be specified by the Contractor. For the purposes of this document, it is to be assumed that hourly averages of all meteorological parameters during the entire air monitoring program shall be tabulated, verified and achieved.

1.20.4 Real-Time Air Monitoring

1.20.4.1 The Contractor shall furnish and maintain air monitoring equipment during all remedial activities to include: a combustible gas indicator, an organic vapor monitor (photoionization detector or flame ionization detector), an airborne total dust monitor and all necessary calibration/audit equipment and supplies.

1.20.4.2 The Contractor shall perform ambient air monitoring prior to commencement of work in order to establish baseline conditions. Monitoring shall be provided during active cleanup operations both on-site, near each active work zone, and perimeter air monitoring locations. Real-time air quality monitoring is required during excavation, staging and loading of potentially contaminated soils and/or handling of chemicals and/or contaminated liquids. A minimum of three (3) monitoring stations (one upwind and two downwind) shall be established along the perimeter of the site. The locations of these

monitoring stations shall be submitted to the Contracting Officer for daily approval. Air monitoring shall also be performed adjacent to each open soil excavation, staging and loading area and any chemical and/or contaminated liquids handling area in the Exclusion Zone(s). This monitoring shall be performed in the area of highest employee exposure risk in the Exclusion Zone.

1.20.4.3 The Contractor shall provide air monitoring for dust using an aerosol dust monitor (total DM) at the designated perimeter stations and adjacent to soil excavation, staging and loading operations.

1.20.4.4 The Contractor shall provide continuous air monitoring for volatile organic compounds with a flame ionization detector (FID) or a photoionization detector (PID).

1.20.4.5 Monitoring for organic vapor concentrations shall consist of measurements taken above background in the breathing zone (BZ) downwind of each of the following areas: each active excavation area in the Exclusion Zone, the Contamination Reduction Zone (CRZ), and the Support Zone, along with measurements collected daily at each of the three perimeter air monitoring stations at locations designated according to wind direction.

1.20.4.6 Any departures from general background shall be reported to the Site Health and Safety Officer and the Contracting Officer who under the advisement of the Health and Safety Officer shall determine when operation should be shut down and contingency plans activated.

1.20.4.7 The frequency of real-time monitoring for all on-site activities shall include as a minimum:

- Continuous monitoring for dust and combustible gas adjacent to all excavation activities.
- Continuous monitoring for organic vapors adjacent to all Exclusion Zone work.
- Monitoring at the perimeter air monitoring stations at least 4 times per 8-hour work shift.
- Monitoring in the CRZ and the Support Zone.

The Contractor shall establish the frequency of real-time monitoring in the Air Monitoring Plan.

1.20.4.8

The Action Levels for real-time monitoring during all excavation activities and those activities expected at the chemical processing facility are as follows:

Instrument	Action Levels (Volatiles)	Level of Respiratory Protection/Action
FID/PID	0.0.2 ppm (TWA) above background in BZ	Level D
FID/PID	0.2-5 ppm (TWA) above background in BZ	Level C
FID/PID	above 5.0 ppm (TW) above background in BZ	** Level B

Instrument	Action Levels (Total Dust)	Level of Respiratory Protection/Action
RAM	0-1.0 mg/m^3 above background in BZ	Level D
RAM	1.0-5.0 mg/m^3 (TWA) above background in BZ	Level C
RAM	above 5.0 mg/m^3 (TWA) above background in BZ	** Level B Utilize SCBA for airline respirator (Level B) Analysis of High-Vol-Samples from Meteorological Stations Analysis Personnel Samples

** Suspend excavation operations. Refer to Section 1.6.3 ("**").

CGI	Less than 5% LEL unknowns	Normal Monitoring

CGI	Greater than 5% LEL unknowns	Continuous Monitoring, Check Off-site Impact
CGI	Greater than 20% LEL unknowns	Stop work and allow to vent

Integrated monitoring shall be used to verify the adequacy of the action levels for total dust. Should the integrated monitoring results exceed the OSHA PEL/TLV of 0.5 mg/m^3 for PCB's (54% chlorine), the above action levels for total dust shall be lowered and respiratory protection adjusted to reflect exposure levels. In addition, the Health and Safety Officer shall notify on-site personnel of the reasons for the changes in action levels and respiratory protection.

Verbal reports shall be given to the Contracting Officer by the Health and Safety Officer whenever conditions require an upgrade/downgrade in protection levels.

1.20.4.9 If the air monitoring indicates abnormal conditions or the Health and Safety Officer feels that an imminent health hazard exists, work at that location shall be shut down and personnel shall be evacuated to a predetermined upwind location. The Contracting Officer shall be notified immediately and work will not resume until:

- o appropriate corrective measures are implemented
- o authorization to continue work is given by the Contracting Officer after consultation with the Health and Safety Officer.

1.20.4.10 If organic vapor levels in the Support Zone begin to exceed baseline ambient levels and approach action levels, appropriate action shall be taken as directed by the Contractor's Health and Safety Officer.

During such time that the organic vapor levels exceed the aforementioned limits in the Support Zone, personnel shall be notified and all personnel within this area shall don respiratory protective equipment as described in the Health and Safety Plan.

1.20.4.11 The action levels for air monitoring at the perimeter stations are as follows:

Instrument	Action Level	Action to be taken
FID	10 PPM	Stop work, initiate off-site evacuation procedures.

Instrument	Action Level	Action to be taken
CGI	20% LEL	Stop work, initiate off-site evacuation procedure, contact fire department.
RAM	$5mg/m^3$	Stop work, initiate dust control measures.

1.20.4.12 A data sheet shall be developed and implemented by the Health and Safety Officer upon which to record the following real-time air monitoring data information:

a. Date and time;

b. Location(s);

c. Scheduled Activity(s) (each location);

d. Instrument, model #, serial #;

e. Calibration data;

f. Ambient (background) monitored levels prior to scheduled activity (each location)

g. Monitored levels of contaminants/time/location.

h. Signature of Health and Safety Officer.

i. Interpretation of the data and any further recommendations by the Health and Safety Officer in consultation with the Safety Officer/Industrial Hygienist.

These results shall be given verbally to the Contracting Officer following each site scan and documented in writing by the end of each work day with three (3) copies provided. Copies of the data sheets shall be included in the daily safety log.

1.20.5 Time Weighted Average (TWA) Air Sampling

1.20.5.1 The Contractor shall provide three (3) portable, fully equipped, monitoring stations for perimeter sampling for PCB contamination. Each unit shall provide for the equipment to be located at an elevation of greater than 5 ft and less than 15 ft above ground level. The Contractor shall also provide personnel

air sampling pumps (two minimum) and appropriate sampling media for conducting required on-site TWA personnel sampling. All necessary support equipment and supplies for operating, maintaining and calibrating all equipment shall be supplied by the Contractor.

1.20.5.2 Prior to initiating any on-site activities, the Contractor shall perform background ambient air quality monitoring for vapors and PCB-contaminated particulates to generate baseline background data. Three air monitoring stations shall be established around the perimeter of the site where such monitoring will occur.

Background ambient air quality for PCB particulate matter shall be obtained from the three (3) air monitoring stations. Background samples shall be obtained on each of three (3) separate days (8-hour TWA) during normal working hours and prior to commencement of any on-site work.

1.20.5.3 The background (ambient) air quality for PCB's shall be sampled and analyzed in accordance with NIOSH Analytical Method 5503 (see attachment this section). This background data or other available data from previous site studies may be used to identify key indicator parameters for further air sampling and analyses during the site operations.

1.20.5.4 During on-site construction activities (excavation, staging, handling of soils/sediments, backfilling, handling of contaminated liquids and other earthmoving work), air monitoring for vapors and particulates shall be conducted on a daily basis, or as otherwise proposed by the Health and Safety Officer and approved by the Contracting Officer. The air monitoring locations shall include the following as a minimum.

1. The three perimeter air monitoring stations (one upwind and two downwind), established for real-time air monitoring shall initially be used for TWA measurements.

2. One (1) location in the Exclusion Zone shall be established for TWA measurements. This will be accomplished by sampling the employee expected to receive maximum exposure with a personal sampling pump or by sampling adjacent to this employee's immediate work area. (For example, if the backhoe operator is to be monitored, it may be more desirable to attach the sampling equipment directly to the machinery in an area that approximates the employee's breathing zone).

3. Perimeter and personnel TWA sampling for PCB contaminated particulates shall be conducted using NIOSH method 5503. Personnel TWA samples for total particulate matter shall be analyzed by gravimetric analysis. All samples shall be retained. At a minimum, one sample per station per week representing the day of the week when the heaviest activity occurred will be analyzed. The Health and Safety Officer shall also have all perimeter TWA air samples analyzed for a given day if real-time monitoring at the perimeter stations indicates contaminant levels exceeding baseline levels measured and established in item 20.4 above.

4. Similarly, all samples from daily personnel monitoring (in the Exclusion Zone) will be retained and, initially, the sample representing the day of heaviest activity shall be analyzed. Particulate filters will be desiccated. The Health and Safety Officer shall also have all samples taken from all personnel analyzed if the real-time monitoring indicates on-site air contaminant levels exceeding any of the action levels, necessitating upgrading of protective equipment.

1.20.5.5 The locations of the monitoring stations and selection of the maximum risk employee exposure for personnel sampling shall be proposed by the Health and Safety Officer and approved by the Contracting Officer prior to the commencement of each day's work activities.

1.20.5.6 The Contractor shall provide verbal analytical results with interpretation of the data for particulates and the Health and Safety Officer's recommendation, if any, to the Contracting Officer within 72 hours of sampling. The results shall be confirmed in a written report with three (3) copies provided to the Contracting Officer within 24 hours of providing the verbal results as specified in part 20.4. The Contractor shall inform the employees of their respective monitoring results in accordance with OSHA requirements.

1.20.5.7 The Contractor shall collect a duplicate sample for particulates at one of the monitoring locations on a daily basis. These samples shall be given to the Corps of Engineers for analysis by a Government-based laboratory for QA purposes.

1.20.5.8 In the event that the TWA analytical results indicate concentrations of particulates in ambient air in excess of background conditions at the perimeter stations, the Contractor shall notify the Contracting Officer immediately. In addition the Health and Safety Officer shall inspect the site in an attempt to determine the cause of the elevated levels. The

Contractor shall implement changes in operating procedures, if applicable, to reduce or eliminate the elevated levels. Action levels for off-site concentrations shall be established based on baseline and background data. If contaminant levels exceed the action levels, the work on-site shall cease and procedures for reducing the on-site releases to acceptable levels will be initiated.

1.20.5.9 Personnel samples and all air samples requiring laboratory analysis shall be analyzed by a laboratory accredited by the American Industrial Hygiene Association (AIHA). An AIHA accredited laboratory shall also be used to analyze the particulate filters from the perimeter monitoring stations.

1.20.5.10 Excavation Monitoring/Sampling

If direct reading monitored levels of PCB-contaminated particulates exceed 1.0 mg/m^3 above background at the source during excavation activities, perimeter monitoring with the RAM shall be initiated.

If dust levels at the perimeter exceed 1.0 mg/m^3, perimeter filter dust samples shall then be required for laboratory analysis.

1.20.5.11 Processing Facility Monitoring/Sampling

Filter samples will be collected continuously at the perimeter relative to the reprocessing facility. If PCB emissions from the processing facility exceed 10 mg/m^3, then the perimeter samples collected during the period of elevated emissions will be analyzed by the laboratory for PCBs. Otherwise one perimeter filter sample per week will be randomly selected for laboratory analysis of PCBs.

1.21 Dust Control

1.21.1 The Contractor shall conduct operations and maintain the project site so as to minimize the creation and dispersion of dust. Visible dust is not necessarily the criterion if hazardous wastes are involved.

1.21.2 The Contractor shall provide foam or water spraying equipment and clean potable water, free from salt, oil, and other deleterious materials for dust supression.

1.21.3 Refer to Section 01562 - Dust Control

1.22 General Safe Work Practices During Clearing and Grubbing Operations and all Excavation Activities

The Contractor shall ensure that the following safe work practices are established prior to the start of site activities

and are adhered to during all clearing and grubbing operations and excavation activities.

The Contractor's Health and Safety Officer (HSO) and/or Safety Monitor(s) shall be present at all times during clearing and grubbing operations.

1.22.1 Levels of protection to be worn by personnel during clearing and grubbing operations and excavation activities shall be determined by the Contractor's Health and Safety Officer using his/her professional judgement and the monitored levels of contamination recorded on the (total) dust monitor and the organic vapor detector.

1.22.2 Exclusion Zone

A primary work zone(s) shall be established within the Exclusion Zone(s) by the Contractor's Health and Safety Officer at each clearing and grubbing location and excavation area. The Exclusion Zone and the primary work zone shall be clearly demarcated and verbally noted by the HSO during daily morning briefings to alert all on-site personnel to the location(s).

The primary work zone shall be of sufficient size to encompass only the necessary and essential personnel and equipment needed during the clearing and grubbing operation and the excavation activities. This determination shall be made by the Contractor's HSO. All moving equipment used on-site shall be equipped with a backup alarm (approximately 107 dBA).

A separate zone shall be established by the Contractor's Health and Safety Officer within the Exclusion Zone and located outside of and adjacent to each primary work zone, which shall contain all non-essential personnel and emergency and first aid equipment.

1.22.3 Communications

A system of communications, shall be established and maintained at all times by the Contractor's HSO between the Command Post and personnel in each primary work zone and these personnel and those adjacent to each primary work area(s).

1.22.4 Emergencies

Prior to entry by non-essential personnel into a primary work area and following an emergency situation, the Contractor's Health and Safety Officer shall ensure that all moving equipment within the primary work areas has been shut down and secured. In addition, the Contractor's HSO or the Safety Monitor shall notify Emergency Medical Services for assistance, as necessary.

1.22.5 Unfilled holes/excavations caused as a result of the clearing and grubbing activities and that are no longer within a primary work zone(s), shall be clearly demarcated by the Contractor's HSO until such are refilled with (clean) soil and the filled areas are approved of by the Contracting Officer. The Contractor's HSO shall, also, ensure that all on-site personnel are familiar with the location of each. Refer to Site Preparation, Section 02100.

1.22.6 Illumination

Work activities for all clearing and grubbing and excavation operations shall be restricted to the time from sunrise to sunset.

10-foot candles shall be used for the illumination of all work areas, 29 CFR, 1926.26, Subpart D.

1.22.7 All excavation activities shall adhere to OSHA Construction Standards, 29 CFR 1926 and the Army Corps of Engineers Requirements, EM 385-1-1.

The handliing and moving of drums or other heavy non-moving equipment shall be accomplished by means of a dolly or similar apparatus.

1.23 Chemical Processing Facility Health and Safety Plan

The Contractor shall submit, as part of the Health and Safety Requirements for the Wide Beach Project, a Site-Specific Health and Safety Plan for the scheduled activities at the Chemical Processing Facility. This Health and Safety Plan shall include, but not be limited to the following:

- Physical Hazard Assessment
    - Moving equipment/vehicular accidents
    - slips and falls
    - heat and cold stress
- Chemical hazard assessment
    - polychlorinated biphenyls
    - reagents
    - laboratory chemicals
- Air Monitoring/Instrumentation
    - Perimeter air monitoring
      detection limits and target levels

- Personnel Air Monitoring
  - detection limits and threshold limit values
- Continuous Monitoring
- Personnel sampling

- Work Zones/Delineation

- Employee Health and Training
  - Medical surveillance examination
  - Training documentation
  - Medical records
  - Injury and illness treatment

- Personnel Protective Equipment
  - Protective Clothing
    - Laboratory/Analysis Work
    - Maintenance and Noncontaminated Work
    - Reactor Loading, Sampling and Filtering
    - Soil Blending and Equipment Decontamination
  - Respiratory Protection
  - Hearing Protection

- Decontamination Procedures

- Safe work practices

- Emergency procedures/contingency plan/actions
  - Emergency telephone numbers
  - Fires
  - Spills
  - Emissions

- Site Maps

- Material Safety Data Sheets

- Medical Reports

- Route directions and map to hospital

- Incident Report

- Safety Training Records

- Respirator Fit Testing

1.24 Record Keeping and Reporting:

1.24.1 The Contractor shall maintain logs and reports covering the implementation of the Health and Safety Plan. The format shall be developed by the Contractor and shall include Training Logs, Daily Safety logs, Air Monitoring Logs, Air Monitoring Results Reports, Weekly Safety Reports and a Close-out Safety Report. These logs and reports shall be submitted to the Contracting Officer as specified.

1.24.2 Training logs shall be completed by the Health and Safety Officer and submitted to the Contracting Officer prior to allowing personnel on site. In addition, the logs and reports noted in Figure 1.24-1, shall include:

a. Employee's name, Social Security number, and attendance record;

b. Time allocation in the training session;

c. Topics covered;

d. Materials used;

e. Equipment demonstrated;

f. Equipment practice for each employee;

g. Prohibitions covered;

h. Explanation of the buddy system;

i. Fit-testing performed, and results;

j. Signature of trainer;

k. Other pertinent information.

1.24.3 A Daily Safety Log shall be completed daily by the Health and Safety Officer and submitted to the Contracting Officer. This log shall follow the format shown in Figure 1.24-2 and shall include:

a. Date;

b. Work area(s) checked;

c. Employees present in work area(s);

d. Equipment being utilized by employees;

e. Protective clothing being worn by employees;

f. Protective devices being used by employees;

g. Accidents or breaches of procedure.

1.24.4 Air Monitoring/Sampling Reports shall be completed by the Health and Safety Officer and submitted to the Contracting Officer in the daily safety log. These reports shall follow the format shown on Figure 1.24-3 and shall include:

a. Date;

b. Equipment/Instruments/Model#/Serial #;

c. Monitored levels of contamination/time/location;

d. Time-Weighted-Average results at each perimeter monitoring stations/date;

e. Time-Weighted-Average of personnel sampling, date and names of personnel sampled;

f. Calibration data (prior to and following daily use).

1.24.5 Weekly Safety Reports shall be completed by the Health and Safety Officer and submitted weekly to the Contracting Officer. These reports shall follow the format shown on Figure 1.24-4 and shall include:

a. Non-use or misuse of protective devices in an area where required;

b. Non-use or misuse of protective clothing;

c. Disregard of the buddy system;

d. Violation of eating, smoking, drinking, or chewing prohibition;

e. Job-related injuries and illness;

f. Data developed by the meteorological station;

g. Summary of air monitoring done that week including results of perimeter monitoring sample analysis completed that week.

1.24.6 Close-Out Safety Report:

At the completion of the work, the Contractor shall submit a Close-Out Safety Report. The report shall be signed and dated

by the Health and Safety Officer and submitted to the Contracting Officer. The report shall include:

a. Final medical examination results for all site personnel;

b. Equipment decontamination certificate;

c. Procedures and techniques used to decontaminate equipment, vehicles, and shower, laundry, toilet and decontamination facilities.

Final acceptance of the work will not be given before the close-out safety report has been received and approved by the Contracting Officer.

PART 2 - PRODUCTS
Not used

PART 3 - EXECUTION
Not used

* * * * * *

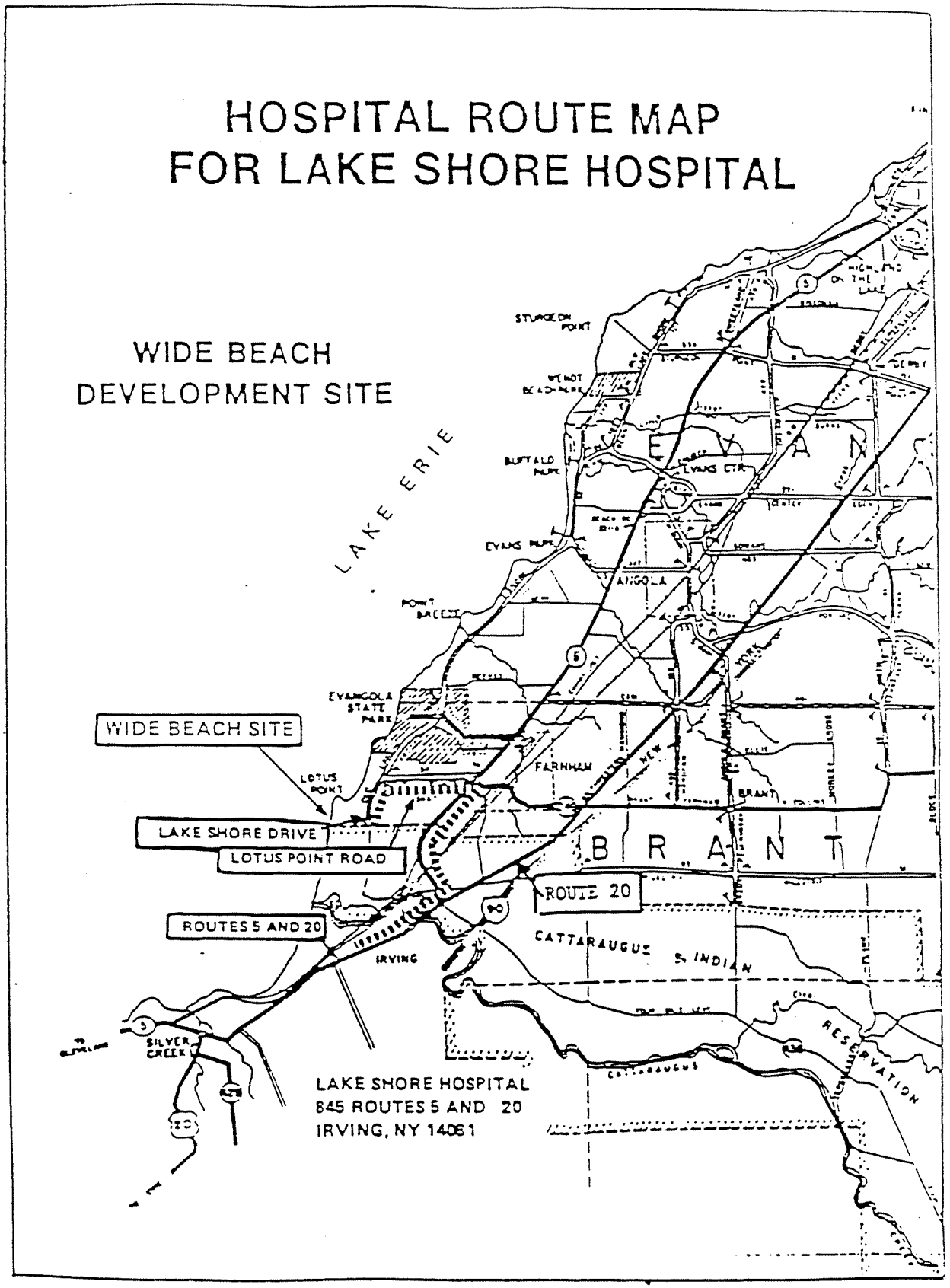
FIGURE 1.15.3

Hospital Route

Lake Shore Hospital
845 Routes 5 and 20
Irving, N.Y. 14081
716-934-2654

Leaving the Wide Beach site, make a left onto Lake Shore Drive and travel approximately 0.6 miles. Turn right onto Lotus Point Road and travel approximately 1.3 miles. Take Rte. 5 West approximately 3 miles to the Lake Shore Hospital, Routes 5 and 20, Irving, N.Y. The drive to the hospital in good weather takes approximately 15 minutes.

FIGURE 1.15.3a



FORMULA: mixture: $C_{12}H_{10-x}Cl_x$ [where x = 1 to 10]
M.W.: ca. 258 (42% Cl ; $C_{12}H_7Cl_2$);
ca. 326 (54% Cl ; $C_{12}H_5Cl_5$)

POLYCHLOROBIPHENYLS
METHOD: 5503
ISSUED: 2/15/84
REVISION #1: 8/15/87

OSHA: 1 mg/m³ (42% Cl); 0.5 mg/m³ (54% Cl)
NIOSH: 0.001 mg/m³ [1,2]
ACGIH: 1 mg/m³ (42% Cl); STEL 2 mg/m³
0.5 mg/m³ (54% Cl); STEL 1 mg/m³ (skin)

PROPERTIES:
42% Cl: BP 325 to 366 °C; MP -19 °C; d 1.38 g/mL @ 25 °C; VP 0.01 Pa (8 x 10^{-5} mm Hg; 1 mg/m³) @ 20 °C [3]
54% Cl: BP 365 to 390 °C; MP 10 °C; d 1.54 g/mL @ 25 °C; VP 0.0004 Pa (3 x 10^{-6} mm Hg; 0.05 mg/m³) @ 20 °C [3,4]

SYNONYMS: PCB; CAS #1336-36-3; 1,1'-biphenyl chloro (CAS #27323-18-8); chlorodiphenyl, 42% Cl (Aroclor 1242; CAS #53469-21-9), and 54% Cl (Aroclor 1254; CAS #11097-69-1)

SAMPLING

SAMPLER: FILTER + SOLID SORBENT (13-mm glass fiber + Florisil, 100 mg/50 mg)

FLOW RATE: 0.05 to 0.2 L/min or less

VOL-MIN: 1 L @ 0.5 mg/m³
-MAX: 50 L

SHIPMENT: transfer filters to glass vials after sampling

SAMPLE STABILITY: unknown for filters; 2 months for Florisil tubes [5]

BLANKS: 10% of samples

ACCURACY

RANGE STUDIED: not studied

BIAS: none identified

OVERALL PRECISION (s_r): not evaluated

MEASUREMENT

TECHNIQUE: GAS CHROMATOGRAPHY, ECD (^{63}Ni)

ANALYTE: polychlorobiphenyls

DESORPTION: filter + front section, 5 mL hexane; back section, 2 mL hexane

INJECTION VOLUME: 4 µL with 1-µL backflush

TEMPERATURE-INJECTION: 250 - 300 °C
-DETECTOR: 300 - 325 °C
-COLUMN: 180 °C

CARRIER GAS: N_2, 40 mL/min

COLUMN: glass, 1.8 m x 2 mm ID, 1.5% OV-17/1.95% QF-1 on 80/100 mesh Chromosorb WHP

CALIBRATION: standard PCB mixture in hexane

RANGE: 0.4 to 4 µg per sample [6]

ESTIMATED LOD: 0.03 µg per sample [6]

PRECISION (s_r): 0.044 [5]

APPLICABILITY: The working range is 0.01 to 10 mg/m³ for a 40-L air sample [5]. With modifications, surface wipe samples may be analyzed [7,8].

INTERFERENCES: Chlorinated pesticides, such as DDT and DDE, may interfere with quantitation of PCB. Sulfur-containing compounds in petroleum products also interfere [9].

OTHER METHODS: This method revises Methods S120 [10], 5503 (dated 2/15/84), and P&CAM 244 [5]. Methods S121 [11] and P&CAM 253 [12] for PCB have not been revised.

POLYCHLOROBIPHENYLS

REAGENTS:

1. Hexane, pesticide quality.
2. Florisil, 30/48 mesh sieved from 30/60 mesh. After sieving, dry at 105 °C for 45 min. Mix the cooled Florisil with 3% (w/w) distilled water.
3. Nitrogen, purified.
4. Stock standard solution of the PCB in methanol or isooctane (commercially available).*

*See SPECIAL PRECAUTIONS.

EQUIPMENT:

1. Sampler: 13-mm glass fiber filter without binders in a Swinnex cassette (Cat. No. SX 0001300, Millipore Corp.) followed by a glass tube, 7 cm long, 6 mm OD, 4 mm ID containing two sections of 30/48 mesh deactivated Florisil. The front section is preceded by glass wool and contains 100 mg and the backup section contains 50 mg; urethane foam between sections and behind the backup section. Join the cassette and Florisil tube with PVC tubing, 3/8" L x 9/32" OD x 5/32" ID, on the outlet of the cassette and with another piece of PVC tubing, 3/4" L x 5/16" OD x 3/16" ID, complete the union.
2. Personal sampling pump, 0.05 to 0.2 L/min, with flexible connecting tubing.
3. Tweezers.
4. Vials, glass, 4- and 7-mL, with aluminum or PTFE-lined caps.
5. Gas chromatograph, electron capture detection (^{63}Ni), integrator and column (page 5503-1).
6. Volumetric flasks, 10-mL and other convenient sizes for preparing standards.
7. Syringe, 10-µL.

SPECIAL PRECAUTIONS: Avoid prolonged or repeated contact of skin with PCB and prolonged or repeated breathing of the vapor [1,2,13].

SAMPLING:

1. Calibrate each personal sampling pump with a representative sampler in line.
2. Break the ends of the Florisil tube immediately before sampling. Connect Florisil tube to Swinnex cassette and attach sampler to personal sampling pump with flexible tubing.
3. Sample at an accurately known flow rate between 0.05 and 0.2 L/min for a total sample size of 1 to 50 L.
   NOTE: At low PCB concentrations, the sampler was found to be efficient when operated at flow rates up to 1 L/min, for 24 hours [8]. Under these conditions, the limit of detection was 0.02 µg/m^3.
4. Transfer the glass fiber filters to 7-mL vials. Cap the Florisil tubes with plastic (not rubber) caps and pack securely for shipment.

SAMPLE PREPARATION:

5. Place the glass wool and 100-mg Florisil bed in the same 7-mL vial in which the filter was stored. Add 5.0 mL hexane.
   NOTE: For surface wipe samples, extract each gauze pad with 25 mL hexane [7].
6. In a 4 mL vial, place the 50-mg Florisil bed including the two urethane plugs. Add 2.0 mL hexane.
7. Allow to stand 20 min with occasional agitation.

CALIBRATION AND QUALITY CONTROL:

8. Calibrate daily with at least five working standards over the range 10 to 500 ng PCB/mL.
   a. Add known amounts of stock standard solution to hexane in 10-mL volumetric flasks and dilute to the mark.
   b. Analyze together with samples and blanks (steps 11 and 12).
   c. Prepare calibration graph (sum of areas of selected peaks vs. ng PCB/mL).
9. Determine desorption efficiency (DE) at least once for each lot of glass fiber filters and Florisil used for sampling in the calibration range (step 8). Prepare three tubes at each of five levels plus three media blanks.
   a. Remove and discard back sorbent section of a media blank Florisil tube.
   b. Inject known amounts of stock standard solution directly onto front sorbent section and onto a media blank filter with a microliter syringe.
   c. Cap the tube. Allow to stand overnight.
   d. Desorb (steps 5 through 7) and analyze together with working standards (steps 11 and 12).
   e. Prepare a graph of DE vs. µg PCB recovered.
10. Analyze three quality control blind spikes and three analyst spikes to ensure that the calibration graph and DE graph are in control.

MEASUREMENT:

11. Set gas chromatograph according to manufacturer's recommendations and to conditions given on page 5503-1. Inject sample aliquot manually using solvent flush technique or with autosampler.
    NOTE 1: Where individual identification of PCB is needed, a procedure using a capillary column may be used [14].
    NOTE 2: If peak area is above the linear range of the working standards, dilute with hexane, reanalyze and apply the appropriate dilution factor in calculations.
12. Sum the areas for five or more selected peaks.

CALCULATIONS:

13. Determine the mass, mg (corrected for DE) of PCB found on the glass fiber filter (w) and in the Florisil front (W_f) and back (W_b) sorbent sections, and in the average media blank filter (B) and front (B_f) and back (B_b) sorbent sections.
    NOTE: If $W_b > W_f/10$, report breakthrough and possible sample loss.
14. Calculate concentration, C, of PCB in the air volume sampled, V (L):

$$C = \frac{(W + W_f + W_b - B - B_f - B_b) \cdot 10^{-3}}{V}, \text{ mg/m}^3.$$

EVALUATION OF METHOD:

This method uses 13-mm glass fiber filters which have not been evaluated for collecting PCB. In Method 5120, however, Aroclor 1242 was completely recovered from 37-mm glass fiber filters using 15 mL isooctane [12,15,16]. With 5 mL of hexane, Aroclor 1016 was also completely recovered from 100-mg Florisil beds after one-day storage [5]. Thus, with no adsorption effect likely on glass fiber filters for PCB, 5 mL hexane should be adequate to completely extract PCB from combined filters and front sorbent sections. Sample stability on glass fiber filters has not been investigated. Breakthrough volume was >48 L for the Florisil tube at 75% RH in an atmosphere containing 10 mg/m³ Aroclor 1016 [5].

REFERENCES:

[1] Criteria for a Recommended Standard...Occupational Exposure to Polychlorinated Biphenyls, U.S. Department of Health, Education, and Welfare, Publ. (NIOSH) 77-225 (1977).

[2] Current Intelligence Bulletin 7, Polychlorinated Biphenyls (PCBs), U.S. Department of Health and Human Services, Publ. (NIOSH) 78-127 (1975).
[3] Hutzinger, O. S. Safe and V. Zitko. The Chemistry of PCBs, CRC Press, Inc., Cleveland, OH (1974).
[4] Foreman, W. T., and T. F. Bidleman, "Vapor Pressure Estimates of Individual Polychlorinated Biphenyls and Commercial Fluids Using Gas Chromatographic Retention Data," J. Chromatogr. 330: 203-216 (1985).
[5] NIOSH Manual of Analytical Methods, 2nd. ed., V. 1, P&CAM 244, U.S. Department of Health, Education, and Welfare, Publ. (NIOSH) 77-157-A (1977).
[6] User check, Southern Research Institute, NIOSH Sequence #4121-U (unpublished, January 25, 1984).
[7] Kominsky, J. Applied Ind. Hyg. 1 (4): R-6 (1986).
[8] NIOSH Health Hazard Evaluation Report, HETA 85-289-1738 (unpublished, 1986).
[9] Hofstader, R. A., C. A. Bache, and D. J. Lisk. Bull. Environ. Contam. Toxicol., 11:136 (1974).
[10] NIOSH Manual of Analytical Methods, 2nd ed., V. 4, S120, U.S. Department of Health, Education, and Welfare, Publ. (NIOSH) 78-175 (1978).
[11] Ibid, V. 2, S121, U.S. Department of Health, Education, and Welfare, Publ. (NIOSH) 77-157-B (1977).
[12] Ibid, Vol. 1, P&CAM 253.
[13] Occupational Diseases, A Guide to Their Recognition, revised ed., 255-256, U.S. Department of Health, Education, and Welfare, Publ. (NIOSH) 77-181 (1978).
[14] Dunker, J. C. and M. T. J. Hillebrand. Characterization of PCB Components in Clophen Formulations by Capillary GC-MS and GC-ECD Techniques, Environ. Sci. Technol., 17 (8), 449-456 (1983).
[15] Backup Data Report for S120, prepared under NIOSH Contract 210-76-0123, available as "Ten NIOSH Analytical Methods, Set 2," Order No. Pb 271-464 from NTIS, Springfield, VA 22161.
[16] NIOSH Research Report-Development and Validation of Methods for Sampling and Analysis of Workplace Toxic Substances, U.S. Department of Health and Human Services, Publ. (NIOSH) 80-133 (1980).

METHOD REVISED BY: James E. Arnold, NIOSH/DPSE; S120 originally validated under NIOSH Contract 210-76-0123.

Table 1. Composition of some Aroclors [3].

Major Components	Aroclor 1016	Aroclor 1242	Aroclor 1254
Biphenyl	0.1%	<0.1%	<0.1%
Monochlorobiphenyls	1	1	<0.1
Dichlorobiphenyls	20	16	0.5
Trichlorobiphenyls	57	49	1
Tetrachlorobiphenyls	21	25	21
Pentachlorobiphenyls	1	8	48
Hexachlorobiphenyls	<0.1	1	23
Heptachlorobiphenyls	none detected	<0.1	6
Octachlorobiphenyls	none detected	none detected	none detected

FIGURE 1.24-1

TRAINING LOG

Date:_____

Employees in Attendance:

Name	S.S. #	Name	S.S. #

Description of Training Activity/Topics Covered:_____

Equipment Demonstrated:_____

Special Training and Other Comments:_____

_____ _____

Person Conducting Training Title

Signature _____

9540b

FIGURE 1.24-2

DAILY SAFETY LOG

Date: _____

Work Shift: _____

Weather Conditions: _____

_____

Scheduled Work Activities:

Personnel	Activity	PPE	Equipment

Heat//Cold Stress:

Name	Activity	PPE	Descriptons

Accidents/Incidents/Illnesses:

_____

_____

_____

Miscellaneous:

_____

_____

_____

_____ _____

Name Title

_____

Signature

9540b

FIGURE 1.25-3

AIR MONITORING/SAMPLING REPORT

Date: _____

Duration of Monitoring: _____

Work Location and Task: _____

Instrument Reading	(Time)	Instrument Reading	(Time)	Instrument Reading	(Time)

(Note: If instruments have recorders, just attach tape to report. Also note any action levels when exceeded.)

Instrument Calibration: _____

Perimeter Samples Collected: _____

Personnel Samples Collected: _____

Perimeter and Personnel Sample Results From Previous Day (Provide data when received):

Comments: _____

_____ _____

Name Title

Signature _____

FIGURE 1.25-4

WEEKLY SAFETY REPORT

Week Ending: _____

Summary of Any Violations of Procedures Occurring That Week:

_____
_____
_____
_____
_____
_____

Summary of Air Monitoring Data That Week (Include any sample analyses, action levels exceeded, and actions taken):

_____
_____
_____
_____
_____
_____

Comments: _____
_____
_____
_____
_____
_____
_____

Attach Meteorological Station Data.

_____ _____
Name Title

Signature _____

SECTION 01210
PRE-CONSTRUCTION AND PRE-WORK CONFERENCES

PART 1 - GENERAL

1.1 Pre-Construction Conference:

Prior to the Notice to Proceed, the Contractor shall meet with the Contracting Officer, or his representative for a Pre-Construction Conference. The purpose of this conference is to review submittals procedures , safety, payrolls, and labor relations, environmental protection, erosion and sediment control, work plan and schedules, schedule of values and payments, and procurement of materials. The principal features of work will also be reviewed and any questions regarding the contract and the work site will be addressed.

1.2 Pre-Work Conference:

As soon after the Notice to Proceed as practicable and prior to starting on-site construction, a Pre-Work Conference will be held between the Contracting Officer and the Contractor. Attendance by the Contractor's superintendent , quality control personnel, and any major subcontractor's superintendents will be required.

During this meeting, the Contractor shall submit ten (10) copies of the following:

1. Site Specific Quality Management Plan (SSQMP)

2. Health and Safety Plan

3. Environmental Protection Plan

4. Erosion and Sediment Control Plan

5. Security Plan

6. Material Handling Plan including:

   - o Spill and Discharge Control Plan, and
   - o Proposed Program for Off-Site Transportation and Disposal

7. Progress Chart and Preliminary Network Analysis.

8. Schedule for Obtaining On-Site/Off-Site treatment/ disposal facility Approvals.

These will be briefly reviewed to provide the Contracting Officer with a general understanding of the Quality Control (QC) system. The Contractor's schedule, particularly for the initial start-up period, will be discussed. Questions concerning the administrative requirements outlined during the Pre-Construction Conference or any other aspect of the project may also be addressed.

1.3 Submittals

The Contractor shall record the minutes of conferences and include any significant proceedings and decisions. The Contractor shall reproduce and submit to the Contracting Officer within three days after each conference three copies of the minutes of the conference and shall distribute copies to each participant in the conference and to parties affected by decisions made at the conference.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

* * * * * *

SECTION 01220
PROJECT PROGRESS MEETINGS

PART 1 - GENERAL

1.1 Summary

1.1.1 This section describes the general requirements for the convening of the minimum Project Progress Meetings that are necessary during execution of the construction work. These meetings are described under Part 3.0 of this section.

1.1.2 Additional meetings may be called by either the Contracting Officer to the Contractor during any stage of this project, up until turnover to EPA, when it is deemed necessary to raise any significant questions, established new guidelines, introduce a new aspect to the project, or any other items that will affect the progress of work.

1.1.3 Meetings and conferences may take place at the project site or some other location, that is satisfactory to both the Contracting Officer and the Contractor.

1.1.4 All expenses associated with attending the meetings that are incurred by other than the Contracting Officer shall be born by the Contractor.

1.2 Attendance:

1. The Contracting Officer or his representative;
2. The Contractor's superintendent
3. Contractor's Quality Control supervisory engineer;
4. Contractor's Safety and Health Specialist (Industrial Hygiene Technician);
5. Subcontractors as appropriate to the agenda;
6. Suppliers as appropriate to the agenda;
7. Others as requested by the Contracting Officer.

1.3 Submittals

The Contractor shall record the minutes of the meetings and include any significant proceedings and decisions. The Contractor shall reproduce and submit to the Contracting Officer within three days after each meeting three copies of the minutes of meeting and shall distribute copies to each participant in the meeting and to parties affected by decisions made at the meeting.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 General

The Contractor shall schedule and administer progress meetings at a minimum of once per week and such additional meetings as required, and if requested by the Contracting Officer.

3.2 Meeting Requirements

The Contractor will administer the following general requirements for the progress meetings.

1. Prepare agenda for meeting.
2. Make physical arrangements for meetings.
3. Preside at meetings.
4. Record the minutes; include significant proceedings and decisions.

3.3 Suggested Agenda

The following is a list of suggested agenda for Progress Meetings:

1. Review and approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede construction schedule and proposed corrective actions.
5. Review of off-site delivery schedules.
6. Corrective measure and procedures to regain projected schedule.
7. Revisions to construction schedule.
8. Progress during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality and safety standards.

12. Pending changes and substitutions.

13. Review proposed changes for effect on construction and on completion date, and effect on other contracts of the projects.

14. Other business.

* * * * * *

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.1. SUMMARY

1.1.1 This Section identifies the submittals to be provided by the Contractor as specified in the Special Clauses section of this Contract to ensure successful completion of this project.

1.1.2 This section is intended to supplement and clarify the information contained in the submittals paragraph of various sections of this Contract Document.

1.1.3 All submittals shall include calculations, drawings, plans, reports, records, flow diagrams, and details, where applicable, to assist the Contracting Officer in his/her review.

1.2 SUBMITTAL REGISTER

After receipt of the Notice to Proceed, the Contractor shall complete and submit to the Contracting Officer for approval, six copies of ENG Form 4288 Submittal Register. Partially completed copies of ENG Form 4288 are included as attachments to this Section. A minimum of one form shall be assigned to each specification section. The submittal register form shall list plans, records, reports, samples, spare parts lists, operation and maintenance manuals, or other type of submittals as required by these Specifications. Additional ENG Forms 4288 will be furnished to the Contractor by the Contracting Officer.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR:

CONTRACT NUMBER:

NAS ACTIVITY CODE I J	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		01010															
		Para. 3.6.1	Photographs and Videotapes of Pre-remediation Site Conditions							X							
		Para. 3.6.3	Photographs and Videotapes of Remediated Site Conditions							X							

*AE-Architect Engineer ED-Engineering Division CD-Construction Division AREA-Area Engineer RE-Resident Engineer

ENG FORM 4288, Apr 84 EDITION OF 1 JUL 73 IS OBSOLETE

(Proponent: DAEN ECC-O)

GPO : 1984 O - 458-677

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR:

CONTRACT NUMBER:

NAS ACTIVITY CODE	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL							ACTION ELEMENT	CONTRACTOR SCHEDULED DATES			CORPS ACTION DATES		REMARKS
				SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	TECH REVIEW BY	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	SUBMITTED TO CORPS	ACTION CODE	
		01025															
		Para. 1.2.1	Schedule of Values							X							
		Para. 1.2.2	Monthly Invoices							X							
		01050															
		Para. 1.1.2	Work Plan							X							
		Para. 1.1.2	Project Organization Chart							X							
		Para. 1.4.1	Field Change Request Procedure and Forms							X							
		Para. 1.4.3	Qualification of Survey Crew							X							
		Para. 1.4.4	Certificate of Conformance by Surveyor					X									
		01065															
		Para. 1.3.1	Site Safety and Health Plan							X							
		Para. 1.3.2	Daily Safety Logs							X							
		Para. 1.3.3	Training Logs							X							
		Para. 1.3.4	Air Monitoring Results							X							
		Para. 1.3.5	Weekly Safety Reports							X							
		Para. 1.3.6	Closeout Safety Report							X							
		Para. 1.3.7	Evidence of Medical Examinations							X							

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GPO : 1984 O - 458-677

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR:

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NAS ACTIVITY CODE	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL							ACTION ELEMENT	CONTRACTOR SCHEDULED DATES			CORPS ACTION DATES		REMARKS
				SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	TECH REVIEW BY	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	SUBMITTED TO CORPS	ACTION CODE	
		01065 (cont'd)															
		Para. 1.3.8	Accident Reports							X							
		Para. 1.6.1	Levels of Protection							X							
		Para. 1.8.7	Health and Safety Training Protocol							X							
		Para. 1.9.1	Medical Surveillance Program							X							
		Para. 1.12.1	Decontamination Procedures							X							
		Para. 1.12.2	Layout of Personnel Decontamination Facilities							X							
		Para. 1.15.2	Community Public Health Plan							X							
		Para. 1.15.3	Emergency Response and Contingency Plan							X							
		Para. 1.16.1	Posted Regulations							X							
		Para. 1.19	Accident Prevention Plan							X							
		Para. 1.20.1	Air Monitoring Program							X							
		Para. 1.23	Chemical Processing Facility Health and Safety Plan							X							

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GPO : 1984 O - 458-677

SUBMITTAL REGISTER *(ER 415-1-10)*

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR:

CONTRACT NUMBER:

NAS ACTIVITY CODE I J	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		01210															
		Para. 1.3	Minutes of Conferences							X							
		01220															
		Para. 1.3	Minutes of Meetings							X							
		01305															
		Para. 1.3	Letters of Commitment							X							
		01400															
		Para. 1.3.1	Contractor Quality Control Management Plan							X							
		Para. 3.5.4	Contractor Quality Control Records							X							
		01410															
		Para. 1.2	Construction Quality Control Program							X							
		Para. 3.3.2	Construction Quality Control Records							X							

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SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR

CONTRACT NUMBER

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		01420															
		Para. 1.5	Chemical Quality Control Program							X							
		Para. 1.5	Names of Testing Laboratories							X							
		Para. 1.5	Sample Analysis Results							X							
		01430															
		Para. 1.3	Laboratory Formal QA/QC Program							X							
		01510															
		Para. 1.2	Temporary Site Facilities General Arrangement	X													
		Para. 1.2	Details of Temporary Site Facilities	X			X	X		X							
		01540															
		Para. 1.3	Security Plan							X							
		01560															
		Para. 1.5	Environmental Protection Plan							X							

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SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR

CONTRACT NUMBER

NAS ACTIVITY CODE	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL							ACTION ELEMENT	CONTRACTOR SCHEDULED DATES			CORPS ACTION DATES		REMARKS
				SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	TECH REVIEW BY	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	SUBMITTED TO CORPS	ACTION CODE	
		01563															
		Para. 1.4	Erosion and Sediment Control Plan							X							
		01564															
		Para. 1.4	Spill and Discharge Control Plan							X							
		01600															
		Para. 1.3	Material Handling Plan							X							
		01640															
		Para. 1.4.1	Off-Site Transportation and Disposal Program							X							
		Para. 1.4.2	Proposed List of TSD Facilities							X							
		Para. 3.4	Shipment Manifest Records							X							
		01720															
		Para. 1.5	Record Documents and Samples		X					X							
		01725															
		Para. 1.2.1	As-Built Prints	X													
		Para. 1.2.2	As-Built Drawings	X													
		01730															
		Para. 1.2	Operation and Maintenance Manuals				X										

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ENG FORM 4288, Apr 84

EDITION OF 1 JUL 73 IS OBSOLETE.

(Proponent: DAEN ECC-Q)

GPO : 1984 O - 458-677

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE

CONTRACTOR:

CONTRACT NUMBER:

NAS ACTIVITY CODE	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		02090															
		Para. 1.3	Pavement Removal Plan							X							
		02220															
		Para. 1.5	Excavation Plan							X							
		02221															
		Para. 1.6	Soil Borrow Sample and Information		X				X								
		Para. 1.6	Compaction Test Results						X								
		02500															
		Para. 1.4	Detailed Design Calculations and Drawings	X						X							
		Para. 1.4	Job Mix Formula for Recycled Asphalt Concrete							X							
		Para. 1.4	Samples and Test Results		X				X								
		Para. 1.5	Certificates of Compliance					X									
		02720															
		Para. 1.5.1	Design Calculations and Drawings	X						X							
		Para. 1.5.2	Materials List and Samples		X					X							
		Para. 1.5.3	Manufacturer's Specifications				X										
		Para. 1.5.4	Manufacturer's Installation Procedures				X										
		Para. 1.5.5	Certificates of Compliance and Test Reports					X	X								

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GPO : 1984 O - 458-677

SUBMITTAL REGISTER *(ER 415-1-10)*

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT STTE

CONTRACTOR:

CONTRACT NUMBER:

NAS ACTIVITY CODE I J	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		02900															
		Para. 1.4	Samples and Material Specifications		X					X							
		03200															
		Para. 1.4.1	Shop Drawings	X													
		Para. 1.4.2	Certificates of Compliance					X									
		03310															
		Para. 1.4	Design Mix							X							
		Para. 1.5	Certificates of Compliance					X									

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SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE, NEW YORK

CONTRACTOR: | CONTRACT NUMBER:

NAS ACTIVITY CODE	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL							ACTION ELEMENT	CONTRACTOR SCHEDULED DATES			CORPS ACTION DATES		REMARKS
				SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	'TECH REVIEW BY	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	SUBMITTED TO CORPS	ACTION CODE	
		Sect. 11305															
		Para. 1.1.3 (a)	Application Form 2C - Wastewater Discharge Information (EPA Form 3510-2C)							X							
		Para. 1.1.3 (b)	NYDEP Standard Application Form CP#1 - Construction & Discharge							X							
		Para. 1.1.3 (c)	Supporting Documents, Drawings, Specifications for Discharge Approval	X						X							
		Para. 1.3.1.1	Detailed Process Flow Diagram Detailed Piping - Instrument Diagram	X													
		Para. 1.3.1.1	Bill of Materials General Arrangement - Layout Drawings	X													
		Para. 1.3.1.1	Equipment Dimension Drawings	X													
		Para. 1.3.1.2	Motor Data Sheets Actual Motor Outline Drawing				X										
		Para. 1.3.1.2	One Line Wiring Diagram List of Major Elect. Equipment	X			X										
		Para. 1.3.1.2	Cable and Conduit List Conduit Drawing	X													
		Para. 1.3.1.3	Description of System Operat. Operating Logic Diagram	X													
		Para. 1.3.1.4	Detail System Performance Testing Procedure						X								
		Para. 1.3.1.5	Weekly Report of Source and Quantity of AQUGS Waste Treated, Reused and Dispose							X							
		Para. 1.3.1.5	Sample Analyses Data							X							
		Para. 2.1.1	Calculations, Specifications and Design Drawings	X						X							

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(Proponent: DAEN ECC-Q)

GPO : 1984 O - 458-677

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE, NEW YORK

CONTRACTOR | CONTRACT NUMBER

NAS ACTIVITY CODE I J	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		Sect. 11505															
		Para. 1.4.1.1	Fugitive Emissions Monitoring and Control Report							X							
		Para. 1.4.1.2	Process Flow Diagram, 100 cu yds. per 24 hr. day, cont. soil flow	X													
		Para. 1.4.1.3	Piping - Instrument Flow Diagram, 100 cu yds. per 24 hr. day, cont.soil flow	X													
		Para. 1.4.1.4	Flow Diagram - Symbol Legend Sheet	X													
		Para. 1.4.1.5	Process Equipment Data Sheets				X										
		Para. 1.4.1.6	Instrumentation Data Sheets				X										
		Para. 1.4.1.7	Backup and Redundancy Report							X							
		Para. 1.4.1.8	Organization Chart							X							
		Para. 1.4.2	Para. 1.4.1.1-8 submittals revised to reflect contract award							X							
		Para. 1.4.3	Instrument Calibration Manual				X										
		Para. 1.4.4	Plans and General Arrangement	X													
		Para. 1.4.5	Operations Personnel Resumes							X							
		Para. 1.4.6	Process Data Recording							X							
		Para. 1.4.7	Accident, Shutdowns, Hospital, Emerg. Reports							X							
		Para. 3.2.1	Laboratory and Pilot Scale Reports Proposed Chemical Process							X							
		Para. 3.3.2	Erection and Installation Drawings	X													

*AE-Architect Engineer ED-Engineering Division CD-Construction Division AREA-Area Engineer RE-Resident Engineer

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE, NEW YORK

CONTRACTOR:

CONTRACT NUMBER:

NAS ACTIVITY CODE I J	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		Sect. 11505 (Cont'd)															
		Para. 3.6.2.1	Monitoring, Sample, Analytical Procedures							X							
		Para. 3.6.2.2	Failsafe Automatic Shutdown Procedure							X							
		Para. 3.6.2.3	Contingency Plan							X							
		Para. 3.6.2.4	Schedule							X							
		Sect. 11507															
		Para. 1.4.c	Heat Balance & Calculations							X							
		Para. 1.5.a	Shop Drawings	X													
		Para. 1.6.d	Fabrication of Equipment is in Compliance of Codes					X									
		Sect. 11509															
		Para. 1.4.1	Reagent Physical Characteristics Test Report						X								
		Para. 1.5.a,b	Mass Balance, Piping Instrument Diagram, Layout Drawing,	X													
		Para. 1.5.a,b	Vessel Drawings, Pump Data Shop Drawings	X													
		Para. 1.5.c	Shop Drawings, Design Loads, Materials of Construction	X													
		Para. 1.5.c	Arrangement Drawings Control Logics	X													
		Para. 1.6.d	Fabrication of Equipment is in Compliance of Codes					X									

*AE-Architect Engineer ED-Engineering Division CD-Construction Division AREA-Area Engineer RE-Resident Engineer

GPO : 1984 O - 458-677

SUBMITTAL REGISTER (ER 415-1-10)

TITLE AND LOCATION: WIDE BEACH DEVELOPMENT SITE, NEW YORK

CONTRACTOR

CONTRACT NUMBER

NAS ACTIVITY CODE I J	SUBMITTAL IDENTIFICATION (ITEM NUMBER)	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL: SHOP DRAWING	SAMPLE	GUARANTEE	MFR'S DATA	CERTIFICATE	TEST REPORT	OTHER, AS NOTED	ACTION ELEMENT: TECH REVIEW BY	CONTRACTOR SCHEDULED DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CORPS ACTION DATES: SUBMITTED TO CORPS	ACTION CODE	REMARKS
		Sect. 13400															
		Para. 1.5.a	Performance/Operation Instructs							X							
		Para. 1.5.c.1	General Arrangement, Bill of Materials	X						X							
		Para. 1.5.c.2	Arrangement Drawings, Panel Drawings	X													
		Para. 1.5.c.2	Wiring Diagrams	X													
		Para. 1.5.c.3	Electrical & Instrument Detail Drawings	X													
		Para. 1.5.c.4	Control Wiring Diagrams	X													
		Sect. 16010															
		Para. 1.1.e.3	One Line Diagram	X													
		Para. 1.1.e.9	As Built Drawings	X													

*AE-Architect Engineer ED-Engineering Division CD-Construction Division AREA-Area Engineer RE-Resident Engineer

ENG FORM 4288, Apr 84

EDITION OF 1 JUL 73 IS OBSOLETE.

GPO : 1984 O - 458-677

(Proponent: DAEN ECC-Q)

SECTION 01305
LETTERS OF COMMITMENT

PART 1 - GENERAL

1.1 Scope

This section covers the requirements for letters of commitment from the waste haulers and from the treatment, storage and disposal (TSD) facilities.

1.2 Letters of Commitment

Letters of commitment shall be obtained by the Contractor from waste haulers and from the TSD facilities agreeing to handle and dispose Wide Beach remedial work wastes. In the event that a TSD facility (such as a privately owned treatment works) is prohibited from issuing a letter of commitment without a sample of the waste, a conditional type letter will be acceptable. Such a conditional letter shall specifically state what types and quantities of waste the facility will accept.

1.3 Submittals

All letters of commitment shall be submitted to the Contracting Officer with the Contractors bid. A copy of each letter shall be maintained in the Contractor's file.

1.4 Information

The following information shall be submitted with the letters of commitment:

1.4.1 Waste haulers:

a. Name and EPA identification number.

b. Address.

c. Name of responsible contact for the hauler.

d. Telephone number for the contact.

e. List of types and sizes of all transport vehicles and equipment to be used.

f. A description of proposed transportation methods and procedures for hauling waste material, including type of vehicles that will be used for each type of wastes.

g. Attach any and all necessary permit authority for each type of waste transported.

1.4.2 TSD Facilities

The Contractor shall submit the following information on the Resource Conservation and Recovery Act (RCRA) approved off-site disposal facility or facilities where he is planning to take the contaminated materials removed from the site. The information in Items b through g may be required by EPA for certification of the disposal facility before award of the contract. All information shall be furnished in the Contractor's expense.

a. General Information

- o Facility name and EPA Identification Number
- o Facility location
- o Name of responsible contact for the facility
- o Telephone number for the contact
- o Signed letter of agreement to accept wastes as specified in this contract
- o Unit of measure utilized at facility for costing

b. A listing of all permits, licenses, letters of approval, and other authorizations to operate held by the proposed facility as they pertain to receipt and management of wastes derived from this contract.

c. A listing of all permits, licenses, letters of aproval, and other authorizations to operate applied for by the proposed facility but not yet granted or issued. Provide dates of application(s) submitted. Planned submittals shall also be noted.

d. The Contractor shall specify and describe the unit(s) that the proposed facility will use to manage the waste and provide dates of construction and begining of use, if applicable. Drawings may be provided. The Contractor shall identify the capacity available in the units and the capacity reserved for the subject waste.

e. The Contractor shall provide the date of the proposed facility's last compliance inspection under RCRA.

f. List of all active (unresolved) compliance orders (or agreements), enforcement notices, or notices of violation issued to the proposed facility. State the source and nature of the cause of contamination, if known. If groundwater contamination is noted, provide details of facility groundwater monitoring program.

g. State whether the proposed facility is permitted to receive material from the Wide Beach site and that the facility meets all applicable requirements.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

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SECTION 01400
SITE SPECIFIC QUALITY MANAGEMENT PLAN

PART 1 - GENERAL

1.1. Summary

1.1.1 This section covers the general Quality Assurance requirements for control of the equipment material and services supplied by the Contractor during the construction and analysis activities.

1.1.2 The Quality Assurance Policy for the project shall be described by the Contractor in a detailed Site Specific Quality Control Management Plan (SSQMP). The SSQMP shall include consideration of the technical specification requirements and contain provisions to assure identification of and compliance with the requirements of EPA, USACE and State Regulations. The SSQMP shall include a Construction Quality Control (Construction QC) program and a Chemical Quality Control program (Chemical QC program). Sections 01410 and 01420 present the requirements of these programs.

1.1.3 Contractor's Quality program shall provide assurance that activities affecting quality are documented within the document control system and accomplished in accordance with written instructions, drawings and procedures. Provisions shall be established for communicating to all responsible individuals in Contractor's organization that Quality Assurance policies, plan and procedures are mandatory requirements which shall be implemented.

1.1.4 Activities affecting quality shall be accomplished under controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanliness; adequate laboratory facilities; and assurance that all prerequisites for the given activity have been satisfied.

1.1.5 Prior to the initiation of work, Contractor shall review drawings, specifications, applicable codes, standards and other contract documents to assure proper knowledge of the contract requirements.

1.2. Related Sections

Section 01410 - Construction Quality Control
Section 01420 - Chemical Quality Control
Section 01430 - Chemical Testing Laboratory Services

1.3. Submittals

1.3.1 Contractor shall submit his Site Specific Quality Control Management Plan (SSQMP) to the Contracting Officer for review and acceptance at the Pre-work conference. The Contractor shall make all necessary amendments as instructed by the Contracting Officer and resubmit to him for his acceptance. The Contractor will not be authorized to work in the Hot Zone (or appropriate zone delineated by the Contracting Officer) until the SSQMP have been reviewed and approved by the Contracting Officer.

1.3.2 The Contractor's SSQMP shall include at a minimum the following:

a. A description of the quality organization including a chart showing lines of authority and acknowledgment that the CQC staff shall report to the Project CQC system manager.

b. The name, qualifications, duties, authorities and responsibilities of each person assigned to perform QC functions.

c. A copy of the letter to the CQC system manager signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the CQC system manager.

d. Procedures for controlling activities related to inspections, testing, noncompliance conditions, auditing and documents including those of subcontractors, off-site fabricators, laboratory suppliers and purchasing agents.

e. Reporting procedures including proposed reporting formats.

f. Chemical Quality Control as specified in Section 01420 of the technical specification.

1.3.3 Procedures and/or other documents relating to construction and laboratory activities shall be submitted to Contracting Officer for review and acceptance for conformance to contract requirements. Any comments by the Contracting Officer shall be resolved and the Contractor shall not begin any construction activities until Contracting Officer is assured that contractor's implementing procedures are in accordance with the contract requirements.

1.4. Quality Organization

1.4.1 Contractor shall establish and execute a SSQMP which shall clearly define the organizational structure within which the SSQMP is to be planned, implemented and executed.

1.4.2 The authority and responsibility of persons performing quality activities shall be stated in writing. The Quality organization shall document the functional lines of authority within the Quality organization.

1.4.3 The Contractor's CQC System Manager shall be responsible for overall management of the CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager for this contract shall be an approved, qualified hazardous material removal engineer or comparable individual whose sole responsibility is to ensure compliance with contract Quality plan and specifications. This person shall demonstrate his ability to perform correctly the duties required of him to the satisfaction of the Contracting Officer and shall be physically at the project site whenever work is in progress and will be in charge of the Contractor's Quality Control program for this project. All the Contractor's submittals for approval shall be reviewed and modified or corrected as needed by him or his authorized assistants and approved prior to forwarding of such submittals to the Contracting Officer.

The CQC System Manager may designate some of his responsibilities to another qualified person who shall be approved in advance by the Contracting Officer.

1.4.4 The person or organization responsible for measuring the effectiveness of the SSQMP shall be designated and shall have direct access to responsible management level able to take appropriate action.

1.4.5 Personnel - A staff shall be maintained under the direction of the CQC system manager to perform all Quality activities. The actual number of the staff during any specific work period may vary to cover work phase needs, shifts, and rates of placement. The personnel of this staff shall be fully qualified by experience and technical training to perform their assigned responsibilities and shall be directly hired by and work for the prime Contractor.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION

3.1. Inspection

3.1.1 Contractor shall establish a program for inspection of activities affecting quality and shall cover all construction site and laboratory operations including both on-site and off-site operations. Inspections shall be performed to verify compliance to documented instructions, drawings, procedures and specifications as required by the Contract. Such inspections shall be performed by individuals other than those who performed the activity being inspected.

3.1.2 Inspections shall be performed in accordance with an established plan when such a plan can be effectively performed. Otherwise indirect control by monitoring processing methods shall be provided. Inspections required by the contract shall be identified in the Plan. The inspection plan shall be detailed sufficiently to describe and identify the major inspection related to the construction and lab activities to be performed. The inspection plan may be used by the Contracting Officer in determining his witness points.

3.1.3 A detailed breakdown of the required specific inspections are provided in applicable sections of the technical specification.

3.2. Tests

3.2.1 Procedures:

a. When testing is required by the Contract or by technical specification, Contractor shall establish a test program to assure that all required testing is properly identified, documented and performed under suitable environmental conditions including cleanliness, and shall be performed in accordance with written test procedures.

b. Test Procedures shall incorporate or reference the requirements as contained in technical specification codes, standards and regulations of the EPA, USACE and State of New York. The Contractor shall submit the test procedures to the Contracting Officer for review and acceptance prior to their implementation. Test procedures shall contain the following information at a minimum:

1. Test objective

2. Reference to tests being conducted by qualified personnel trained in the proper application and use of various instruments and methods involved.

3. Reference to use of calibrated instrumentation, appropriate and adequate test equipment, preparation conditions and items to be tested.

3.2.2 Testing:

a. The Contracting Officer and EPA representative will have the right of access to check laboratory equipment in the proposed labs for compliance with the standards set forth in the contract technical specification and to check the lab's testing procedures and techniques.

b. The acceptability of the proposed laboratory shall be subject to compliance with the specific criteria listed in the appropriate sections of the laboratory services (Section 01430).

3.2.3 Testing Equipment

All test and measuring equipment shall be individually identified, calibrated, and maintained at prescribed intervals, or prior to use, and be traceable to certified equipment having known valid relationships to nationally recognized standards (i.e., National Bureau of Standards). If no national standards exists, the basis for calibration shall be documented.

c. Equipment shall be marked to indicate calibration status. Records shall be maintained which include information specific to individual equipment, date of last calibration, by whom it was calibrated and the next calibration due date.

3.3. Notification of Noncompliance

3.3.1 Contractor shall establish and document a system to control services or activities which do not comply with the Contract requirements. The system shall provide for prompt identification, segregation, documentation and disposition of noncompliance as well as notification to affected organizations.

The system shall provide for immediate action to withhold work until disposition is determined. The responsibility and authority for the disposition of noncompliance shall

be clearly defined. Noncomplying conditions can be resolved by issuing a field change request or shall be reviewed, retested and reinspected and then accepted or rejected in accordance with documented procedures as required. All noncomplying conditions shall be clearly identified as to noncomplying status, segregated from acceptable samples, analysis and test results.

3.3.2 The Contracting Officer will notify the Contractor of any noncompliance with the contract requirements. The contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the contractor or his representative at the site of the work, shall be deemed sufficient for the purpose of notification. If the contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.3.3 The corrective action shall not simply be limited to the specific local condition at hand, but must address itself to system noncompliances that may be the contributing factor resulting in the deviation or noncompliances. The cause of adverse conditions, therefore, shall be determined and corrective action shall be made in the system to preclude recurrence of noncompliances. Corrective action shall extend to associated subcontractors as necessary. A description of the adverse condition, its cause and corrective action shall be documented and reported to appropriate levels of management.

3.4. Audits

3.4.1 Contractor shall establish and document an auditing system to verify the implementation of his SSQMP for the contract. The auditing system shall be used to make determination regarding the effectiveness of SSQMP.

3.4.2 Auditing shall be performed in accordance with a written instructions, procedures or checklist and documented. Audits shall be performed by qualified and properly trained personnel who are familiar with the SSQMP, auditing procedures and techniques. Auditing system shall cover all the quality affected activities for construction as well as laboratory and shall be applicable to the on site and off site location including the subcontractors. The results

of the audits shall be documented and reported to the appropriate levels of management. All noncompliance conditions identified during the audit shall be reaudited to verify the corrective action taken by the appropriate organization.

3.5. Records

3.5.1 Sufficient records shall be prepared as work is performed to furnish documentary evidence of the quality of construction and laboratory analysis and of activities affecting quality. Records shall be consistent with applicable portions of the contract.

3.5.2 The records shall include the results of review, inspections, tests, audits, monitoring of work performance, and laboratory analysis. The records shall also include, as appropriate, closely related data such as qualifications of personnel, procedures and equipment, and other documentation required by applicable parts of this specification and/or the contract. Inspection and test records shall, as a minimum, identify the date of inspection or test, the inspector or data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted. Required records shall be identifiable, meaningful and maintained in an appropriate manner.

3.5.3 The Contractor shall maintain current records of Quality operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form and indicate a description of trades working on the project, the numbers of personnel working, the weather conditions encountered, any delays encountered, and acknowledgment of noncompliances noted along with the corrective actions taken on current and previous noncompliances. In addition, these records shall include factual evidence that required activities or tests have been performed, including but not limited to the following:

a. Type and number of control activities and tests involved.

b. Results of control activities or tests, with authorized signature.

c. Nature of noncompliances, causes for rejection, etc.

d. Proposed remedial action.

e. Corrective actions taken.

3.5.4 These records shall cover both complying and defective or noncomplying features and shall include a statement that supplies and materials incorporated in the work comply with the contract. Legible copies of these records shall be furnished to the Contracting Officer.

3.5.5 Records shall be readily retrievable. All records shall be available for inspection and audit, at any time, by the Contracting Officer, or EPA representative.

3.5.6 The Contracting Officer will maintain a records storage facility for inspection and test records and materials certification documents which are in the custody of Contracting Officer. SSQMP shall include written procedures for the storage of Quality Assurance records prior to the time of turnover to the Contracting Officer.

* * * * * *

SECTION 01410
CONSTRUCTION QUALITY CONTROL

PART 1 - GENERAL

1.1. Summary:

1.1.1 Construction Quality Control (Construction QC) is the means by which the Contractor assures himself that his construction complies with the requirements of the contract plans and specifications. The control shall be adequate to cover all construction operations, including both on-site and off-site operations, and will be keyed to the proposed construction sequence.

1.1.2 The quality controls shall include at least four phases of inspection for all definitive features of work as follows.

1. Preparatory Inspection
2. Initial Inspection
3. Follow-up Inspection
4. Completion Inspection

The controls shall also includes site testing, reporting of noncompliance conditions, field change activities and auditing of all site activities.

1.2. Submittals:

1.2.1 The Contractor shall prepare, as part of his Site Specific Quality Control Management Plan (Described in Section 1400), a Construction Quality Control (Construction QC) Program for equipment and material supplied to the work site, and controlling the quality of construction (non-chemical) activities.

1.2.2 The Construction QC shall include at a minimum, the following:

1. Schedule of inspection activities to cover at least the following items:

   - o Site facilities construction
   - o Asphalt removal
   - o Excavation, transportation and storage
   - o Erosion and sediment control
   - o On-site PCB dechlorination
   - o On-site aqueous waste treatment

- o Backfill
- o Site storm drainage
- o Roads and driveways repaving
- o Landscaping

2. Procedures for implementing and scheduling inspection, documentation, and submittals, including those of subcontractors, off-site fabricators, suppliers and purchasing agents.

3. All testing procedures for each specific test, other than chemical testing.

4. Reporting procedures including proposed reporting formats.

5. Noncompliance conditions control procedure.

6. Procedures for field changes.

7. Procedures for auditing construction activities.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

The execution of the Construction QC shall be in accordance with the requirements of Section 01400. Additional requirements are as follows:

3.1. Control Inspections:

3.1.1 Preparatory Inspection:

The preparatory inspection shall be performed prior to beginning any work on any definable feature of the construction work. It shall include a review of contract requirements; a check to assure that the pre-remediation site conditions have been properly recorded by videotaping, submitted, and approved; a check to assure that all materials and/or equipment have been tested, submitted and approved; a check to assure provisions have been made to provide required testing; examination of the work area to ascertain all preliminary work has been completed; and a physical examination of materials, equipment and samples to assure they conform to approved shop drawings or submittal data. Further, all materials and/or equipment are on hand, and all equipment is properly calibrated and in proper working condition. The Contracting Officer shall be notified at least

24 hours in advance of the preparatory inspection and such inspection shall be recorded in the Contractor's Quality Control documentation as required below. Subsequent to the preparatory inspection and prior to commencement of work, the Contractor shall instruct each applicable worker as to the acceptance level of workmanship required in his plan in order to meet contract specification.

3.1.2 Initial Inspection:

The initial inspection shall be performed as soon as a representative portion of the particular feature of work has been accomplished and shall include examination of the quality of workmanship and a review of control testing for compliance with contract requirements, use of defective or damaged materials, omissions, and dimensional requirements. The Contracting Officer shall be notified at least 24 hours in advance of the initial inspection and such inspection shall be recorded in the Construction QC documentation as required below.

3.1.3 Follow-up Inspection:

The follow-up inspection shall be performed daily to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. Such inspections shall be recorded in the Construction QC documentation as required in item 3.3 below. Final follow up inspections shall be conducted, and test deficiencies corrected prior to the addition of new features of work.

3.1.4 Completion Inspection:

At the completion of all work or any increment thereof established by a completion time stated elsewhere in the specification, the Construction QC (CQC) System Manager shall conduct a completion inspection of the work and develop a "punch list" of items which do not conform to the approved plans and specifications. Such a list shall be included in the Construction QC documentation, as required by item 3.3 below and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or his designee shall make a second completion inspection. Deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work. Further, any particular sub-tasks of required corrections of the project will be divided into project sepcific completion dates. The completion inspection shall include a check to assure that the post-remediation site conditions have been properly recorded by videotaping, submitted, and approved by the Contracting Officer.

3.2. Tests (Other Than Chemical Sampling and Analysis)

Test Procedures: The Contractor shall perform tests specified or required to verify control measures are adequate to provide a

product which conforms to contract requirements. The Contractor shall procure the services of an industry recognized testing laboratory or he may establish an approved testing laboratory at the project site. A list of tests (other than chemical sampling and analysis) which the Contractor understands he is to performshall be furnished as a part of the Construction QC program to the Contracting Officer. The list shall give the test name, specification paragraph containing the test requirements, and the personnel and laboratory responsible for each type of test. The Contractor shall perform the following activities and record and provide the following data:

- o Verify that testing procedures comply with contract requirements;
- o Verify that facilities and testing equipment are available and comply with testing standards; and to
- o Check test instruments calibration data against certified standards (i.e., PE samples).

3.3. Documentation

3.3.1 The Contractor shall maintain current records of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form (sample form attached) and indicate a description of trades working on the project, the number of personnel working, the weather conditions encountered, delays encountered, and acknowledgments of deficiencies noted along with the corrective actions taken on current and previous deficiencies. In addition, these records shall include factual evidence which required site-specific activities or tests needed to be performed, which would include but is not limited to the following:

- o Type and number of control activities and tests involved;
- o Results of control activities or tests, with authorized signature;
- o Nature of defects, causes for rejection, etc.;
- o Proposed remedial action; and any
- o Corrective actions taken.

3.3.2 These records shall cover both conforming and defective or deficient features, and shall include a statement indicating supplies and materials incorporated in the work comply with the contract. Legible copies of these records shall be furnished to the Contracting Officer daily.

3.4. Notification of Noncompliance:

The Contracting Officer will notify the Contractor of any noncompliance with the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his representative at the site of work, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.5. Field Changes:

Refer to Section 1400 - Site Specific Quality Management Plan for execution and requirement.

3.6. Auditing Construction Activities:

Refer to Section 1400 - Site Specific Quality Management Plan for execution and requirement.

* * * * * *

SECTION 01420
CHEMICAL QUALITY CONTROL

PART 1 - GENERAL

1.1. SUMMARY

The Contractor shall prepare a Chemical Quality Control program (Chemical QC program) as part of his Site Specific Quality Control Management Plan (SSQMP) to be submitted to the Contracting Officer for approval. The Chemical QC program section covers the minimum specifications for the development of the program, which shall include the quality assurance and quality control procedures associated with those chemical analyses to be performed during the site remediation program. These specifications shall include QA/QC requirements for chemical analyses related to on-site soil clean up operations, and drummed liquid, solid wastes generated during the chemical on-site treatment processes, and the aqueous wastes treatment system.

1.1.1 Purpose - The purpose of the Chemical QC program is to ensure that the Contractor adequately addresses all chemical quality management details associated with the Specification. The Chemical QC program shall ensure that all technical data generated are accurate and representative. The type and quantity of testing shall be based on the requirements, as a minimum, set forth in these specifications (including SSQMP: Section (01400) and the Health and Safety Plan: Section 01065) and other testing as required.

The data generated by the Contractor shall be utilized to assure the following:

a. On-site excavated soils having a concentration of 10 mg/kg PCB or higher will be treated to the appropriate PCB level (a 2 mg/kg PCB maximum);
b. Any on-site drummed wastes are appropriately characterized for treatment and/or disposal;
c. The chemical characteristics of treated soil are determined in order to insure appropriate utilization as on-site backfill.
d. Aqueous waste treatment effluent shall be monitored to insure compliance with the SPDES permit requirements.

1.2 RESPONSIBILITIES

The quality of all data shall be the responsibility of the Contractor. The Contractor shall furnish qualified personnel, appropriate facilities, instruments, and testing devices necessary for the implementation of the Chemical QC program. Refer to Section 01430 Chemical Testing Laboratory Services for detailed requirements.

1.3 RELATED SECTIONS

Related work that is specified in other sections of the contract documents includes but is not limited to the following:

Section 01060	Regulatory Requirements
Section 01065	Health and Safety Requirements
Section 11305	Aqueous Waste Treatment System
Section 11505	PCB Dechlorination System
Section 01300	Submittals
Section 01400	Site-Specific Quality Control
Section 01430	Chemical Testing Laboratory Services
Section 02220	Excavation
Section 02221	Backfill and Grading

1.4 REFERENCE PUBLICATIONS

A list of publications which are appropriate for reference use in the preparation of the Contractor's Chemical QC program are presented at the end of this section. These publications are intended for supplemental guidance. Alternative analytical methods which may be presented in these guidance documents should not be substituted for analytical methods specifically identified in this Section without a technical rationale for the substitution. Such proposed substitutions will require the expressed written approval of the Contracting Officer.

Also included as an attachment to this section is a Ebasco revision of the USACE document Sample Handling Protocol for Low, Medium and High Concentration Samples of Hazardous Waste. The document should be used as a detailed guide for the preparation of the Contractor's SSQMP.

1.5 SUBMITTALS

The Contractor shall prepare and submit to the Contracting Officer for approval, a Chemical Quality Control (Chemical QC program) program as part of his Site Specific Quality Control Management Plan (SSQMP) described in Section 01400 of this technical Specifications.

The Chemical QC program shall provide the chemical quality assurance and quality control program (QA/QC) procedures necessary for those chemical analyses to be performed in conjunction with site remediation activities. As previously indicated, these will include requirements for analyses to determine on-site soil clean-up levels, chemical characterization/compatibility tests for drummed waste disposal, and hazardousness testing for solid wastes generated during on-site chemical treatment processes.

QA/QC procedures shall be in accordance with USACE requirements, as well as those of EPA, the National Institute of Occupational Safety and Health (NIOSH), and the New York State Department of Environmental Conservation (NYSDEC).

The Chemical QC program shall include the following elements:

a. The Contractor's (as well as that of any subcontractor) quality control organization, including names, qualifications, authorities, and responsibilities of all quality control personnel.

b. Provision for a properly equipped (certified) laboratory and experienced staff, including a description of facilities and instrumentation, and names and qualifications of analytical and technical personnel. In terms of the on-site laboratory(s), the responsibilities will entail:

   - The analyses required surrounding the PCB dechlorination process with excavated PCB contaminated soils;

   - The analyses required are to comply with the intent of the NYSDEC SPDES parameters, required for the discharge of surface water run-off accumulated in the excavated asphalt and soil staging area prior to on-site treatment; and

   - Other analyses required for on-site waste stream generating processes described in detail in Section 01420 and Table 01420-1.

   - The proposed laboratory will be required to successfully analyze performance evaluation samples to be supplied by the USACE-MRD and/or by the EPA Region II MMB branch prior to validation. The contracting officer may contact EPA-Region II MMB once the laboratory(ies) involved in the analytical testing have been chosen in order to determine if PE's will be necessary.

c. Proposed sample collection, preservation, handling, storage, transfer and recording procedures, including equipment.

d. Proposed analytical methods.

e. Schedule of field and laboratory inspections.

f. Procedures for assessing laboratory precision and accuracy and field completeness, representiveness and comparability of samples and data, including performance audits.

g. Proposed protocols for corrective measures.

h. Planned preparation of daily and project summary quality control reports (QC).

The Contractor shall include in the Chemical QC program a letter to the Contracting Officer describing the authorities and duties of all chemical QA/QC officers.

The Contractor is responsible for obtaining and becoming familiar with the necessary related documents from EPA which are related in the reference section. The following additional submittals/requirements are also the responsibility of the Contractor:

a. The Contractor shall provide and coordinate the services of an approved testing laboratory to perform specified services and analyses. Laboratory capabilities must be provided for the duration of the work. The facilities must meet at a minimum the requirements of Section 01430 Chemical Testing Laboratory Services and are subject to inspection and prior approval by the Contracting Officer. In addition, the laboratory performing air sample analyses should be American Industrial Hygiene Association (AIHA) accredited and/or a successful National Institute for Occupational Safety and Health (NIOSH) proficiency test program participant for the appropriate analyses.

b. The Contractor shall submit with the Chemical QC program, the names of all testing laboratory(ies) to the Contracting Officer for approval. The Contractor's laboratory(ies) shall also be inspected and approved by the Contracting Officer. In addition:

   o The Contractor shall provide the Contracting Officer with a copy of the proposed laboratory's Laboratory Quality Management Manual (LQMM), prior to the initiation of the analytical program. The Contracting Officer will require this documentation prior to its approval of the laboratory.

   o The proposed laboratory will be required to successfully analyze performance evaluation samples to be supplied by the USACE-MRD prior to validation.

c. The methods of chemical analysis to be employed shall be in accordance with all methods contained within this specification and appropriate USACE, EPA, NIOSH, and NYSDEC guidelines. All chemical analysis methods anticipated for use must be specified in the Chemical QC program. This information shall include methodology references and analytical details including operable laboratory detection limits. Specific parameters to be analyzed are listed in Tables 1420-1, 1420-2, and 1420-3.

d. The Contractor shall be responsible for obtaining all waste compatibility and characterization analysis data (where required) for the transportation and off-site disposal of liquid and solid waste generated on-site.

e. The Contractor shall provide for prompt sampling and turn-around of analysis results so as not to delay the project. Sample turn-around requirements are listed in Table 1420-1.

1.6 QUALITY MANAGEMENT OBJECTIVES

The basic goal of the laboratory's Laboratory Quality Management Plan is to assure that the chemical data collected are thoroughly documented, and legally and scientifically defensible. Provisions for the development of the Chemical QC program are based on USACE Publication (ER 1110-1-263) Engineering and Design Chemical Quality

a. To provide the requirements upon which the Contractor shall submit a Chemical QC program.

b. To assure that all chemical samples are accurately and precisely collected, analyzed and documented so that proper treatment and/or disposal of soils, waste material, and aqueous waste is undertaken, and that costs incurred by the government for waste handling and/or disposal are correctly derived.

c. To insure compliance with all appropriate EPA, USACE, DOT and NYSDEC regulations.

d. To insure that samples are properly collected, analyzed and documented to provide data as part of the Contractor Health and Safety Plan, and protect the government against claims related to exposure to hazardous chemicals.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 PROJECT ORGANIZATION AND QM RESPONSIBILITIES

The Contractor shall provide details relative to the project organization and quality management (QM) responsibilities for the prime contractor and any subcontractors to be involved in

the completion of the proposed work. The SLQMP shall clearly define the project management assignments and responsibilities to insure compliance with QA/QC protocols. The following items shall be provided in the Chemical QC program:

a. Overall project organization which includes schematic diagrams indicating key QC individuals for the prime contractor and any subcontractors and showing all contractor-subcontractor interactions and responsibilities.

b. Listing of key QC individuals and descriptions of qualifications and experience relative to toxic or hazardous materials/wastes analyses.

c. Designation of the Contractor Quality Control System Manager who shall report directly to a responsible company senior officer, and who must have experience with chemical quality control, and sampling and analysis of toxic and hazardous chemicals.

d. Qualifications and certification of the Contractor's analytical laboratory and a description of the facility's analytical instrumentation. Personnel responsible for the performance of all laboratory analysis, including supervisors, chemists and technicians shall be identified, together with a corresponding description of experience and qualifications. Refer to Section 01430-Chemical Testing Laboratory Services for more details.

3.2 SAMPLING AND SAMPLE CUSTODY PROCEDURES

3.2.1 Sampling Plan Overview - The Contractor shall prepare a sampling plan which will clearly address, at a minimum, procedures to be used to obtain representative soil, air, liquid and solid waste samples, descriptions of sampling, equipment, sample containers and sample sizes and sampling program organization.

In general, sampling and sample custody procedures shall be consistent with the attached USACE Sample Handling Protocol and EPA guidelines unless otherwise specified. In some cases special Corps procedures or, if the EPA has not developed specific analytical procedures, ASTM procedures (or NIOSH for air monitoring) recommended by the USACE and EPA shall be used.

The Chemical QC program must include a detailed description of techniques used in selecting sampling sites (random, stratified, etc.). Specific sampling and analytical procedures must be identified, including related extraction procedures, and

analytical methodologies for appropriate chemical analysis (e.g., SW-846, MCAWW, Standard Methods, ASTM or NIOSH). Specific references or descriptions should be provided including sample sizes, applicable samplers, etc. For non-standard sampling methods or modified sampling methods, detailed procedures with appropriate references are required and will require approval of the Contracting Officer.

Appropriate EPA methodologies for required chemical analyses are identified for guidance in item 3.3 of this section. Based on these guidelines, the Contractor shall identify each laboratory chemical analysis method intended for use in his Chemical QC program. Any analytical methodologies methods which are proposed as alternatives to those listed in item 3.3 shall be clearly identified and a rationale for the proposed alternative procedure supplied. Approval of any alternatives by the Contracting Officer is required.

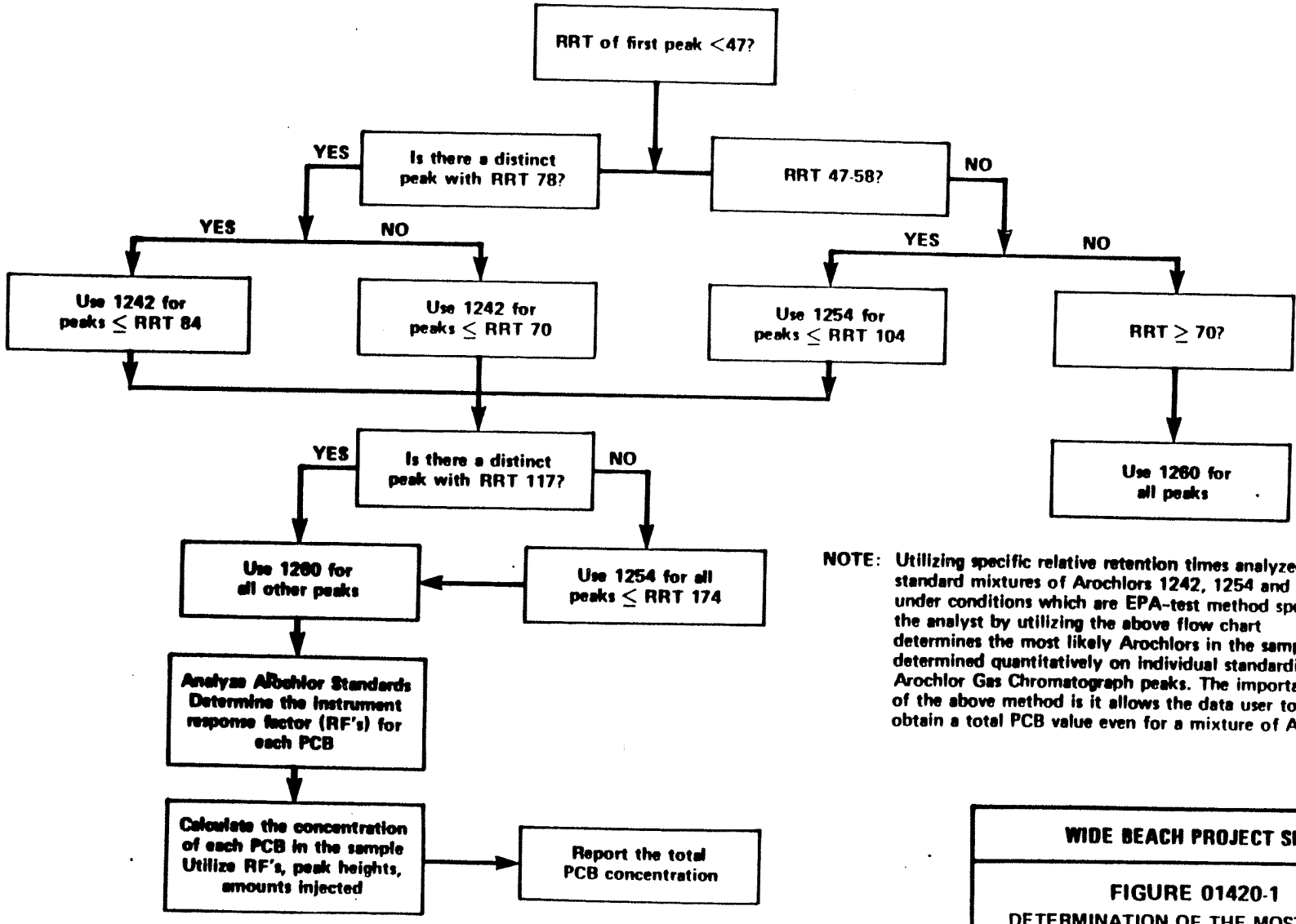
3.2.2 Sampling Program Organization - The Contractor shall clearly specify the sampling program organization to be followed during all field sampling efforts.

The Chemical QC program shall identify whether the Contractor or individual subcontractors will be responsible for specific field sampling programs. The Chemical QC program shall identify all subcontractors responsible for chain of custody transfers between sample collection and receipt by the laboratory.

The Contractor shall institute sampling procedures which allow for the collection of representative samples. The Contractor shall provide a description of the technique to be used to select sampling locations. This description shall include the selection rationale and criteria to be employed for each matrix or waste phase. The Contractor shall follow appropriate USACE and EPA guidelines including those specified within "Test Methods of Evaluating Solids Wastes - Physical/Chemical Methods (3rd Edition)."

The Contracting Officer shall have the right to direct modifications to the sampling methodology to ensure representative sampling.

3.2.3 Sample Types and Chemical Analyses - The following types of samples will be collected for chemical analyses during this program. The reporting schedule requirements and analysis methods are summarized in Tables 1420-1 and 1420-2 respectively.



NOTE: Utilizing specific relative retention times analyzed on standard mixtures of Arochlors 1242, 1254 and 1260 under conditions which are EPA-test method specific; the analyst by utilizing the above flow chart determines the most likely Arochlors in the sample determined quantitatively on individual standardized Arochlor Gas Chromatograph peaks. The importance of the above method is it allows the data user to obtain a total PCB value even for a mixture of Arochlors.

COURTESY USEPA: TEST METHOD EPA 600/4-81-045, SEPTEMBER 1982
BELLAR, LICHTENBERG.

WIDE BEACH PROJECT SITE

FIGURE 01420-1

DETERMINATION OF THE MOST LIKELY AROCHLORS AND TOTAL PCB CONCENTRATION

EBASCO SERVICES INCORPORATED

3.2.3.1 Soil Samples - Soil samples from the excavated soil and sediments shall be collected by the Contractor to determine adherence to remedial soil clean-up requirements for PCB levels as required by the EPA. Soils containing PCB levels in excess of 10 ppm will require remediation via chemical treatment (see section 11505 - PCB Dechlorination System for requirements). The concentration of PCB's will be analyzed for the PCB Dechlorination Process by the utilization of EPA Method 600/4-81-045. The identification of the most likely Arochlors will follow a standardized identification flow chart schematic specified within the test method and illustrated for convenience in Figure 01420-1. As indicated in the Chemical Testing Laboratory Services (01430) appendix, each PCB peak is isolated, treated as a separate compound, and is quantified individually. The total PCB concentration in a sample is the sum of the concentrations represented in the various peaks. Located within the appendix section of this document are the service requirements of the contractor laboratory for the chemical treatment of the PCB excavated soils.

Sampling of staging piles shall occur daily within one hour of staging unless otherwise directed by the Contracting Officer. Samples of excavated soil shall be taken as random samples from each pile. Samples shall be collected by insertion of a clean stainless steel tube using ASTM method 346-78. The collected sample shall be pushed from the collection tube directly into the sample container using a stainless steel push rod.

The Contractor shall collect and analyze soil samples for PCB level at a frequency of one sample for a maximum of every 100 cubic yards of excavated soil.

Soil samples shall be collected for PCBs analysis on a daily basis. Soil PCBs analysis results must be completed within a 24 hour on-site turnaround period and transmitted to the Contracting Officer for review. All soil samples must be homogenized prior to being placed in the sample container.

Specific details of the analytical methods used by the mobile laboratory to provide PCB data within 24 hours from time of collection must be provided in the Chemical QA Program document. This should include a discussion of QC criteria, method detection limits, calibration standards, etc.. Once the chemical QC plan is reviewed by EPA-Region II MMB personnel, it may be determined the mobile lab will need to analyze PE samples.

3.2.3.2 Post-Excavation Samples - When an area is excavated to the limits shown on the contract drawings, post excavation sampling will determine if excavation is complete. Seven samples shall be collected at an interval of every 100 ft along the roadway for each designated excavation area, or for each open excavation area of 2,500 square feet or less. Post excavation sampling protocols were implemented utilizing the general principles within EPA document 560/5-86-017 the Field Manual Per Grid Sampling of PCB sites to Verify Clean-up

Specifically, the seven samples for every 100 ft. of roadway will consist of the following random surface grab samples:

- One sample in the roadway, which has been excavated approximately 18 in. vertically;

- Two samples involving one grab sample in each of the ditch areas on either side, and adjacent to the roadway, excavated approximately to 36 in.;

- Two samples involving one grab sample in each of the yard areas adjacent to the ditch areas, excavated approximately to 6 in.; and

- Two samples involving one grab sample on each side outside of the excavated yard-ditch-roadway area. The sample results must demonstrate no further horizontal contamination above 10 mg/kg (ppm) is present. The sampler, when procuring these samples on each 100 ft intervals along the roadways, shall refer to Drawings WB-03 and WB-04 to identify the nearest clean sampling point (PCB level less than 10 ppm) outside the excavated yard area. Once the clean sampling point is identified or interpolated, a grab sample shall be obtained at a distance halfway from the edge of the excavated area to the clean sampling point identified in the drawing.

Soil sampling will be accomplished utilizing a stainless steel scoop or trowel device. At the desired location, clear any surface debris (i.e., rocks, twigs). Collect an adequate portion of soil from a depth of 0-6 in., using a trowel or scoop. Properly homogenize the sample. Transfer the sample into the sample container. Once the sample is transferred into the appropriate container (i.e., wide mouth 4 oz. or 8 oz. glass jar is recommended), the bottle must be capped and, if necessary, the outside of the bottle should be wiped cleaned with a paper towel to remove excess sampling material. The bottle should not be submerged in water to clean it. Rather, if necessary, a clean paper towel moistened with distilled/deionized water may be used. The samples are then directed to the on-site mobile laboratory for less than 24 hour turnaround results. The samples should be cooled at 4°C prior to analysis. These samples shall be collected in a depth 6 in. below the excavated surface. For verification of the horizontal extent, a duplicate sample (one for every 10 sample grabs) shall be taken at a point within the same excavation demarcation line shown on the contract drawings.

The analytical results for the PCBs concentration as described above shall be then submitted for review to the Contracting Officer. If the PCBs concentrations in the sample is less than or equal to 10 (mg/kg) ppm, the excavation of that area is considered complete. If the PCB concentration result of a grab

sample in the roadway-ditch-yard area or outside the yard area (with the procedure described above) is greater than 10 (mg/kg) ppm, it is recommended for the strip (i.e., roadway-ditch-yard area or outside the yard area) to further excavate 6 in. vertically on the entire 100 ft. strip. Again, a random surface grab sample is obtained for the yard, ditch or roadway. A pre-determined sample as described above is obtained for outside the yard area. The sample(s) is(are) then analyzed to ascertain if the 10 (mg/kg) ppm clean-up criteria level is obtained. The excavation procedure described above will continue each time, only after approval of the Contracting Officer.

3.2.3.3 Excavated Asphalt Pavement Samples - The Contractor shall be responsible for testing excavated asphalt pavement for total PCBs. One sample shall be collected for every 50 tons of excavated asphalt pavement. The PCBs analysis results must be completed within a 24-hour on-site turnaround period and transmitted to the Contracting Officer for review. The excavated asphalt pavement with PCB concentrations greater than 10 mg/kg shall be Subtitle C landfilled or incinerated depending on the PCB concentration level. (See Tables 01420-4 and 7 for test method requirements). The asphalt samples may require some pre-treatment such as grinding of the samples to a uniform free-flowing granular consistency prior to extraction. Data interpretation will be on a sample in which the grab sample in uniform of the mating (i.e., both the lower and upper layers of the asphalt layer will be grinded prior to extraction/PCB analysis).

3.2.3.4 Treated Soil Samples - The Contractor shall be responsible for testing all soils after treatment. The Contractor shall specify the methods of collection for each batch of samples. Samples shall be analyzed utilizing EPA 600/4-81-045 to determine compliance with the treated soil Acceptance Criteria and the PCB test limits specified in Section 11505 - PCB Dechlorination System.

Treated soil samples shall be collected on a weekly basis and the analytical results shall be reported to the Contracting Officer within 24 hours of sampling.

3.2.3.5 Air Samples - Air samples shall be collected following applicable NIOSH procedures and as specified in Section 01065-Health and Safety Requirements.

On-site air samples shall be collected as part of the overall health and safety program. Utilizing NIOSH Method 5503 sample grabbing protocols, samples will be collected from approximately three on-site sampling locations.

Air sample filters (PCB particulates entrained on dust particles) shall be analyzed for PCBs. Samples will be analyzed according to NIOSH Method 5503.

The Contractor shall be responsible for insuring that all regulatory requirements (Federal and State) regarding stack sampling associated with operation of the on-site chemical treatment system be met. This responsibility shall include requirements relating to initial trial treatment test as well as subsequent continuous treatment operations. The Contractor shall identify the types of analyses to be performed, their frequency, and detailed information on sampling methods including identification of any responsible subcontractors in the SSQMP. Analytical methodologies to be utilized will be identified along with appropriate EPA, USACE, or NIOSH references.

3.2.3.6 Off-Site Disposal Samples - The Contractor shall be responsible for all sampling and analysis required to satisfy off-site disposal facilities. The collection and analysis of the samples for manifesting is the responsibility of the Contractor.

The materials for off-site disposal include but may not be limited to the following:

- At the termination of the PCB Dechlorination Process, spent condensate reagent materials from the process will be RCRA incinerated. Table 1420-4 details the testing requirement information to the waste generator who has bulked on-site materials for RCRA Subtitle C incineration.

- During the operation of the on-site PCB dechlorination of excavated PCB contaminated soils, light volatile hydrocarbons are continuously generated from the PCB dechlorination process in small amounts and will be evaluated as RCRA hazardous due to this flammability characteristic (flash point less than $140^{O}F$). The waste stream (estimated at 10-55 gallon drum will be directed for RCRA incineration and manifested under the NYSDEC hazardous waste code D001 in accordance with 371.3(b)(1) requirements.

- Any solid or soils tested for off-site manifesting and found to be RCRA non-hazardous, at the discretion of the contractor, can be landfilled in a Subtitle D sanitary type landfill as an alternate to RCRA incineration. Section 3.2.3.6.1 details the requirements for landfilling in the County of Erie.

3.2.3.6.1 Solid Waste Samples

Samples determined to be RCRA non-hazardous which will need to be analyzed in accordance with the parameters in Table 01420-5.

Specifically, the manifesting of solid waste in Erie County, New York requires:

- o The completion of NYSDEC form 47-19-7 (10/86) - Tex 12: Application For Treatment or Disposal of a Waste Steam;

- o Testing of parameters outlined in Table 01420-5: Materials Bulked for Non-RCRA Landfilling (Subtitle D). Solid Waste materials to be Subtitle D landfilled can be directed to either of (2) Erie County landfills:

  - C.I.D. Landfill, Inc. Chaffe, New York; and the

  - Niagara Landfill operated by Browning Ferris Industries (BFI).

- o In accordance with TSCA and NYSDEC Division of Solid Waste Non-Hazardous Waste Type Codes, the solid wastes which may be specific for the Wide Beach site include but may not be limited to:

  - N012: Solid and/or sludges containing oil, and less than 50 mg/kg (ppm) of PCB. Erie County landfills however have a 40 mg/kg (ppm) limit.

These materials may all be generated from the KPEG-Chemical Treatment Process:

- N015: Non-hazardous Tank Bottoms other than gasoline (N014) or fuel oil (N013).

- N598: Neutralized spent alkaline solutions.

- N515: Neutralized spent hydrochloric acid.

- N334: Spent polyethylene glycol.

- N399: Other Organic Salts.

- N322: Other Organic Liquids.

Listed below is a description of the necessary requirements to be followed before the waste can be landfilled:

CHAIN OF CUSTODY:

A. A representative sample of the waste must be collected and identified.

B. The generator must identify who collected the representative sample, the time and date the sample was collected, how many samples were taken, and maintained a signed chain of custody.

ANALYSIS REPORT - All testing must be performed in accordance with the Test Methods for the Evaluation of Solid Waste Standard Editions; Physical/Chemical Methods; EPA Publication SW-846 (as amended) or other testing methods as the NYSDEC or landfill may request. Please check with the landfill before performing any test. The analysis report must include, but is not limited to, the following:

A. Certification by the waste generator and/or laboratory the waste proposed for disposal contains no free liquids.

B. Laboratory analysis (depending on the type of waste) of the following: Ignitability, corrosivity, reactivity, heavy metals, organics, and PCB's (polychlorinated biphenyls). NYSDEC also requires a Total Organic Halides (TOX) test be performed. Refer to Table 01420-5.

C. Identify the laboratory conducting the analysis and include signature(s) of duly authorized personnel certifying the methods used and results obtained on the sample(s).

o THE FOLLOWING ITEMS MUST BE SIGNED BY THE OWNER, PROPRIETOR, OR A CORPORATE OFFICER OF VICE PRESIDENT OR HIGHER. PLEASE INDICATE POSITION OF PERSON WITH SIGNATURE.

- Application for Treatment or Disposal of an Industrial Waste Stream (NYSDEC 47-19-7) signed on Line 29A.

- The landfill's site specific Generator's Waste Material Profile (signed under "CERTIFICATION").

- Waste Service Agreement.

- Transporter Acknowledgement.

o TRANSPORTER INFORMATION

A. If the landfill is to be the waste hauler, please follow guidelines issued by the landfill regarding NYSDOT weight laws will be followed.

B. Normally, at a minimum twenty-four (24) hours notification is required prior to the waste shipment arriving at the landfill.

3.2.3.7 Wipe Samples - Wipe testing shall be performed by the Contractor on some vehicles, following their decontamination, to assure that they do not carry contamination off-site. The determination of the frequency shall be the responsibility of the Contracting Officer. At the termination of the on-site

activity, the Contractor shall be responsible for collecting and analyzing wipe samples of the various concrete slabs used. The contractor shall perform one (1) wipe testing for each 500 sq. ft of the slab areas, after decontamination by steam cleaning, to confirm their non-hazardous nature.

The procedures for taking wipe samples for a suspected PCB contaminated surface is outlined below in Section 3.2.3.7.1.

The wipe samples shall be analyzed for total PCB utilizing EPA 600/4-81-045 or RCRA Method 8080. Wipe samples may be analyzed by the alternate PCB method (RCRA Method 8080; SW-846, Revision, 11-86), if off-site laboratory analysis is warranted or a quick turnaround result utilizing EPA 600/4-81-045 is not possible. The appropriate extraction technique must be used by utilizing either Method 3540 or 3550 (SW-846, 11-86 Revision) and treating the extraction of the filter paper as a soil sample extraction. The total PCB content will be a quantitative addition of the method-listed Arochlors presented in Table 1 of the test method (Arochlors 1016, 1221, 1232, 1242, 1248, 1254 and 1260). Based on the results, the Contracting Officer will stipulate off-site disposal as either RCRA non-hazardous or hazardous. Erie County PCB landfill restrictions at the current time for soils with no free liquids is 40 (mg/kg) ppm or less.

3.2.3.7.1 PCB Contaminated Wipe Test Procedure

Wipe test materials will include:

a. 10 cm (approximately) filter paper

b. 1:4 acetone/hexane mixture. The acetone and hexane solvents must be of a pesticide grade or purer.

c. sampling template, size: 10 cm x 10 cm (100 cm^2), stainless steel or teflon; or the sampling 100 cm^2, may be drawn with a ruler.

d. stainless steel forceps

e. sample jars

f. ruler (marked with 1 cm increments) and marker suitable on tank wall (optional if (c) above is utilized)

Wipe test procedures will consist of:

a. securing a drawing with a ruler or with a template in place.

b. dipping filter paper in hexane.

c. thoroughly swabbing sampling area with filter paper.

d. storing the filter paper in a sample jar at 4°C - sample containers will be labeled and handled in accordance with EPA procedures.

e. removal and decontamination of sampling template.

f. the laboratory will rinse the sample jars with solvent after transferring the sample to the extraction glassware.

Several kinds of quality control (QC) samples for Wipe Sampling activities must be used. Each kind of sample provides an indication of the reliability of a part of the sampling and analysis process.

It is better not to identify QC samples as such when submitting the QC samples to the analytical laboratory. It is best to randomly number all samples when submitting them to the analytical laboratory. The chemical analysis laboratory does not need to know sample descriptions except for matrix type or in the event of the presence of an unusually high concentration in the wipe. Specific identification of the QC samples will not be necessary since the concentration range in these samples should be in the normal operating range of the analytical instruments.

Vials refer to the glass vials containing sampling gauze and filter paper.

- o Field blanks - at least 5% of the total samples include at least two samples each from the following:
  - Ship unopen vials back for analysis.
  - With gloved hands, remove the cap from a sample vial for the estimated time (record this time) or normal wipe sampling, allow the gauze (filter paper) to air dry without applying it to any surface, and allow to air dry and secure for shipping in the jar.
  - Use the wipe sampling procedures to wipe some areas/surfaces near the sampling site but which are not expected to be contaminated.
- o Duplicates - at least 5% of total samples including at a minimum the designated samples from both the following groups:
  - Double wipe at least two sample sites, label which was the first wipe and which was the second wipe for each of the two sites, for each kind of surface sampled.

- For at least two sample sites for each kind of surface sampled, wipe two adjacent identical or nearly identical areas. Clearly identify the samples as being adjacent to one another in the sample description forms.

3.2.4 Field Program Quality Assurance (QA) and Quality Control (QC) Samples - The Contractor shall be responsible for the collection and transmittal to the USACE MRD laboratory for analysis of QA/QC samples as part of the overall field sampling program. All QA/QC samples to be collected shall be identified by the Contractor in the SSQMP. All QA/QC sample analysis costs shall be paid by the USACE. Since QA/QC samples are being sent to an external laboratory (probably USACE-MRD laboratory), it is important to note that the results from the QA/QC samples must be applied to the environmental samples during the data validation process. The chemical QC plan must detail the procedures that will be used to validate all data produced by the sampling/analysis activity at the site.

The following types of samples should be included in the field QA and QC program, at a minimum:

a. Duplicates - Duplicate samples at a frequency of one duplicate for each 10 samples shall be collected at the same time and sampling location and using the same sampling methodology as employed to collect an original sample;

b. Field Blanks - One daily composite rinse water blank will be collected in the field to demonstrate the adequacy of the field sampling decontamination procedures;

   o The field blank is to be analyzed for Total PCB's utilizing either of the above approved test methods described in Section 3.2.3.

   Additional QA/QC samples such as a trip blank aqueous (i.e., surface water) will only be sent if a sample is to be analyzed for volatile organics. In accordance with EPA Region II protocols, trip blanks are not required for volatile soil/sediment analyses.

c. Samples of soil, air, and drummed aqueous and solid waste should each be considered as an individual matrix for determining the proper number of QA samples.

Preliminary guidelines for the frequency of collection and analysis requirements for QA/QC samples are presented in Table 1420-3. Actual frequencies and analysis requirements are subject to review and approval by the Contracting Officer.

The QA/QC samples (duplicates and field blanks) identified in Table 1420-3 are part of the quality control program and will be analyzed by an external laboratory (probably the USACE MRD laboratory). If laboratory QC fails for any reason on any sample then the sample shall be reanalyzed at no cost to the government. Also, as noted in Table 1420-3, QA/QC samples which are to receive volatile organic analyses shall not be composited or homogenized but should be collected as duplicates.

The collection and frequency of samples to perform matrix spike/matrix spike duplicate (MS/MSD) analysis must be specified by the on-site QA laboratory in their QA Program. The frequency of collection, at a minimum, is one MS/MSD sample per 20 environmental grab samples collected and analyzed. MS/MSD samples serve as a measure of both sampling and analytical precision and accuracy. The field crew team will need to indicate to the laboratory which samples are for matrix spike, matrix spike duplicate (MS/MSD) analysis.

As discussed, QA/QC samples identified in Table 1420-3 shall be sent directly from the field to an external laboratory and not to the on-site Contractor's laboratory. The QA/QC samples are intended to serve as an external performance check. The QA laboratory will be designated by the USACE (CEMRD-ED-L). It is anticipated that the USACE-Missouri River Division (MRD) laboratory will conduct the QA analyses.

The on-site laboratory turnaround data requirements warrant data reporting within 24 hours to 7 days, depending on the analyses being performed. As such, if USACE-MRD cannot produce a 30 day maximum turnaround of off-site QA/QC sample results, an alternate approved USACE laboratory will be utlized. The shipping and packaging of off-site QA/QC samples will be the responsibility of the Contracting Officer.

3.2.5 Sample Containers and Decontamination - This section specifies information which the Contractor shall include in the Chemical QC program regarding sample containers and sampling equipment decontamination.

3.2.5.1 Sample Containers - Containers for all QA/QC samples and coolers shall be supplied by the off-site laboratory (probably USACE-MRD). Additionally, all sample containers including the containers to be utilized by the on-site mobile laboratory must be provided from an EPA approved supplier utilizing pre-cleaned containers. The USACE Sample Handling Protocol (copy attached) and EPA guidelines shall be followed for sizes and types of containers, sample preservation, container identification, cleaning, storing, labelling and sample storage. These procedures should be performed in the same manner as detailed in the Laboratory Program Sample Bottle Repository Statement of Work. The contractor may elect to use

the repository contractors, currently I-Chem and Eagle Pitcher, to obtain the necessary sample containers. If so, this must be noted in the QC plan.

At the completion of the project, the Contracting Officer will decide on long-term sample storage. Disposal of samples prior to project completion shall be at the direction of the Contracting Officer and shall be the responsibility of the Contractor.

3.2.5.2 Decontamination - The Contractor shall submit a detailed decontamination procedure for sampling equipment as part of the Chemical QC program. Sampling methods and equipment shall be chosen so as to minimize decontamination requirements and the possibility of cross contamination. Any sampling equipment used at more than one sampling location shall be decontaminated between locations. Decontamination procedures shall be consistent with USACE requirements. Any proposed modifications to standard USACE decontamination procedures shall require the approval of the Contracting Officer. The required decontamination procedure for all sampling equipment is as follows and must be noted in the Chemical QC Plan:

- wash and scrub with low phosphate detergent;
- tap water rinse;
- rinse with 10% HNO_3 (ultrapure)
- tap water rinse
- acetone only rinse or a methanol followed by hexane rinse (all solvents must be pesticide grade or better);
- deionized demonstrated analyte free water rinse;
- and wrap in aluminum foil for transport

Tap water may be used from any municipal water treatment system. The use of an untreated potable water supply is not an acceptable substitute. Also, the deionized water used must be demonstrated as analyte free. Documentation from the manufacturer which shows the water has been analyzed for the parameters of interest here must be available onsite. In lieu of this, a sample from each lot of water used must be analyzed prior to and independently of the environmental samples.

3.2.6 Sample Preservation Methods - The Contractor shall detail in the Chemical QC program all sample preservation methods to be employed following sample collection. The Chemical QC program shall include all chemical preservatives to be used, physical conditions of storage and shipment, and holding times. All sample preservation requirements shall be in accordance with EPA and USACE guidelines.

3.2.7 Sample Transportation Requirements - The Contractor shall detail all procedures to be followed regarding transportation of samples from the field to off-site laboratories. The Contractor shall be responsible for compliance with all appropriate USACE, EPA and DOT regulations regarding sample shipment. The Contractor shall identify in the SSQMP how compliance with all appropriate regulations will be accomplished.

3.2.8 Sample Custody and Documentation Requirements - This section identifies that information which will be supplied at a minimum by the Contractor in the Chemical QC program regarding chain of custody, and documentation.

3.2.8.1 Chain of Custody (COC) Procedures - The Contractor shall describe the sample custody procedures which will be used to assure that any sample which is analyzed will yield results representative of the sample's condition prior to sampling. The Chemical QC program COC procedures shall be in conformance with the appropriate USACE guidelines.

The Contractor shall demonstrate in the SSQMP that proposed chain of custody procedures adequately record, for evidence, at a minimum following information:

a. Initial sample type, sample number, date and time of collection and signatures of the collector;

b. Signatures of persons involved in sample chains of possession; and

c. Inclusive dates of possession of all individuals involved in sample possession.

d. Additional remarks the sample handler may have to transcribe onto the chain of custody form.

The Contractor shall describe the methods by which written chain of custody information shall be stored for future use.

3.2.8.2 Sample Documentation - The Contractor shall maintain a permanently bound sample log book of his sampling program. The log book shall be filled out in indelible ink. All log book pages shall be prenumbered. He shall provide the USACE access to it at all times and shall turn it over to the USACE in good condition at

the completion of the work. The following information, at a minimum, shall be recorded in the log book:

- Sample identification
- Sample location
- Field observations
- Sample type
- Analysis
- Date/time of collection
- Collector name(s)
- Contracting Officer or representative name(s).

3.3 ANALYTICAL METHODS/PROCEDURES

The Contractor shall fully describe in the Chemical QC program, and provide appropriate references, the specific analytical methods and procedures which will be used to perform all soil, water, air and waste chemical analyses associated with this project.

The Contractor shall also describe in the Chemical QC program, chemical analyses to be performed in conjunction with any additional activities such as off-site disposal of solid wastes which may be required by the project.

All procedures proposed by the Contractor shall be consistent with those methodology guidelines presented within this specification. Any procedures which are required for performance by the Contractor shall be included in the SSQMP and shall be based upon appropriate EPA analytical methodologies (such as those specified in EPA-SW-846) or USACE or NIOSH methods as appropriate.

The Contractor shall identify in the SSQMP the on-site and/or off-site laboratories to be utilized. The analytical laboratory shall in all cases meet the requirements listed in Section 01430-Chemical Testing Laboratory Services.

3.3.1 General Analytical Methods - The following details relating to analytical methods and procedures shall be addressed by the Contractor's Chemical QC program.

3.3.1.1 Analytical Instrumentation - The apparatus to be used for all analyses shall be identified including:

a. Specific field and laboratory instrumentation, including manufacturer and model.

b. Operating parameters.

c. Laboratory chemicals necessary to perform the analyses including a list of sources and purity.

d. Standards, including those for calibration.

3.3.1.2 Analytical Methodology Details - Published analytical methods used for this contract shall be properly referenced. Any analytical methods proposed which are not published shall be described in such detail as to provide the following information:

a. Detailed step-by-step methodology to be used for analyzing samples.

b. The applicability of the proposed methods to specific anticipated chemicals or classes of chemicals, concentration ranges and matrices to be analyzed.

c. Sensitivity and detection limits for each method.

d. Possible interferences due to the matrices involved or other chemicals known to be present.

e. Step-by-step procedure for analyzing samples.

f. Procedures for analyzing internal quality control samples. For example, the Contractor is required to utilize method blanks, calibration checks, surrogate recoveries, reference standards, replicate analyses, split or spiked samples for the purpose of QC checks. (The QC checks required by the method should be performed in addition to the splits, duplicates and blanks associated with field sampling).

g. Procedures for sample extraction for both soil and liquid matrices. Extraction procedures shall follow EPA protocols specified in the 3000 series methods contained in SW-846 3rd Edition.

h. Computations required to convert instrument responses into chemical concentrations in the original sample matrix.

Where alternate standard methods of USACE, EPA or NIOSH approved analytical methods are not applicable to this project, other properly substantiated and standardized methods may be proposed by the Contractor. Appropriate procedural descriptions, precision and accuracy and supportive data must be provided in advance for review and approval by the Contracting Officer.

3.3.1.3 Analytical/Statistical/Control Parameters - The Contractor shall provide a system of internal quality control checks designed to establish technically sound criteria for each measurement parameter which will serve to accept or reject data in a uniform and systematic manner. Normally 10-20% of the total number of a given type of sample shall be devoted to internal QC checks (i.e., one in 10 split or duplicate samples

or one per set, whichever is greater; and all additional methodology checks such as spikes, reference blanks, etc.). Criteria for data acceptance shall address the following items:

a. Discussion shall include the accuracy of each analytical method as applied to given analytical instrument for given analyses in given matrices, and the degrees of accuracy (both bias and precision) required for this project. Analytical methods shall be validated for the same or similar matrix.

b. Discussion shall include the sensitivity of each proposed analytical method in each of the matrices involved at this site, and the sensitivity required for this project. Sensitivity shall be related to detection levels needed for the project. Calibration methods for determining detection levels and quantification shall be addressed.

c. Discussion shall include the analytical methodology used to determine the precision of each analytical method using duplicate samples and instrumentation checks, and the degree of precision required for this project. In determining the precision of the analytical method for given analytes, the exact sample matrix shall be taken into account.

d. Discussion shall include the methodology for data comparison, listing specific units, equations and data formats to be used.

e. Checks for transmittal, data reduction and reporting errors.

f. Any process used for data validation must be close to the origin of the data, while being independent of the data production process.

3.3.1.3.1 Internal Quality Control Checks - To assure analytical accuracy and consistency, the system of internal quality control checks shall include:

a. Quality control samples to be analyzed at a minimum frequency of 10 percent, inclusive of all blanks, spikes and duplicates, of the total samples of each type analyzed.

b. Analysis of blank samples, duplicate or split samples (field and laboratory), spiked samples and instrument calibrations. Instrument calibrations shall be described by number and type of sample. Quantities or estimates and basis for estimates shall be addressed.

c. The Chemical QC program shall also include a discussion of the corrective action to be taken if values are questionable or outside the established control limits as specified in Paragraph 3.3.1.3.3, Corrective Action, of this quality management plan.

d. Calibration procedures performed.

e. General remarks.

f. Reports of Problem: Reports shall be prepared on any significant problems with analytical procedures, instrument calibrations or Project Quality control, and must be delivered to the Contracting Officer within 48 hours of occurrence (or less if a safety problem is involved). These reports shall include a description of the problem along with the corrective actions that have been taken to rectify the problem.

3.3.1.3.2 External Quality Assurance Checks - The Contractor shall describe a system of external quality assurance checks to independently and systematically assess whether analytical data are within acceptable control limits. The following items shall be included in this section of the SSQMP:

a. At the request of the USACE, 10% of the total number of each type of samples collected or analyzed by the Contractor shall be submitted to the USACE for external QA checks. QA samples from each of the various sample matrices which are being analyzed (or up to 10% of total samples within each matrix) will be requested by USACE. Some quality control samples may be provided through an independent QA Laboratory to the Contractor's laboratory for analysis.

b. Performance audit samples can consist of duplicate, split, blank and spiked samples.

c. The off-site laboratory (probably USACE-MRD) shall provide the pre-cleaned sample containers for any external quality control samples. The USACE sample handling protocol for quality control samples shall be provided to the Contractor and shall be followed.

d. The Contractor shall express a willingness to analyze any additional audit samples as provided by a USACE or an EPA QA laboratory, as well as any additional government inspection(s), if the Contracting Officer considers it necessary.

3.3.1.3.3 Corrective Action - The Contractor shall describe a protocol indicating the corrective actions to be taken by the Contractor should any analytical data fall outside of acceptable control limits. The following items shall be addressed in this section of the Chemical QC program:

a. Limits of data acceptability for each analytical parameter and sample matrix along with the corrective action to be taken when these limits are exceeded.

b. Information regarding the poor precision shall be documented if limits are exceeded.

c. Personnel responsible for initiating and performing the corrective action shall be indicated.

3.3.1.4 Calibration Procedures - The Contractor shall describe in detail or provide references to the procedures for the calibration of all analytical equipment or instrumentation to be used either in the laboratory or on-site (including the frequency of these checks) to assure that the equipment is functioning optimally. Information shall be provided on instrumentation manufacturer, model and accessories.

The calibration procedures and instrumentation shall be consistent with the sample analysis requirements of this project and applicable USACE or EPA approved analytical methods.

3.3.1.5 Preventive Maintenance - The Contractor shall provide and describe in the SSQMP a system for the preventative maintenance of all analytical equipment and instrumentation to be used either in the laboratory or on-site (including the frequency of these maintenance operations). Detailed records of these operations shall be maintained and must be available for inspection by the Contracting Officer on request. Maintenance operations shall be performed by qualified maintenance personnel. Experience and qualifications of these personnel shall be included in the Chemical QC program.

3.3.1.6 Data Analysis - The Contractor shall describe the specific system to be used in handling the raw data from the time of analysis until the time of reporting. As a minimum, the Contractor shall address the following items for each analytical method and major measurement parameter anticipated during this project.

a. The data management system, including:

- The collection and recording of raw data, including a checking procedure.

- Data storage system, including provisions for the prevention of data tampering or data loss.

- Data quality assurance documentation, including copies of any forms used.

- Identification system for raw data, data storage and data quality assurance documentation.

- Identification of individuals involved in the data management and reporting sequence.

b. The data analysis system, including units and equations required to convert instrument responses into chemical concentrations in the original samples matrix.

c. Plans for treating questionable or incorrect data, or other problems.

3.3.1.7 Reports - Chemical Quality Control Program (Chemical QC program): The Contractor shall submit a Chemical QC program to the Contracting Officer for approval and/or modification. The Chemical QC Program shall address, as a minimum, the elements and requirements contained in this specification. It shall be a separate and complete document in itself when used in combination with any referenced guidance material, and serve as a clear and concise quality control guide for the Contractor's (and subcontractor's) personnel performing construction and/or testing activities.

a. Contractor Daily Quality Control (DQC) Report - The Contractor shall submit Reports to the Contracting Officer during all construction or testing activities. The format for the Reports shall be included in the Chemical QC program, and must contain as a minimum the following items:

- Location of work.

- Weather information.

- Quality management inspections performed and results.

- Problems identified, if any, and corrective actions taken, if any.

- Any verbal or written instructions from government personnel for retesting or changes of work.

- Records of any tests performed, including all chemical analytical QC test results, samples taken, personnel involved.

The Contractor shall report in writing within two working days any significant problems with analytical procedures, instrument calibrations or QC along with the corrective actions that have been taken to solve the problems. The minimum chemical data reporting requirements for data where QA/QC samples (duplicates and field blanks) are being sent to the MRD-Lab, would include all internal laboratory QC data including spike recoveries, duplicate results, and lab blank results. These results are required to aid the data user in the precision and accuracy of the data results.

a. Contractor Chemical Quality Control Summary Report - A report shall be submitted by the Contractor at the conclusion of the site remedial activities: This report will outline QC practices employed by the Contractor including any problems and acceptable corrective actions taken. This report shall address the following:

   - Scope of Project
   - Project Description
   - Sampling Procedure (planned procedures, implementation problems and corrective actions taken)
   - Analytical Procedures Implemented and Detection Limits
   - Quality Control Activities
     - o Presentation of field and laboratory analytical results
     - o Discussion of reliability of resulting data
   - Conclusions/Recommendations

3.3.1.8 Performance Audits - The Chemical QC program shall indicate in detail, how the Contractor's laboratory will comply with performance audit requirements as established by the USACE. The Chemical QC program shall delineate the numbers and types of samples to be supplied to the QA laboratory, for external QA. The numbers and types of performance audit samples shall be consistent with the USACE guidelines presented in Section 2.4. It shall be noted that the Contracting Officer reserves the right to request changes or additions to the QA sampling program.

3.4 REFERENCES

1. U.S. Army Corps of Engineers, Environmental Regulation ER1110-1-263 "Engineering and Design Chemical Quality Management -- Toxic and Hazardous Wastes."

2. U.S. Army Corps of Engineers, "Interim Standard Air Monitoring Guide for Hazardous Waste Sites," June 1984.

3. "Test Methods for Evaluating Solid Wastes - Physical/Chemical Methods," SW-846, Office of Solid waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460, 3rd Edition, 1986.

4. "EPA Contract Laboratory Program, Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration," (Contract Lab Protocols for Inorganic Analysis), Sample Management Office, PO Box 818, Alexandria, VA 22313, 1984.

5. "Handbook for Analytical Quality Control in Water and Wastewater Laboratories, EPA-600/4-79-019, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Office of Research and Development, Cincinnati, Ohio 45268, 1979.

6. "Characterization of Hazardous Waste Sites, A Methods Manual, Volume III. Available Laboratory Analytical Methods," U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Office of Research and Development, Las Vegas, Nevada 89114, 1984.

7. "Preparation of Soil Sampling Protocol Techniques and Strategies," EPA-600/4-83-020, PB83-206979, U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Office of Research and Development, Las Vegas, Nevada 98114, 1983.

8. "GC Screen, GC/MS Analysis of Organic Compounds," U.S. Environmental Protection Agency, Procurement Section A (PM-214-F) 401 M Street SW, Washington, DC 20460, 1983.

9. "Analytical Methods for CERCLA Hazardous Substances - Interim Report," EPA 600/X-83-071, U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, PO Box 15027, Las Vegas, Nevada 89114-5027, 1983.

10. "Procedures for Handling and Chemical Analysis of Sediment and Water Samples," Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, Mississippi 39180, 1981.

11. "NIOSH Sampling and Analytical Methods", PB85-179018, February 1984.

12. Ambient Monitoring Guidelines for Prevention of Significant Deterioration, USEPA, (PB 81-153231).

13. "Test Methods: Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater," EPA-600/4-82-057, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, 1982.

14. "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, 1983.

15. "Supplement to the 15th Edition of Standard Methods for the Examination of Water and Wastewater: Selected Analytical Methods Approved and Cited by the U.S. Environmental Protection Agency", American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1981.

16. "Field Manual for Grid Sampling of PCB Sites to Verify Clean-up" (Office of Toxic Substances, May 1986) EPA 560/5-86-017.

17. NIOSH Manual of Analytical Methods, 3rd Edition, February, 1984.

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TABLE 01420-1

SAMPLING ANALYSIS AND SCHEDULE REQUIREMENTS(1)

SAMPLE TYPE	SAMPLING PARAMETER	ANTICIPATED SAMPLE	SAMPLING FREQUENCY	DATA REPORTING
Excavated Soil and Asphalt Pavement Sampling	Total PCBs	Daily	3-6/Day	24 hrs or better; on-site testing laboratory
Post Excavation Sampling	Total PCBs	Daily	3-6/Day	24 hrs or better; on-site testing laboratory
PCB Dechlorination System (Field test) Sampling	Total PCBs	Single Event	-	24 hrs or better; on-site testing laboratory
PCB Dechlorination System Operation Sampling	Total PCBs	Continues and As Required	As Required	24 hrs or better; on-site testing laboratory
Surface Water (rainwater run-off/ from materials staging area)	SPDES (parameter specific, refer to Table 1420-6)	Continues and As Required	As Required	24 hrs or better; on-site testing laboratory
Liquid Wastes from Activities for Off-site RCRA incineration	Table 1420-4 parameter requirements	Continues and As Required	As Required	7 days
Solid Waste from Site Activities	Table 1420-5 parameter requirements	Continues and As Required	As Required	7 days
On-site Air Particulate within exclusion-zone (filters)	Total PCBs	Daily	-	24 hrs or better; on-site testing

TABLE 01420-1 (Cont'd)

SAMPLING ANALYSIS AND SCHEDULE REQUIREMENTS(1)

SAMPLE TYPE	SAMPLING PARAMETER	ANTICIPATED SAMPLE	SAMPLING FREQUENCY	DATA REPORTING
Wipe Samples (Slabs)	PCBs	Single Event	-	7 days

NOTES:

1) Data Reporting Requirements time period within which analytical results will be transmitted to the Contracting Officer.

REFERENCES

1) SW-846: Test Methods for Evaluating Solids Wastes: Physical/Chemical Methods (EPA-SW-846 3rd Edition; November, 1986).

2) MCAWW: Methods for Chemical Analysis of Water and Wastes (EPA 600/4-79-020 and EPA 600/4-82-057; March, 1983).

TABLE 01420-2

LABORATORY ANALYSIS PROTOCOLS

Sample Type	Parameter	Analysis Method
Soil (including post excavation soil testing) and excavated asphalt pavement	Total PCBs	EPA 600/4-81-045 or EPA SW-846-8080 protocols
Surface Water	NYSDEC SPDES Parameters	Table 01420-6
Chemical Treatment System		
o Trial Treatment Run	Total PCB's	EPA 600/4-81-045
o Operation		
Treated Soil	Acceptance Criteria	EPA 600/4-81-045
On-Site Air Samples Particulate (filters)	Total PCBs	NIOSH Method 5503
Equipment Pads for decontamination	Total PCBs	Extraction followed by EPA 600/4-81-045 or EPA SW-846-8080 protocols

REFERENCES

1) Test Methods for Evaluating Solids Wastes: Physical/ Chemical Methods (EPA-SW-846-8080 Latest Edition).

2) Methods for Chemical Analysis of Water and Wastes (EPA 600/4-79-020 and EPA 600/4-82-057)

3) Federal Register, Friday November 7, 1986, Vol. 51, No. 216/Rules and Regulations

4) NIOSH Manual of Analytical Methods, 3rd Edition, current revision.

TABLE 01420-3

FIELD PROGRAM QA/QC GUIDELINES

SAMPLE TYPE	PARAMETERS	NUMBER OF FIELD SAMPLES	QC AND QA DUPLICATES(1)	FIELD BLANKS (ONE PER WEEK PER EQUIPMENT TYPE)(1)	TOTAL NUMBER OF ANALYSES
SOIL (POST EXCAVATION SAMAPLES: 7 SAMPLES EVERY 100 LINEAR FEET)	TOTAL PCBs	450	35	25	500-525
EXCAVATED ASPHALT PAVEMENT (1 SAMPLE EVERY 50 TONS) AND AND MISCELLANEOUS MATERIALS(2)	TOTAL PCBs TABLE 01420-4 AND 7 REQUIRE-	100	5	5	100-110
SURFACE WATER (RAINWATER RUN-OFF)	SPDES PARAMETERS	60	3-5	3-5	60-70
AQUEOUS WASTES (KPEG-CHEMICAL TREATMENT PROCESS)	TABLE 01420-4 REQUIREMENTS	30	1-2	1-2	30-35
SOLID WASTES	TABLE 01420-%	100	5	5	100-110
ON-SITE AIR MONITORING(3)	PARTICULATE PCBs (HIGH VOLUME AIR FILTERS)	110-115	1-5	1-5	120-125
TREATED SOILS	PCBs SOILS ACCEPTANCE CRITERIA (2 mg/kg)	1150	50-60	50-60	1200-1250

NOTES:

(1) Trip blanks are not being required since they only accompany samples undergoing aqueous VOA analyses. VOA samples for QA or QC are not composited but rather duplicates are collected. Field blanks will consist of at least one sample rinsed and one background sample per fraction type being collected. All field blanks associated with only PCB analyses will only be analyzed for the Arochlors listed on the TCL list or when utilizing EPA 600/4-81-045, the total PCB's will be determined as described in the EPA method, by calculations according to the Webb and McCall quantification procedure. Actual numbers of QA and QC samples required for each matrix may be adjusted by the Contracting Officer.

(2) Excavated miscellaneous materials that are potentially contaminated include culverts and catch basins.

(3) One sample per week from each of the four air monitoring stations (Time Weighted Average).

TABLE 01420-4

Bulked Waste Material for RCRA Incineration
Test Method Requirements

I. Purpose: The purpose of Table 01410-2(b) is to supply the waste generator who has bulked on-site materials for RCRA Subtitle C incineration, the test methods to properly handle and classify the bulked material as hazardous waste.

II. Required Turnaround: 7 days

III. Laboratory Analysis Protocols:

	Parameter	Test Method
a.	appearance	
	1. color	field determined on bulked shipment
	2. physical state	field determined on bulked shipment
	3. description as being single or multi-phased	field determined on bulked shipment
b.	RCRA corrosivity in accordance with 40 CFR 261.22	Method 9040 and/or Method 1110
c.	RCRA Ignitability in accordance with 40 CFR 261.21 (Note: RCRA Ignitability along with parameters g-k need only be tested when RCRA manifesting the light volatiles from the KPEC-DMSO process	Pensky Martens Closed cap Test Method (Method 1010) or Setaflash Closed Cup Test Method (Method 1020). Liquid containing non-filterable suspended solids utilize Method 1010.
d.	Full TCL chemical characterization	(see Footnote 1)
	1. Volatile Organics	EPA-8240 (SW-846)
	2. Semi-Volatile Organics	EPA-8250 (SW-846)
	3. Pesticide/PCB's	EPA-8080 (SW-846)
	4. Trace Metals (plus mercury and cyanide)	EPA-6010: Metals (SW-846) EPA-7000: Metals (SW-846) EPA-7470 or 7471: Mercury (SW-846) EPA-9010 or 9012: Cyanide (SW-846)
e.	Heat Value (BTU/lb)	ASTM-D-240, D-2015
f.	Percent Water	ASTM-D-4006, E-203

TABLE 01420-4 (Cont'd)

Bulked Waste Material for RCRA Incineration
(RCRA - Regulated)
Test Method Requirements

g.	Viscosity	ASTM-D-4486
h.	Percent Ash	ASTM-D-482
i.	Particle Size on Solids only (Result warranted: Percentage passing thru 1/8" screen)	ASTM-D-422
j.	Total bromine, chlorine, fluorine,	ASTM-D-2361 D 4327, D808
k.	Total sulfur	ASTM-D-2361, D516

Footnotes

1. The full Target Compound List (TCL) characterization is to be performed to allow the waste generator information to allow the completion of the RCRA Incinerator specific Waste Material Profile Sheet (WMPS) needed to manifesting the bulked shipments. The full TCL characterization will allow the waste generator to report:

   - o The confirmation of the generic chemical composition;
   - o The presence of PCB's (Arochlors) which must be incinerated at certain regulatory threshold levels (i.e., greater than 500 ppm); and
   - o The percentage of certain heavy metals for information and handling purposes at the RCRA incinerator, metals such as beryllium, potassium andd sodium.

TABLE 01420-5

MATERIALS BULKED FOR NON-RCRA
LANDFILLING (SUBTITLE D) TEST METHOD REQUIREMENTS

I. Background and Purpose: Non-hazardous waste materials which are subject to Subtitle D landfilling in Erie County are directed normally to the C.I.D. or Niagara County, New York (BFI) landfills. The contractor when submitting any non-regulated RCRA waste for landfilling is resonsible for contracting the landfill and making all arrangements of off-site disposal. Section 3.2.3.5.1 does address the generalized requirements for off-site Subtitled D landfilling.

II. Required Turnaround: 30-40 days or better

III. Laboratory Analysis Protocols:

Parameter	Test Method
a. RCRA Hazardous Characteristics	
1. Reactivity	EPA Section 7.3 (SW-846)
2. Corrosivity	EPA 1110 (SW-846)
3. Ignitability (liquids only)	EPA 1010-1020 (SW-846)
4. Toxicity	EPA 1310 (SE-846) EPA-6010 (SW-846) EPA-7000 (SW-846)

b. Additional specific test method requirements include:

- o RCRA Characteristics mentioned in (a) above;
- o Total Petroleum Hydrocarbons Content as per the Methods for Chemical Analysis of Water and Wastes: Document # EPA-600/4-79-020, March 1983: Test Method 418.1 (Spectrophotometric, Infrared, Petroleum Hydrocarbons, Total Recoverable). Suggested extraction: Soxhlet-type.
- o Total PCB Content (Utilize the Arochlors listed under the Pesticide/PCB fraction of the TCL list as a total by utilizing RCRA Method 8080 or 600/4-81-045 with the Webb-McCall quantitation approach.
- o Total Organic Halides (TOX) utiliting RCRA Method 9020. A NYS/Erie County-specific requirement.

TABLE 01420-5 (Cont'd)

MATERIALS BULKED FOR NON-RCRA
LANDFILLING (SUBTITLE D) TEST METHOD REQUIREMENTS

- The determination for the presence of free liquids by the Paint Filter Test method in RCRA Method 9095 and for EP-Toxicity constituents utilizing SW-846 test methods. These include

  - The heavy metals As, Ba, Cd, Cr, Pb, Ag and Sr: Extract by Method 3010/Analyze by Method 6010

  - Mercury: Analyze by Method 7470

  - Herbicides: Analyze by Metod 8150

  Pesticide/PCB's: Analyze by Method 8080

TABLE 01420-6

STAGING AREA: SURFACE WATER RUN-OFF
NYSDEC SPDES PARAMETERS

I. Purpose: Excavated PCB-contaminated soil will be staged to form a soil pile from which the KPEG treatment unit will draw. Rain events will create run-off, from which settlement and treatment will be performed. A sample grab for each discharge event is required.

II. Laboratory Analysis Protocols:

Parameter	Test Method
PCB	EPA 8080 (SW-846) or EPA 60014-81-045
Total Suspended Solids	EPA 160.2 (MCAWW)
Oil and Grease	EPA 413.1-.2 (MCAWW)
Iron	EPA 236.1-.2 (MCAWW)

III. Discharge Parameter Criteria

Total Annual Discharge	1,800,000 Gallons
Maximum Monthly Discharge	1,000,000 Gallons
Maximum Discharge Rate	30 Gallons/Minute

	PCB (ug/l)	Total Suspended Solids (mg/l)	Oil & Grease (mg/l)	Iron (mg/l)
Water Before Treatment	16	2,160	3.0	0.49
Water After Treatment	< 1.0	15	<3.0	<0.3

TABLE 01420-7

Materials Bulked for RCRA
Landfilling: Test Method Requirements

I. Purpose: The purpose of Table 01420-2(a) is to supply the waste generator who has bulked on-site materials for RCRA Subtitle C landfilling, the required test methods to properly handle and classify the bulked material as RCRA hazardous waste.

II. Required Turnaround: 7 days or less

III. Laboratory Analysis Protocols

Parameter	Test Method
a. appearance	
1. color	field determined on bulked shipment
2. physical state (70°F)	field determined on bulked shipment
3. description as being single or multi-phased	field determined on the bulked shipment
b. Paint Filter Test (Performed on all materials which are not water viscosity consistency)	SW-846, Method 9095
c. RCRA corrosivity in accordance with 40 CFR 261.22	Method 9040 and/or Method 1110
d. Full TCL chemical characterization	As described in (b) above, samples which are not of a water-viscosity consistency, perform the Paint Filter Test (SE-846 Method 9095) followed by either the Pensky Martens Closed Cap Test Method (Method 1010) or Setaflash Closed Cup Test Method (Method 1020). Liquid containing non-filterable suspended solids utilize Method 1010.
e. RCRA Reactivity	Section 7.3, SW-846 protocols (see footnote 1)

ATTACHMENT

TO

SECTION 01420

CHEMICAL QUALITY MANAGEMENT/SAMPLING PLAN

SAMPLE HANDLING PROTOCOL

SAMPLE HANDLING PROTOCOL
FOR
LOW, MEDIUM AND HIGH CONCENTRATION SAMPLES
OF
HAZARDOUS WASTE

The Sample Handling Protocol describes the procedures and paperwork to be used when sending samples to an assigned Quality Assurance (QA) Laboratory off-site to independently check the capability of the on-site mobile laboratory. The external QA laboratory will be responsible to provide all sample bottles and coolers, however, the contractor must always use the same types of bottles. External QA sample results are compared to contract laboratory results as part of the process for final validation of data. The number of QA field splits or duplicates shall be one per matrix type or one for each ten samples of each matrix type sent to the contract laboratory whichever is greater. Examples of matrix types are surface water run off, sediment, soil and solid waste. See examples below:

Each sample shall include the number of subsamples or containers with preservatives as needed for each type of analysis required.

Example of Number of QA Samples Needed

Number of Samples of a Matrix Type Sent to Contract Lab	Number of QA Field Splits or Duplicates Needed
1	1
3	1
12	1
17	2
25	3

Also required for external QA purposes is one field blank sample for each matrix and equipment type or one for each ten samples of each matrix and equipment type sent to the contract laboratory, whichever is greater. Not to exceed one per day for each matrix and equipment type. The QA Laboratory will furnish the sample bottles for the QA blanks may be clean or background soil samples, water samples from background wells, sampler rinsates, or distilled water blanks as appropriate to the sample type and as recommended by the QA laboratory. Remember, a similar number of field blanks and field splits or duplicates are also needed for internal Quality Control (QC) purposes by the contract laboratory.

I. LOW CONCENTRATION SAMPLES (Less than 15 ppm) - Low level samples are considered to be those collected off-site, (background) around the perimeter of a waste site, or in areas where hazards are thought to be significantly reduced by normal environmental processes. Post-excavation soil samples, surface water run-off samples, solid waste materials, are considered to be low level matrix samples.

A. Waters

1) Organics

a) Bottle and Preservative Requirements for TCL Characterization:

- Extractables (Pesticide/PCB's, BNA's): Four 1-liter (or two 80 ounce or two half-gallon) amber glass bottles (Teflon-lined caps), iced to 4°C (may not be held at site over 25 hours). Remember: Leave headspace!

- (Volatile Organics): Two 40 mL glass VOA vials (Teflon-lined caps), iced to 4°C (may not be held at site over 25 hours). Fill completely. All air bubbles should be excluded. No headspace.

- The samples above are needed when Method 624 is used to analyze for volatile (or purgeable) organics, when Method 625 is used to analyze for Acid/Base Neutral (A/B/N) extractable organics, and when Method 600/4-81-045 or Method 8080 is used to analyze for PCB's.

b) Paperwork/Labels

- Chain of Custody Record. See attached example. It is important to note only one site may be listed per form even if the sites have the same project number. Top original goes with the samples: a copy should be saved for the sampler's files.

- Receipt for Samples. See attached example. This form complies with the requirements that the owner, operator, describing the samples obtained from the site and; ii) a portion of each such sample equal in weight or volume to the portion retained, if requested. The original form is retained for the Project Coordinator and a copy is given to the owner, operator, or agent-in-charge.

- o Labels/Sample Tags. See attached example. You must label the sample with a date, time of collection, site name, and brief description on a label that will not float/soak off - no masking tape, please. Use only indelible ink on all labels and tags. Numbered sample tags should be used on all samples.

c. Packaging and Shipping.

- o Waterproof metal (or equivalent strength plastic) ice chests or coolers only.
- o After filling out the pertinent information on the sample label and tag, put the sample in the bottle or vial and screw on the lid. For bottles other than VOA vials, secure the lid with strapping tap. (Tape on VOA vials may cause contamination.) Then, secure the string from the numbered approved tag around the lid.
- o Mark volume level on bottle with grease pencil.
- o Place about 3 inches of inert cushioning material such as vermiculite in the bottom of the cooler.
- o Enclose the bottles in clear plastic bags through which sample tags and labels are visible, and seal the bag. Place bottles upright in the cooler in such a way that they do not touch and will not touch during shipment.
- o Put in additional inert packing material to partially cover sample bottles (more than half-way). Place bags of ice around, among, and on top of the sample bottles.
- o Fill cooler with cushioning material.
- o Put paperwork (chain of custody record) in a waterproof plastic bag and tape it with masking tape to the inside lid of the cooler.
- o Tape the drain shut.

- Secure lid by taping. Wrap the cooler completely with strapping tape at a minimum of two locations. Do not cover any labels.

- Attach completed shipping label to top of the cooler.

- Put "This Side Up" labels on all four sides and "Fragile" labels on at least two sides.

- Affix numbered and signed custody seals on front right and back left of cooler. Cover seals with wide, clear tape.

Remember that each cooler cannot exceed the weight limit set by the shipper:

2) Inorganics

a) Bottle and Preservative Requirements.

- Metals. One 1-liter high density polyethylene bottle (Teflon-lined cap), adjust to pH <2 with 1:1 HNO_3 (usually 3 mL). See notes 1 and 2 below.

- Cyanides. One 1-liter high density polyethylene bottle (Teflon-lined cap), adjust to pH >12 with NaOH (usually 2 mL of 10N NaOH or 4 pellets), and 4°C. See note 1 below.

Notes:

1. For quality control purposes, larger sample volumes of some samples are needed. If a water sample is sent from only one sample location, two 1-liter bottles for each separately preserved sample are needed. If there are more sample locations, one out of every five will require two 1-liter bottles for each separately preserved sample.

Notes:

1. For quality control purposes, larger sample volumes of some samples are needed. If a water sample is sent from only one sample location, two 1-liter bottles for each separately preserved sample are needed. If there are more sample locations, one out of every five will require two 1-liter bottles for each separately preserved sample.

2. Water samples may require filtration on site before shipment. (This usually applies only to ground water samples which are visibly cloudy). Be sure to refer to the project Sampling and Analysis Plan for detailed instructions.

b) Paperwork/Labels

- Inorganic Paperwork is the same as described for organics (See I.A.1.b) above) and includes the Chain of Custody Record, Receipt for Samples, and Labels/Sample Tags. See previous examples and explanations.

c) Packaging and Shipment

- Follow packaging and shipping requirements listed for organics (See Section I.A.1)c) above). "Fragile" labels are optional for coolers not containing glass bottles.

  In cases where ice is not required (metals), fill cooler with only packing material. Once again, remember that the cooler must not exceed the shipper's weight limit.

B. Soils/Sediments (Organics and Inorganics)

1) Bottle and Preservative Requirements

- Two 8-ounce glass wide mouth jars at least 3/4 full (Teflon-lined caps), no preservative, and iced to 4°C - one jar for organics and one jar for inorganics. For analysis of volatiles in soil, either 2-40 mL VOA vials with Teflon septa completely full with no headspace are needed in addition (preferably) or 1 additional 8 oz. jar with Teflon-lined lid completely full. No preservatives and iced to 4°C are also required for volatile samples.

Note: **For quality control purposes, larger sample volumes of some samples are needed. If a soil sample is sent from only one sample location, four 8-ounce bottles are needed, two for organics and two for inorganics. If there is more sampling locations, one out of every five will require four 8-ounce bottles.**

2) Paperwork/Labels

- Follow paperwork requirements listed for water samples in Section I.A.1)b) above. See attached examples of forms.

3) Packaging and Shipping

- Follow packaging and shipping requirements in Section I.A.1)c) above. Be sure that the shipping cooler does not exceed the shipper's weight limits.

II. MEDIUM CONCENTRATION SAMPLES (15 ppm to 15 percent) - Medium level samples are most often those collected on-site, in areas of moderate dilution by normal environmental processes. Areas of medium concentration samples include hot-spot soil areas wipe samples of the process piping and PCB lagoon areas. Medium concentration samples are also samples which have been field screened with real-time equipment (HNu or OVA) and determined not to be pure phase compound materials.

A. Waters/Liquids (Organics and Inorganics)

Note: Samples are not known to contain highly toxic compounds such as dioxin.

1) Bottle and Preservative Requirements for TCL Characterization:

- Four 32-ounce wide mouth glass jars (Teflon-lined caps), no preservatives, and iced to 4°C for A/B/N extractable organics.

- Two 40 mL glass VOA bottles (Teflon-lined caps), Iced to 4°C. Fill completely. No preservatives.

- Two 16-ounce wide mouth glass jars nearly-full (Teflon-lined caps), no preservative - one for metals and one for cyanides.

- Volume and preservation requirements for solid and liquid samples involving other tests than the TCL characterization test must be determined by the Contracting Officer with the aid of the QA laboratory. The determination will be based on the test methods supplied in Table 01410-2 and 01410-4, and the determination on whawt will be analyzed by the on-site mobile laboratory.

2) Paperwork/Labels

- See previous examples. Follow paperwork requirements in I.A.1)b) for low concentration samples.

3) Packaging and Shipping

- Secure sample jar lids with strapping tape or evidence tape. At the same time secure string from USEPA numbered tag around lid.
- Mark volume level of bottle with grease pencil.
- Position jar in Ziploc bag so that tags may be read.
- Place about 1/2 inch of cushioning material in the bottom of metal can.
- Place jar in can and fill remaining volume of can with cushioning material.
- Close the can using three clips to secure the lid.
- Write sample number on can lid. Indicate "This Side Up" by drawing an arrow and place "Flammable Liquid N.O.S." label on can. Personnel who ship samples must be sure to comply with DOT shipping regulations and not knowingly over classify a sample prior to shipment. If the person shipping a sample knows that the sample is not a "Flammable Liquid" (i.e., a water phase sample or a soil sample), he should not classify it as "Flammable Liquid."
- Place about 1 inch of packing material in bottom of cooler.
- Place cans in cooler and fill remaining volume of cooler with packing material.
- Put paperwork in plastic bags and tape with masking tape to inside lid of cooler.
- Tape drain shut.
- After acceptance by shipper, tape cooler completely around with strapping tape at two locations. Secure lid by taping. Do not cover any labels.

- o Place lab address on top of cooler.

NOTE: Write "Flammable Liquid N.O.S." on side of cooler if this is not marked on the margin of your DOT label.

- o For all medium and high concentration shipments, complete shipper's hazardous material certification form.

- o Put "This Side Up" labels on all four sides, "Flammable Liquid N.O.S." and "Danger-Peligro" on all sides.

NOTE: "Danger-Peligro" labels should be used only when net quantity of samples in cooler exceeds 1 quart (32 ounces) for liquids or 25 pounds for solids. In other words, for our purposes "Danger-Peligro" labels will never be used for Flammable Solids N.O.S.

- o Affix numbered custody seals on front right and back left of cooler. Cover seals with wide, clear tape.

B. Soils/Sediments/Solids (Organics and Inorganics)

1) Bottles and Preservatives

- o Two-8-ounce wide mouth glass jars, 3/4 full (Teflon-lined caps), no preservatives, one jar for organics and one jar for inorganics (metals and cyanide) or

- o Four 4-ounce wide mouth glass jars, each 3/4 full (Teflon-lined caps), no preservative; two jars for organics and two jars for inorganics.

2. Paperwork/Labels

- o See previous examples. Follow paperwork requirements listed in section I.A.1)b) for low concentration samples.

3. Packaging and Shipping

- o Follow packaging and shipping requirements listed in Section II.A.3) for medium concentration water/liquids above substituting "Flammable Liquid N.O.S." with "Flammable Solid N.O.S."

III. HIGH CONCENTRATION SAMPLES (HAZARDOUS; DETERMINED NOT TO BE A D.O.T. DEFINED POISON A) - High concentration samples include those from the bulking of tank materials (i.e., spent waste materials frm the KPEG-DMSO chemical treatment process) or in situations where there is little or no evidence of environmental dilution. High concentration (or high hazard) samples are suspected to contain greater than 15% concentration of any individual chemical substituent.

A. Liquids (Organics and Inorganics)

1) Bottle and Preservative Requirements

- o One 8-ounce wide mouth glass jar filled 1/2 to 3/4 full (Teflon-lined cap). No preservative.
- o Volume and preservation requirements for solid and liquid samples involving other tests than the TCL characterization test must be determined by the Contracting Officer and the QA laboratory. The determination will be based on the test methods supplied in Table 01410-2 and 01410-4,, 6 and 7, and the determination on what will be analyzed by the on-site mobile laboratory.

2) Paperwork/Labels

a) See previous examples. Follow paperwork requirements listed in Section I.A.1)b above.

b) Shipper may require special forms to be completed before shipment of high hazard concentration samples.

3) Packaging and Shipping

- o Follow packaging and shipping requirements listed in Section II.A.3) above for medium concentration water/liquids.

B. Soils/Sediments/Solids (Organics and Inorganics)

1. Bottle and Preservative Requirements

- o One 8-ounce wide mouth glass jar filled 1/2 to 3/4 full (Teflon-lined cap). No preservative.

2. Paperwork/Labels

- o Se attached examples. Follow paperwork requirements in Section I.A.1)b) above.

3. Packaging and Shipping

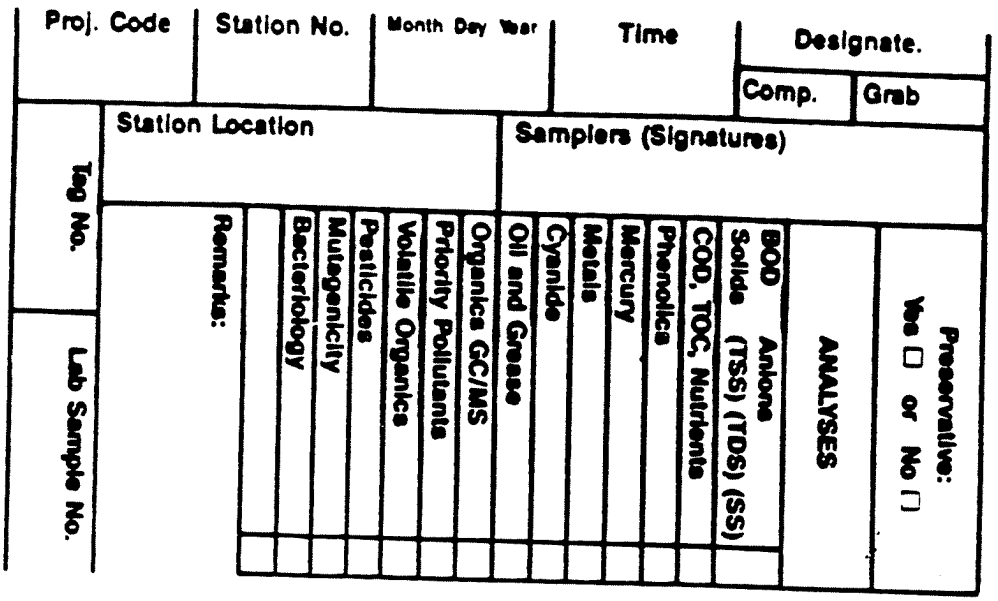
- Follow packaging and shipping requirements listed in Section II.A.3) for medium concentration water/liquids, substituting "Flammable Liquid N.O.S." with Flammable Solid N.O.S."

TABLE 1

ppm = mg/L or ug/mL or mg/kg
ppb = ug/L or ug/kg or ng/g

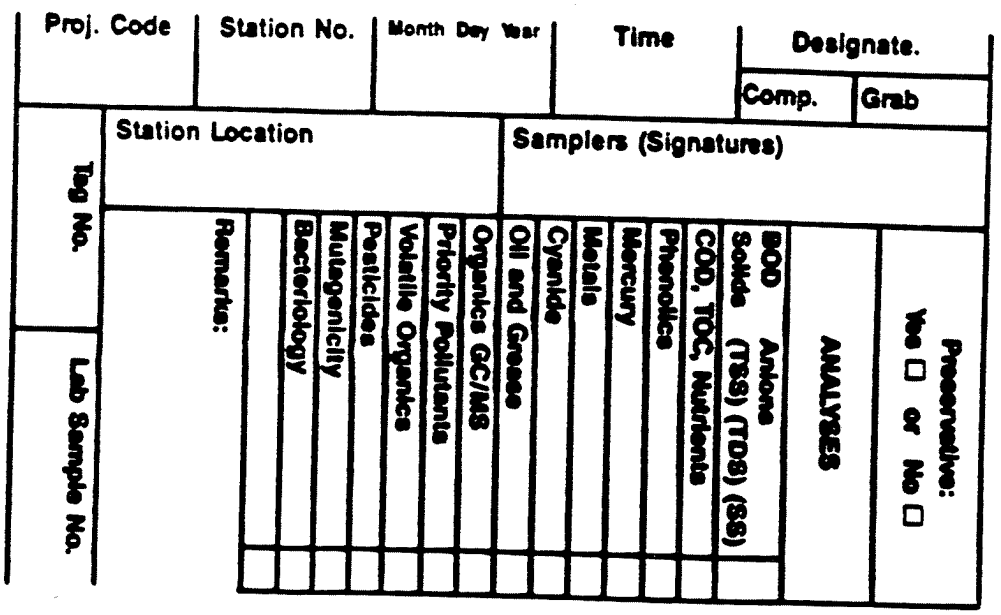
(204)

Low and Medium Concentration Example



(205)

High Concentration Example



Low and Medium Example

CHAIN OF CUSTODY RECORD

Proj. No.	Project Name															
Samplers *(Signature)*																
Sta. No.	Date	Time	Comp.	Grab	Station Location	No. Of Containers										Remarks

Important: Samples are first relinquished by the sampler (as above) who also signs the Shippers Certification from Federal Express.

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks:	

Low and Medium Concentration Example

RECEIPT FOR SAMPLES

Proj. No.	Project Name	Name of Facility
Samplers *(Signature)*		Facility Location
Split Samples Offered ( ) Accepted or ( ) Declined		

Sta. No.	Date	Time	Comp.	Grab	Split Samples	Organic/Inorganic Traffic Report Nos.	Station Description	No. Of Containers Collected	Remarks Sample Matrix
						Note: This form is required even if split samples are refused.			

Transferred by: *(Signature)*		Received by: *(Signature)*		Telephone
Date	Time	Title	Date	Time

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243 West Main Street
Kutztown, PA 19530
(215) 683-6721

HAZARDOUS MATERIALS & WASTE SHIPPING PAPERS AND MANIFESTS

SAMPLE

FEDERAL EXPRESS

SHIPPER'S CERTIFICATION FOR HAZARDOUS MATERIALS

(excluding radioactive materials)

Two completed and signed copies of this certification shall be handed to carrier. (Use block letters.)

WARNING: Failure to comply in all respects with the applicable regulations of the Department of Transportation, 49 CFR, Parts 100-199 and, for international shipments, the IATA Restricted Articles Regulations may be a breach of the applicable law, subject to legal penalties. This certification shall in no circumstance be signed by an IATA Cargo Agent or a consolidator for international shipments.

This shipment is within the limitations prescribed for: (mark one) CHECK AS APPROPRIATE ☐ passenger & cargo aircraft < 32 ounces ☐ cargo-only aircraft > 32 ounces

No. of Pkgs.	Article No. (Int'l only)	Proper Shipping Name of Materials as shown in 49 CFR, part 172.101 and additional description requirements specified in 49 CFR 172.203, and (for int'l shipments) the IATA Restricted Articles Regulations.	Class Specified in 49 CFR 172.101	IATA Packing Note No. Applied (Int'l only)	Net Quantity per Package	Flash Point (closed cup) For Flammable Liquids °C	°F.
# of coolers		FLAMMABLE LIQUID N.O.S.	FLAMMABLE LIQUID UN 1993		# of jars x ounces in each.		
		CARGO AIRCRAFT ONLY (If Net Quantity is greater than 32 ounces)					
		LIMITED QUANTITY (Always write this)					

Special Handling Information:

SAMPLES FOR LABORATORY ANALYSIS

I hereby certify that the contents of this consignment are fully and accurately described above by Proper Shipping Name and are classified, packed, marked, and labelled, and in proper condition for carriage by air according to applicable national government regulations.

Name and full address of Shipper FIELD ADDRESS	Name and title of person signing Certification YOUR NAME YOUR TITLE
	Emergency telephone no. Office & Field #'s (include area code)
Date *	Signature of the Shipper (see WARNING above) YOUR SIGNATURE
Federal Express Airbill No. *	Origin Station
	Destination Station

FEC 3-0147 REV JAN 78

* SELF EXPLANATORY

DISTRIBUTION: White Copy – Attached to Airbill; Canary Copy – Attached to Airbill; Pink Copy – Attached to Package; Goldenrod Copy – Shipper

HAZARDOUS MATERIALS & WASTE SHIPPING PAPERS AND MANIFESTS

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HAZARDOUS MATERIALS & WASTE SHIPPING PAPERS & MANIFESTS

Shipping papers or hazardous waste manifests, in many cases provide the necessary information which enables proper loading and stowing — proper handling and, in an accident or emergency — the information required by Emergency Response Personnel to safely handle the problem.

And providing shipping papers and manifests has become a much more complex task because of the many and varied information requirements under both EPA and DOT regulations.

Each regulated shipment of a hazardous material, substance or waste, requires documentation that clearly spells out the type and class of commodity being offered and transported.

This session will examine those requirements and provide an up-date on new requirements. First HAZARDOUS MATERIALS:

(See Appendix 1)

When a shipper offers a shipment of hazardous material to a common, contract or private carrier, the shipper is required to provide a document that outlines what the shipment is, in a specific and sequential manner.

Whether the transportation document is a bill of lading, a shipping invoice or an air bill, as long as the required DOT information is provided according to the regulations, DOT has no requirement for a specific document.

Once the shipper/consignee information is entered on the document, the DOT regulations require the following sequence.

First, the number and types of containers. This may also appear after the basic description.

Then the proper DOT shipping name, as spelled out in the hazardous materials table in section 172.101 in 49 CFR. Remember, if the name for the hazardous material does not appear in the hazardous material table, it is not a proper DOT shipping name.

This would be followed by the Hazardous Class and the ID Number. Then the Gross weight or quantity of the shipment.

And finally, the shipper or his representative would sign the certification. And this signature may be a true signature, printed or manually reproduced. Incidentally, a true signature is required by some air carriers for air shipments and all hazardous waste manifests require a true signature, as you will see later.

When the information is entered on a document, it should be shown first, before any other information on other non-hazardous commodities that may also be included on the same document.

However, when a situation arises where a shipper cannot or does not enter the

hazardous material information first, he has three other options which allow h to properly comply with the DOT shipping paper requirements.

First, the shipping paper will contain a column that will be marked HM or h ardous material . . . and when the shipper enters the required DOT information he will enter an "X" in the HM column in front of the Proper DOT shipping na Or on "RQ", for a hazardous substance. Or the shipper may also enter the formation in a contrasting color.

Or the shipper may take the copy of the shipping order which the carrier ta and highlight the hazardous materials entries with a hi-liter pen.

If the information is not provided in one of these four ways . . . then it is an impro shipping paper and the shipper would be in violation for providing it and the car would be in violation for using it to transport the shipment.

Whenever the regulations require more than one hazard class to be identif within the basic description, the prime hazard class must always be repeated a the proper shipping name, for placarding purposes.

a shipper will offer a shipment of hazardous material where the basic descript includes two hazardous classes . . . for example, Flammable Liquid Poison n.o.s. . . . the shipper must repeat the primary hazard class in the description ensure proper placard selection. For example, Flammable Liquid, Poison or Poison B, n.o.s. . . . Flammable Liquid.

If this same shipment were being offered in the water mode, not only would t shipper enter the prime hazard class, but would also enter at least two of the che ical or technical names of the materials that make it hazardous.

Now let's examine the shipping paper requirements for HAZARDOUS SU STANCES:

(See Appendix 2 for example)

Hazardous substances are also hazardous materials but are now more stringe regulated by both EPA and DOT. Certain hazardous materials if released ac dentally, may pose a severe health problem for persons exposed to them in environment.

Hazardous substances were first regulated by EPA in 40 CFR in Section 11 This section listed approximately 300 chemicals that if released accidentally intentionally, pose a major threat to the environment and people. There are shipping paper or labels and marking requirements under the EPA regulatio In 117.3, the list outlined the chemical and then showed a specific figure cal a "REPORTABLE QUANTITY" after the name in pounds and kilogra The "Reportable Quantity" or "RQ" represented the specific amount of a chemical that was released that would require notification to the EPA On-Sce Coordinator in the specific EPA region where the release took place . . . or te

phone reporting, as soon as possible to the U.S. Coast Guard National Response Center at 800-424-8802. Once the release was reported, the person responsible for the release was required to clean up the release.

Soon after the EPA regulations for hazardous substances became law, the DOT amended their regulations to include these materials, and added additional shipping paper, manifest and marking requirements for hazardous substance.

The requirements for DOT and EPA are:

When a shipper or generator offers a hazardous material or waste that is designated as a hazardous substance by the letter "E" in column 1, in the 172.101 table . . . they must check the gross weight of each packaging, to determine if the additional regulations apply.

Whenever the letter "E" precedes the Proper DOT shipping name in column 2, in the 172.101 table . . . the weight of the material in one container determines compliance responsibilities.

Let's take an example. Assume a shipper is offering ten (10) five gallon containers of "ALDRIN". When we check ALDRIN in the 172.101 table, we see the letter "E" in column 1 . . . and the notation "RQ-1/.454". This notation means that if the weight in one container or packaging equals or exceeds one pound or .454 kilograms . . . the shipment is now a Hazardous Substance shipment and requires the following additional information on the shipping papers. First, the notation "RQ" must be entered before or after the proper DOT shipping name on the shipping papers.

The "RQ" now alerts anyone coming into contact with the shipment, whether in storage or transportation, that if an amount equal to or greater than the "RQ" is accidentally released or spilled into any surface or underground water system . . . or on land adjacent to a surface or underground water system . . . the person responsible for the release must notify, as soon as possible, the U.S. Coast Guard at 800-424-8802. In addition, if the release took place in transportation, the release must also file a HAZARDOUS SUBSTANCE & MATERIALS INCIDENT REPORT with the department of Transportation within 15 days of the date of the accident. The critical characteristic of these new hazardous substance regulations is that it may not always be apparent when a hazardous material is also a hazardous substance. For example, suppose a shipper offered a shipment of hazardous material that contained a number of hazardous materials. Because the shipper now has a mixture or solution of several hazardous materials . . . the proper shipping name would be FLAMMABLE LIQUID N.O.S. But when we check out the specific commodities, notice that it is also classed as a Poison B as well as flammable liquid. Considering that the gross weight of each drum is 550 pounds and we now have the requirement to identify the shipment as a "HAZARDOUS SUBSTANCE" and the additional requirement to identify the Poison B. Therefore, the description on the shipping paper would be . . . Ten

(10) Drums — "RQ" - FLAMMABLE LIQUID, POISONOUS N.O.S. . . . FLAMMABLE LIQUID. It is also important to remember that when a shipper or generator will use an N.O.S. Proper shipping name . . . and the shipment will contain a "reportable quantity" of a hazardous substance within one container . . . the chemical or technical name of the hazardous substance must be included in the basic description.

It will become a real problem for shippers, generators, transporters and carriers when a hazardous material or waste is described under an n.o.s. or not other wise specified name on the shipping papers or manifest . . . but will contain a reportable quantity of a hazardous substance within the mixture of solution. The fact that the N.O.S. DOT shipping name does not show the letter "E" in front of the shipping name in column 1, does not remove the shipper's or generator's responsibility for entering the "RQ" for any shipment of a hazardous material or waste where the hazardous substance equals or exceeds the reportable quantity for that commodity within one container, packaging, truck, cargo tank, freight container or tank car.

The "RQ" notation serves two purposes. It advises anyone coming into contact with the shipment that the container has a reportable quantity of a hazardous substance and, therefore, can be extremely dangerous . . . and two, that if an amount equal to or greater than the reportable quantity is released accidentally or intentionally, the person in charge of the shipment must notify the U.S. Coast Guard National Response Center . . . or the EPA On-Scene Coordinator at the Regional EPA office in the EPA region where the release of the hazardous substance took place.

One last important point on HAZARDOUS SUBSTANCES.

Under the new SUPERFUND law, EPA has designated additional hazardous materials as hazardous substances. . .and established a "REPORTABLE QUANTITY" of one pound. DOT has not incorporated these hazardous substances or designated them as hazardous substances in the 172.101 hazardous materials table. And even though they will not be designated hazardous substances under DOT, the EPA regulations for the release of one pound of these materials into the environment requires immediate notification to the National Response Center. Failure to notify calls for heavy penalties.

An example would be ACETONE. When you check the hazardous materials table, you'll see that there is no "E" to designate this as a hazardous substance . . . nor reportable quantity after the proper DOT shipping name. But ACETONE is a "reportable quantity" hazardous substance under SUPERFUND. . .and the "RQ" has been established under those new regulations as one pound. If a shipper or generator offered a shipment of ACETONE or WASTE ACETONE to a carrier and there was not information on the shipping paper or hazardous waste manifest advising the carrier or transporter that if he released more than one pound of this material. . .then, if the carrier or transporter did release one (1) pound or more into the environment, did not report it to the National Response

Center . . . and the release was discovered later . . . the shipper or generator . . . and carrier. . .or transporter would be liable for the penalties under "SUPERFUND". To protect his company, and the carrier, a shipper or generator should enter additional "RQ" information on the shipping paper or manifest. . .even though it is not required by DOT and EPA at the present time. It should not be part of the basic description—but should be entered elsewhere on the document.

Now let's review in depth, the requirements for a Uniform Hazardous Waste Manifest (See Appendix 3). The regulations for the new manifest have been promulgated by both DOT and EPA. While the regulations establish that the United States will have one manifest, the regulations allowed each individual state to add additional information requirements to the federal manifest. At the present time, there are 23 states that have adopted a state manifest and may or may not require the generator to use it. For example, if a generator will ship his or her hazardous waste to another state for disposal, and the consignment state has adopted a state manifest and requires its use, the generator may not use his or her state's manifest, but must use the consignment state's manifest. If the consignment state does not have a manifest, but the generator's state adopted a state manifest and requires its use, the generator must use his or her state manifest, even though the waste is consigned to another state. And finally, if the consignment state and the generating state have not adopted a state manifest, the generator may acquire a manifest from any source. The regulations for the acquisition of manifests appear in a new section in CFR 40—Section 262.20 - ACQUISITION OF MANIFESTS:

"Section 262.20 General Requirements.

(a) A generator who transports, or offers for transportation, hazardous waste for offsite treatment, storage, or disposal must prepare a Manifest OMB control number 2000-0404 on EPA form 8700-22, and if necessary, EPA form 8700-22A, according to the instructions included in the Appendix to Part 262.

* *

40 CFR is amended by revising 262.21 in its entirety as follows:

Section 262.21 Acquisition of Manifests.

(a) If the State to which the shipment is manifested (consignment State) supplies the Manifest and requires its use, then the generator must use that Manifest.

(b) If the consignment State does not supply the Manifest, but the State in which the generator is located (generator State) supplies the Manifest and requires its use, then the generator must use that State's Manifest.

(c) If neither the generator State nor the consignment State supplies the Manifest, then the generator may obtain the Manifest from any source."

We'll examine the new Uniform Hazardous Waste Manifest and outline the new requirements. First, you'll notice there are two requirements for information—a federal and a state requirement. The required federal information is in those sections which have numerical designations 1 through 20. State information, if required, would be in the shaded sections and have alphabetical designations A through K. Again, the state sections would be used when there are state regulations that require that specific information.

Section 1:

The Generator's EPA Identification Number, followed by a five digit number determined by the Generator. Therefore, the manifest document number, which is the tracking number, is the generator's EPA ID Number and the five numbers selected by the generator. If the State also requires a manifest number, that may be shown in Section A, in the shaded section.

Section 2:

The number of total pages in the manifest, for example "Page 1 of 1."

Sections 3 & 4:

The Generator's name, mailing address and telephone number, and EPA Identification Number. If the state also requires the State ID Number, that may be shown in Section B, in the shaded section.

Sections 5 & 6:

The 1st Transporter's name and EPA Identification Number. If the Transporter also has a State Waste Haulers ID Number and telephone number, it may be added in Section C in the shaded section, with the telephone number.

Sections 7 & 8:

The 2nd Transporter's name and EPA ID Number, and the state ID and telephone number, if required.

Sections 9 & 10:

The name, address, and EPA ID Number of the Treatment, Storage or Disposal Facility to which the hazardous waste is designated. Again, the ID and telephone number in Sections G and H, if required by the state.

Section 11:

The DOT/EPA description. The basic description includes the proper name, which is found in the hazardous materials table in Section 172.101. The hazard class and ID number, which is found after the shipping name in columns 3 and 3A in the 172.101 table. This section can be a little complex because of new DOT shipping information.

For example, if it's a straight shipping name like WASTE ACETONE, no problem, because the name would be WASTE ACETONE, FLAMMABLE LIQUID, UN1090. (See Appendix 5).

But suppose a generator were offering a shipment of hazardous waste that is 40 percent ACRYLONITRILE and 60 percent CHLOROBENZENE. Because the

waste would meet the criteria of both a flammable liquid and a poison B, the proper shipping name would be WASTE FLAMMABLE LIQUID, POISONOUS N.O.S. and because the N.O.S. name is being used, the generator would now have to show the two constituents in the basic description. The new regulations require a generator or shipper to identify, by chemical or technical name, any constituent that isn't shown in the basic description when it is a hazardous substance or a poison B. And also repeat the prime hazard class when more than one hazard class is used to describe the hazardous material or waste. And, if there is a "reportable quantity" hazardous substance in the mixture, as there is with both ACRYLONITRILE and CHLOROBENZENE meeting the definition of "RQ's," then the entry "RQ" must be shown in the basic description, before or after the proper name.

Based on the above, the proper shipping name would be shown as "RQ" WASTE FLAMMABLE LIQUID, POISONOUS N.O.S. ACRYLONITRILE, CHLOROBENZENE, FLAMMABLE LIQUID UN1992. Again, repeat the prime hazard class when more than one hazard classification is shown in the basic description. (See Appendix 6).

Let's go back to WASTE ACETONE for a minute. As we have covered in other presentations, any hazardous material or waste that does not have an assigned "RQ" value under DOT or EPA's Clean Water Act, and meets the definition of ignitable, reactive, corrosive, or toxic has a statutory "RQ" value of one pound under CERCLA - Superfund. And, when you check the "RQ" for ACETONE in the proposed Section 302.4, you will see the statutory "RQ" for ACETONE is one pound. DOT didn't adopt the CERCLA "RQ" values, but that doesn't mitigate generator liability in the event the transporter discharges more than one pound in a 24-hour period and fails to report it. Both generator and transporter are now liable for all penalties, remedial costs, and punitive damages. The way to show the "RQ" of one pound is to use the "RQ" value section on the top of the manifest. For example, since ACETONE has an "RQ" of one pound, the generator could now indicate the "RQ" value by entering the following information on the manifest: WASTE ACETONE - FLAMMABLE LIQUID, UN1090 and then the designation (5). This would now advise the transporter that ACETONE has an "RQ" of one pound, and if discharged in excess of that "RQ" and not recovered, notification to the National Response Center is mandatory. (See Appendix 5).

However, if the Uniform Hazardous Waste Manifest issued by a state or acquired from another source does not have the "RQ" information box on the top, then follow these guidelines:

When a hazardous waste has an "RQ" value of one pound under CERCLA, but is not a regulated hazardous substance under DOT, the generator and transporter are equally, jointly, and severally liable for a release of one pound, recovered or not, into the environment (land, air, or water) for failure to report the discharge, remedial costs, punitive damages, etc.

When a hazardous material or waste has a statutory "RQ" of one pound under CERCLA - Superfund, but no "RQ" value under DOT, show the reporting responsibility, not as a part of the basic DOT description, but elsewhere on the manifest. Remember, if any "RQ" entry is shown in the basic description and the hazardous material or waste does not meet the DOT criteria as a "hazardous substance," the generator is in violation for providing the manifest and the transporter is in violation for accepting it. As you will see in the example in Appendix 7, put an asterisk in front of the DOT/EPA shipping name, and then provide the "RQ" reporting information. Again, remember, even if the discharge is recovered, it still must be reported to EPA or the National Response Center.

Section 12:

Enter the number and types of containers using the specific code required by EPA.

Sections 13 & 14:

Enter the total quantity and the unit measurement—weight or volume. If EPA waste code numbers are required by the state, enter them in the shaded section I.

Section 15:

Enter any specific handling instructions in this section and if an alternate TSD Facility has been selected, enter it in this section.

Section 16:

The Generator's Certification which must bear the printed name of the signer, a true signature, and the date the manifest was signed.

Section 17:

The 1st Transporter's driver's printed name, true signature, and the date the manifest was accepted and signed by the driver.

Section 18: /

The 2nd Transporter's driver's printed name, true signature, and date of signature and acceptance of shipment.

Section 19:

Discrepancy Indication Space: When a hazardous waste shipment arrives and there is a significant discrepancy, it must be noted in this section. If the discrepancy is not resolved within 15 days, you must submit a letter to the Regional EPA Administrator outlining what the TSD Facility did to resolve the discrepancy and enclose a copy of the manifest with the letter. If the State has received EPA authorization to manage the Hazardous Waste Management System, send the letter and copy of the manifest to the appropriate state official.

Section 20:

TSD Facility personnel accepting the shipment certify their acceptance of the hazardous waste with a printed name, true signature, and date.

When a generator completes the hazardous waste manifest and offers the shipment to the transporter, he or she must provide at least one copy for each transporter and two copies for the Treatment, Storage, and Disposal Facility. When the Trans-

porter delivers the waste shipment to the TSD Facility, the Facility will sign at least three copies—return one to the transporter—retain one copy for his or her files—and mail one certified copy back to the original generator. Each transporter would also sign the manifest with a true signature, printed name, and date of acceptance.

There is also a requirement by some states for the generator and the TSD Facility to also mail one copy of the manifest to the State Agency responsible for environmental enforcement. The generator would mail one copy to the State when he or she offers the shipment, and the TSD Facility would mail one copy to the State when the shipment is accepted at the TSD Facility.

A generator must determine that he or she has received a manifest copy for each shipment of a hazardous waste within 35 days after it leaves his or her plant or location. If a generator does not receive copies of each manifest back within 35 days after they are offered, the generator now has ten days to determine what happened to the copy of the shipment. If the generator is unable to get a copy back, he or she must notify EPA or a state designated agency in writing on company letterhead, explaining exactly what the generator did to try and get a copy, and enclose a copy of the manifest with this letter.

There are cases where a generator will describe a hazardous waste under one of two proper DOT Shipping Names: HAZARDOUS WASTE, LIQUID OR SOLID N.O.S., or WASTE HAZARDOUS SUBSTANCE, LIQUID OR SOLID N.O.S.

HAZARDOUS WASTE, LIQUID OR SOLID N.O.S. is used to describe a hazardous waste that does not meet any of the definitions for a hazardous material as outlined in Part 173 in CFR 49, but does meet the definition of a hazardous or toxic waste using EPA Toxicity Standards. There may also be cases when a waste does not meet any of the EPA criteria but the generator wants to treat it as a waste. Then it could be described as HAZARDOUS WASTE, LIQUID OR SOLID N.O.S. ORM-E. This name may never be used to identify a hazardous waste that in fact meets one of the classes of hazardous materials shown in 173.2. WASTE HAZARDOUS SUBSTANCE, LIQUID OR SOLID N.O.S. would be used when a generator ships a mixture or solution of hazardous substances where the hazard classes for the hazardous substances are ORM-E.

Remember, anytime a generator will use the name HAZARDOUS WASTE, LIQUID OR SOLID N.O.S., or WASTE HAZARDOUS SUBSTANCE, LIQUID OR SOLID N.O.S., and the packaging will contain a reportable quantity of a hazardous substance or Poison B in that packaging, the technical or chemical names of the hazardous substances and Poison B must be included in the basic description on the shipping papers or manifest. And finally, each person who accepts a shipment of hazardous waste must provide a true signature, printed name, and date on the manifest. Stamped, typed or manually produced signatures are forbidden on hazardous waste manifests.

There is one exception to the hazardous waste manifest requirement that exists in the rail mode. Because a freight train may necessarily pass between many different

points and rail personnel, a hazardous waste manifest is not required to be provided to the train crew picking up a shipment of hazardous waste in bulk in tank cars or rail cars. The generator would provide a standard train manifest or shipping paper with all the required EPA/DOT information. Once this has been provided to the train crew, the generator would then mail the three copies of the hazardous waste manifest to the final consignee or the TSD Facility. When the train crew delivered the shipment, the TSD Facility would provide one signed copy for the train crew, retain one copy for his or her files, and return one certified copy to the generator, within 35 days after it was shipped.

If there is a case where a highway transporter will interline with the rail carrier at some point distant from the TSD Facility or final consignee, then the generator will forward four copies of the manifest by mail, to the last interlining highway carrier. The carrier will sign for his or her acceptance of the shipment and provide one copy to the train crew and deliver three copies to the TSD Facility. The Facility will certify acceptance of the shipment, provide one copy to the transporter, retain one copy in his or her files, and return one copy to the original generator.

Here are some additional points to remember when preparing shipping papers or hazardous waste manifests. If a shipper or generator will take an exception for a limited quantity of a hazardous material or waste, each shipping paper or manifest requires the notation, "LIMITED QUANTITY" or "LTD/QTY" entered on the document.

If a shipper or generator offers a hazardous material or waste under an N.O.S. or end-use name and where the proper DOT shipping name will not include the proper chemical or technical name of Poison B which is a constituent, for example, FLAMMABLE LIQUID, POISONOUS or POISON B, N.O.S., then the name of the Poison B must be included in the basic description of the material, in the same section with the shipping name and hazard class.

Waste that is classified as a FLAMMABLE SOLID - DANGEROUS WHEN WET, or uses a proper shipping name like CALCIUM METAL, which is classed as a FLAMMABLE SOLID - DANGEROUS WHEN WET, the basic description on the shipping papers or manifest must include the words "DANGEROUS WHEN WET."

One last point on shipping documentation. Recently DOT proposed regulations that will require shippers and generators to provide carriers and transporters with the OSHA Material Safety Data Sheet covering each hazardous material or waste being offered for transportation. At the present time, the proposal covers bulk shipments, that hazardous material or waste moving in portable tanks, tank cars, and cargo tanks. It may be expanded later to include all shipments of hazardous materials and waste. That will remain to be seen. Currently, the new OSHA regulations concern themselves with labels and markings on containers under 110 gallons. At the present time, DOT has jurisdiction over shipping paper and hazardous waste manifest information. There may be changes in the future, but for

the time being, OSHA has no requirements for shipping paper information.

As mentioned before, shipping papers and hazardous waste manifests are the key to safer transportation and protection. And making sure each person coming into contact with shipments of hazardous materials and waste is provided with the right information will afford the greatest protection and ensure compliance with the applicable state and federal regulations.

States requiring the use of that state's hazardous waste manifest when generating or disposing of hazardous waste:

ALABAMA	LOUISIANA	NEW HAMPSHIRE
ARKANSAS	MAINE	OKLAHOMA
CALIFORNIA	MARYLAND	PENNSYLVANIA
CONNECTICUT	MASSACHUSETTS	RHODE ISLAND
DISTRICT OF COLUMBIA	MICHIGAN	SOUTH CAROLINA
DELAWARE	MISSOURI	TEXAS
ILLINOIS	NEW JERSEY	VERMONT
	NEW YORK	WISCONSIN

When determining which individual State Uniform Hazardous Waste Manifest is required, the generator would comply with the following regulations in descending order. If 262.21(a) does not apply, the generator must comply with 262.21(b). If neither of these paragraphs apply, the generator would then comply with 262.21(b) as shown below:

"Section 262.20 General Requirements.

(a) A generator who transports, or offers for transportation, hazardous waste for offsite treatment, storage, or disposal must prepare a Manifest OMB control number 2000-0404 on EPA form 8700-22, and, if necessary, EPA form 8700-22A, according to the instructions included in the Appendix to Part 262.

• •

5. 40 CFR is amended by revising 262.21 in its entirety as follows:

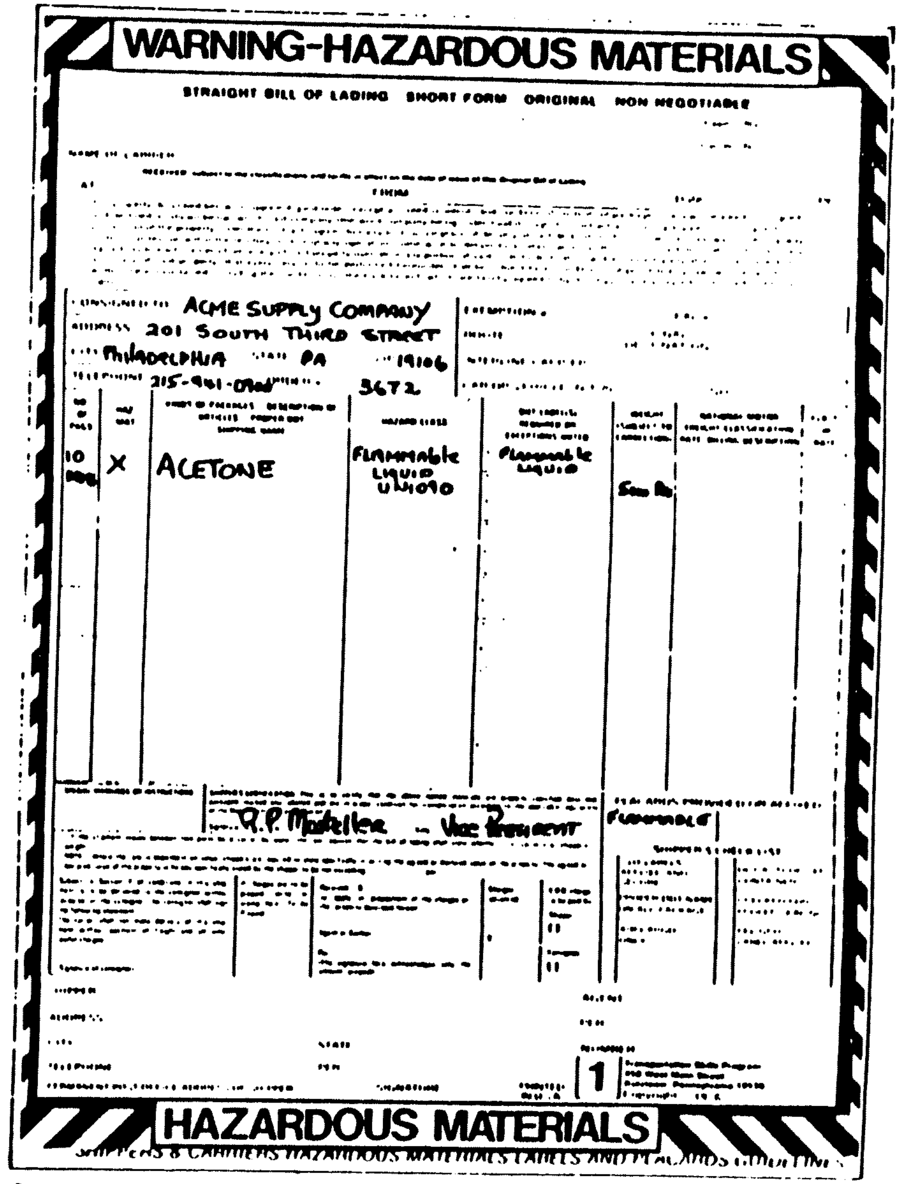
Section 262.21 Acquisition of Manifests.

(a) If the State to which the shipment is manifested (consignment State) supplies the Manifest and requires its use, then the generator must use that Manifest.

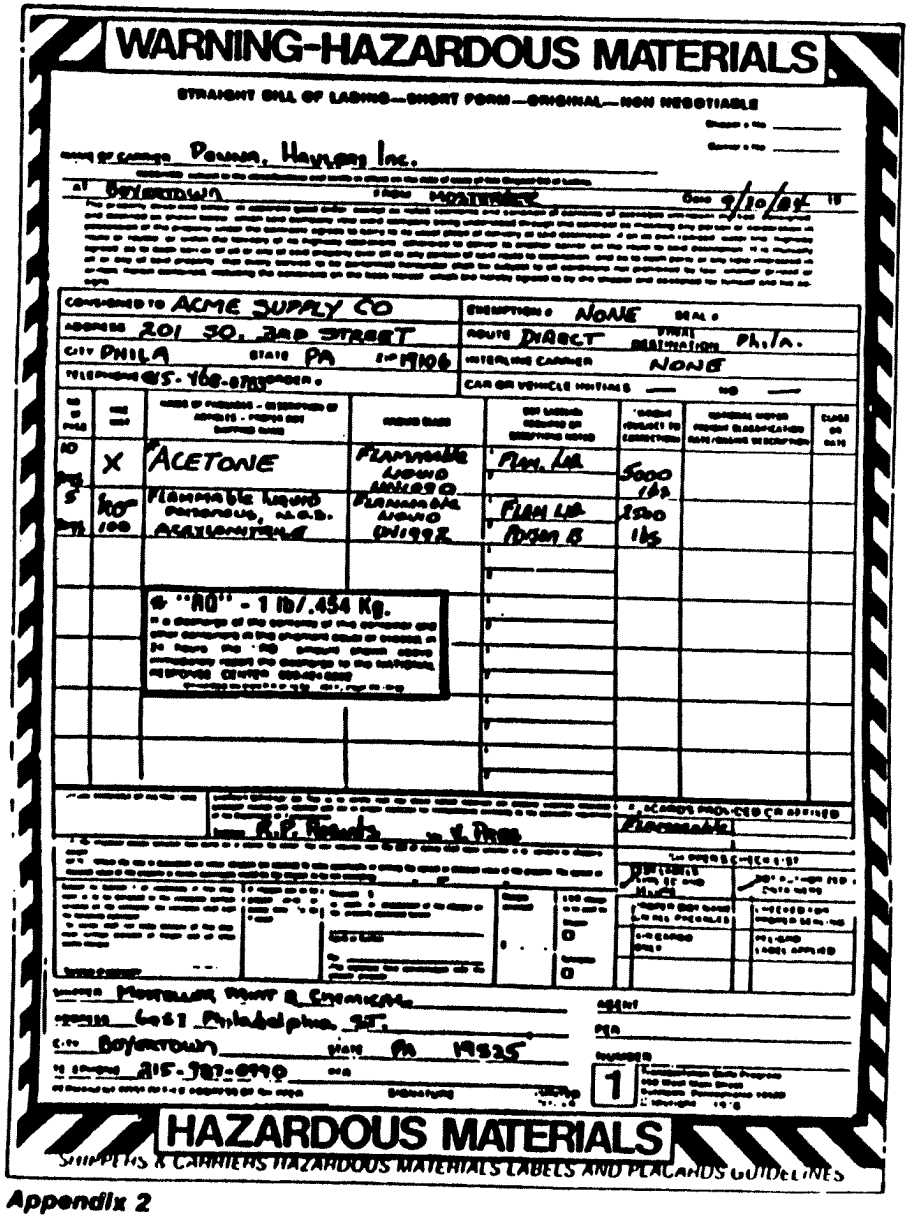
(b) If the consignment State does not supply the Manifest, but the State in which the generator is located (generator State) supplies the Manifest and requires its use, then the generator must use that State's Manifest.

(c) If neither the generator State nor the consignment State supplies the Manifest, then the generator may obtain the Manifest from any source."

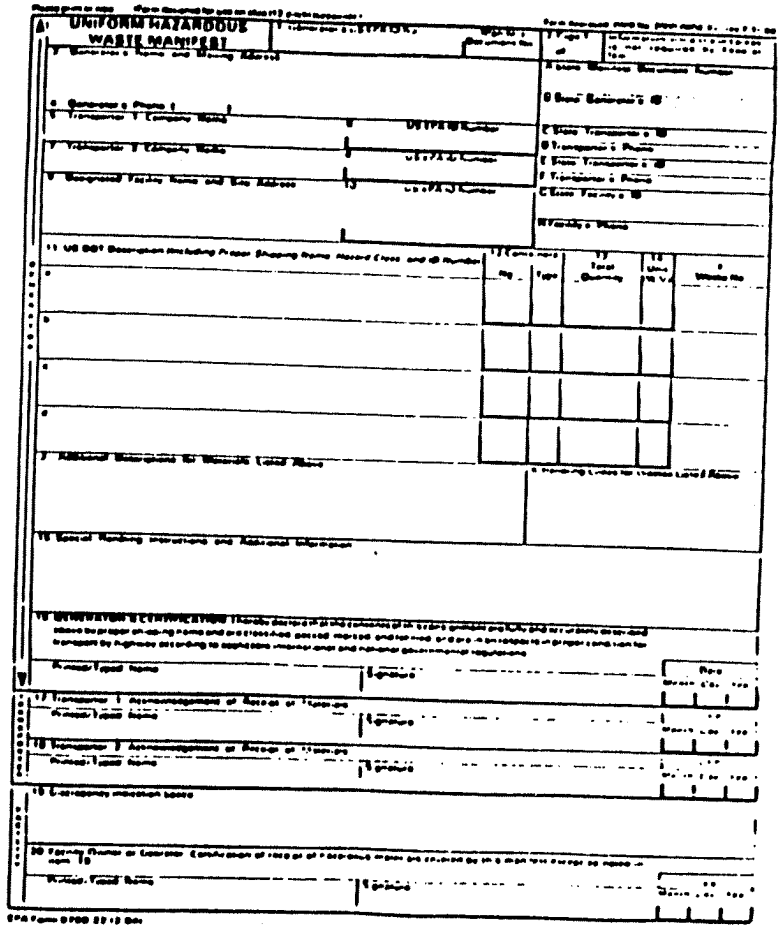
Incidentally, the Uniform Hazardous Waste Manifest Continuation Sheet, in many cases, has not been adopted by states, and therefore, must be acquired from another source. Be sure to check your state regulations to determine your compliance responsibilities.



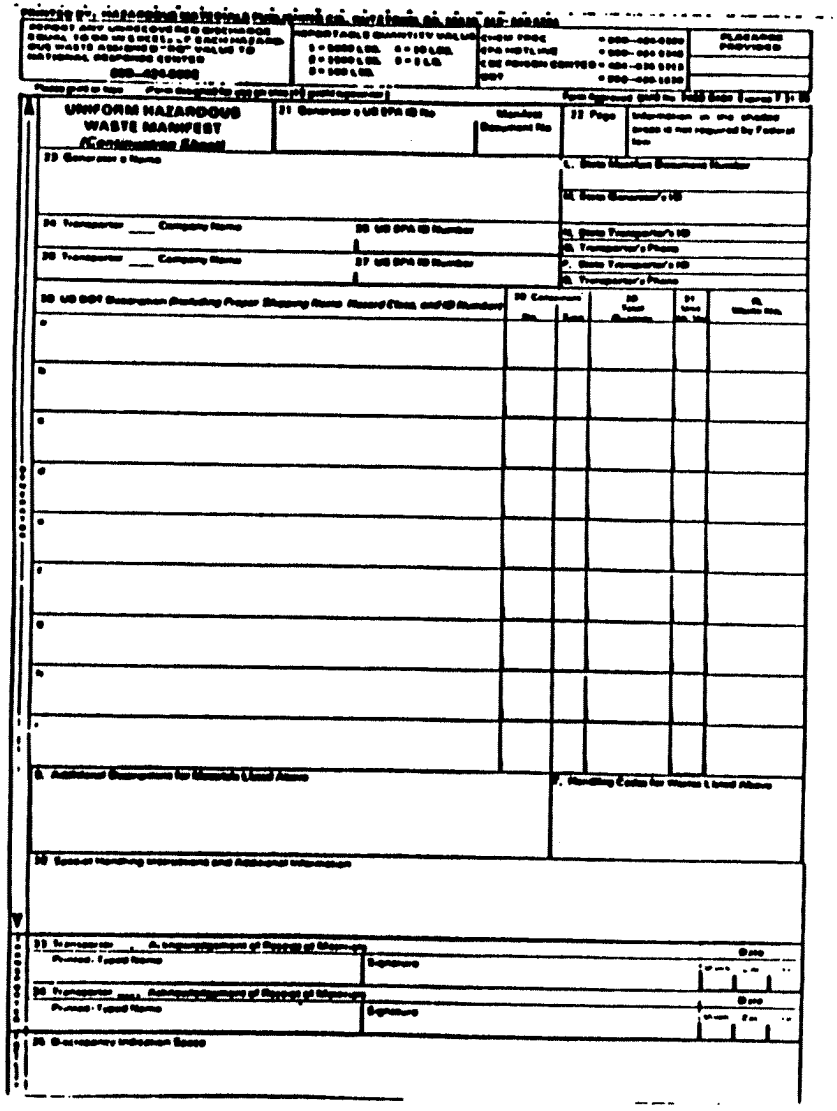
Appendix 1



Appendix 2

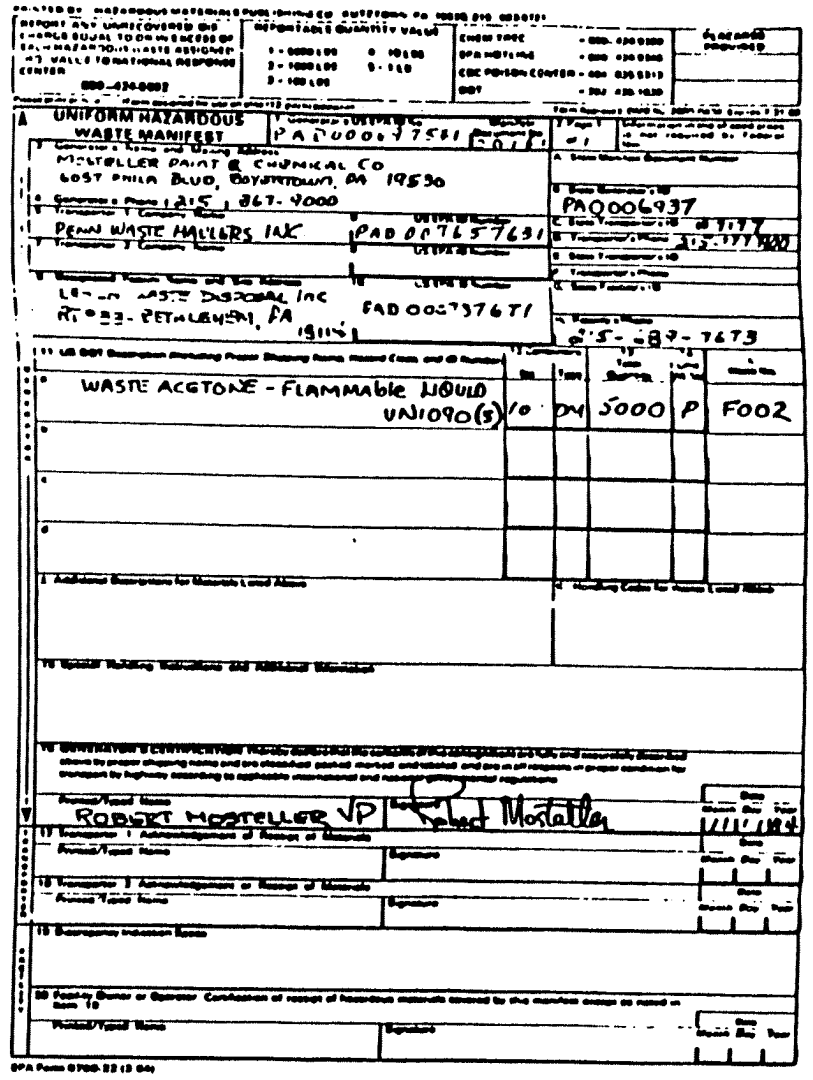


Appendix 3



Appendix 4

27091



Appendix 5

PRINTED BY HAZARDOUS MATERIALS PUBLISHING CO., GUTZTOWN, PA.

REPORT ANY UNRECOVERED OR CHARGE EQUAL TO OR IN EXCESS OF EACH HAZARDOUS WASTE ... RQ VALUE TO NATIONAL RESPONSE CENTER 800-424-8802

PLACARDS PROVIDED

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: PAD000697541 — Manifest Document No.: 00811 — Page 1 of 1

3. Generator's Name and Mailing Address: MOSTELLER PAINT & CHEMICAL CO. 6057 PHILA PIKE, BOYERTOWN PA 19525

4. Generator's Phone: (215) 367-7000

5. Transporter 1 Company Name: PENN WASTE HAULERS INC — US EPA ID Number: PAD007657681

7. Designated Facility Name and Site Address: LEHIGH WASTE DISPOSAL INC RT #33 BETHLEHEM PA 18114 — US EPA ID Number: PAD000737671

B. State Generator's ID: PA0006937

C. State Transporter's ID: 7177

D. Transporter's Phone: 215-777-7900

H. Facility's Phone: 215-689-7673

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ - WASTE Flammable Liquid, Poisonous N.O.S. ACRYLONITRILE - CHLOROBENZENE Flammable Liquid UN1992 (5)	60	DM	20000	P	F003
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION

Printed/Typed Name: ROBERT Mosteller VP — Signature: Robert Mosteller — Date: 11/1/84

17. Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name — Signature — Date

18. Transporter 2 Acknowledgement of Receipt of Materials — Printed/Typed Name — Signature — Date

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name — Signature — Date

EPA Form 8700-22 (3-84)

Appendix 6

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: PAD000697541 — Page 1 of 1

3. Generator's Name and Mailing Address: Mosteller Paint & Chemical Company 6057 Philadelphia Blvd., Boyertown PA 19525

5. Transporter 1 Company Name: PENN WASTE HAULERS INC. — US EPA ID Number: PAD007657631

7. Designated Facility Name and Site Address: Lehigh Waste Disposal Inc. Rt#33 - Bethlehem PA 18114 — US EPA ID Number: PAD000737671

B. State Generator's ID: PA0006937

C. State Transporter's ID: 7177

D. Transporter's Phone: 215-777-7900

H. Facility's Phone: 215-689-7673

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE ACETONE - FLAMMABLE LIQUID UN1090	10	DM	5000	P	F003
b.					
c.					
d.					

* "RQ" - 1 lb/.454 Kg.

If a discharge of the contents of this container and other containers in the shipment equal or exceed in 24 hours the RQ amount shown above immediately report the discharge to the NATIONAL RESPONSE CENTER 800-424-8802

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION

Printed/Typed Name: ROBERT Mosteller VP — Signature: Robert Mosteller — Date: 11/12/84

17. Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name — Signature — Date

18. Transporter 2 Acknowledgement of Receipt of Materials — Printed/Typed Name — Signature — Date

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name — Signature — Date

EPA Form 8700-22 (3-84)

Appendix 7

EMERGENCY TELEPHONE RESPONSE GUIDE

In the event of any of the following, call the DOT at 202-426-1830 immediately:

1. **A person is killed**
2. **A person is hospitalized**
3. **Property Damage in excess of $50,000**
4. **Any location where a continuing danger exists**

In the event of an accidental or intentional release of a "Hazardous Substance" in a "REPORTABLE QUANTITY" amount the person in charge of the release or incident shall immediately notify:

U.S. COAST GUARD
NATIONAL RESPONSE CENTER
800-424-8802
(District of Columbia - 202-426-2675)

FOR EMERGENCY ASSISTANCE OR INFORMATION IN THE EVENT OF A RELEASE OR ACCIDENT OF HAZARDOUS MATERIALS, SUBSTANCE OR WASTE:

CHEMTREC - TOLL FREE 800-424-9300

When Biological Materials are accidentally released, notify:

Director, CDC, Atlanta, GA. 404-633-5313

BUREAU OF ALCOHOL, TOBACCO & FIREARMS
Toll Free - 800-424-9555

EPA HOT LINE — 800-424-9346

ORGANICS TRAFFIC REPORT

E 1217

① Case Number:
FROM USEPA SAMPLING COORDINATOR/VIAL CONTACT

Sample Site Name/Code:
TOD#
TOD SITE NAME

② SAMPLE CONCENTRATION (Check One)
___ Low Concentration
___ Medium Concentration

③ SAMPLE MATRIX (Check One) CHECK AS APPROPRIATE
___ Water
___ Soil/Sediment

④ Ship To:
LAB NAME & ADDRESS FROM USEPA SAMPLING COORDINATOR/VIAL CONTACT
Attn:
Transfer
Ship To:

⑤ Regional Office: #
Sampling Personnel:
#
(Name)
Office number
(Phone)
Sampling Date:
COLLECTION DATE(S) FOR VIAL LABEL
(Begin) SAMPLED (End)

⑥ For each sample collected specify number of containers used and mark volume level on each bottle.

		Number of Containers	Approximate Total Volume
Water (Extractable)		* FOR LOW CONC.	1 GALLON
Water (VOA)		* FOR LOW CONC	60 mls
Soil/Sediment		* FOR LOW OR MEDIUM CONC.	4-8 OUNCES
Water (Ext/VOA)		* FOR MEDIUM CONC.	4-8 OUNCES
Other			

Peel-off bottle labels:
E 1217
E 1217
E 1217
E 1217
E 1217
E 1217
E 1217
E 1217

⑦ Shipping Information
#
Name of Carrier
#
Date Shipped:
#
Airbill Number:

⑧ Sample Description
___ Surface Water ___ Mixed Media
___ Ground Water ___ Solids
___ Leachate ___ Other (specify) _____
CHECK AS APPROPRIATE

⑨ Sample Location
SAME AS ON ALL FORMS

⑩ Special Handling Instructions:
(e.g., safety precautions, hazardous nature)

FOR MEDIUM CONCENTRATION INDICATE POSSIBLE HAZARDS

* SELF EXPLANATORY

SHOOT!

US ENVIRONMENTAL PROTECTION AGENCY · HWI Sample Management Office

INORGANICS TRAFFIC REPORT

Sample Number: ME 08821

① Case Number: [illegible]
Sample Site Name/Code:
TDD #
TDD SITE NAME

② SAMPLE CONCENTRATION (Check One)
____ Low Concentration
____ Medium Concentration

③ SAMPLE MATRIX (Check One) CHECK AS APPROPRIATE
____ Water
____ Soil/Sediment

④ Ship To: LAB NAME & ADDRESS FROM USEPA REGION COORDINATOR/MANAGER
Attn:
Transfer Ship To:

⑤ Sampling Office: *
Sampling Personnel:
(Name) *
(Phone) OFFICE NUMBER
Sampling Date: COLLECTION DATE. USE BEGIN & END FOR COMPOSITE.
(Begin) ______ (End) SAMPLE

⑥ Shipping Information:
Name Of Carrier: *
Date Shipped: *
Airbill Number: *

Peel-off bottle labels:

ME8823	Task 1 & 2
ME8823	Task 1 & 2
ME8823	Task 3
ME8823	Task 3
ME8823	Task 3
ME8823	Task 3
ME8823	Task 3

⑦ Sample Description: (Check One) CHECK AS APPROPRIATE.
____ Surface Water
____ Ground Water
____ Leachate INDICATE
____ Mixed Media SAMPLE LOCATION
____ Solids ON LINE
____ Other ______ (specify)
MATCHES ORGANIC SAMPLE NO. E1212

⑧ Mark Volume Level On Sample Bottle
Check Analysis required
____ Task 1 & 2 METALS
____ Task 3 Ammonia
Sulfide CHECK AS
Cyanide APPROPRIATE
____ TOC
____ Fluoride & pH

SMO COPY

* SELF EXPLANATORY

CHAIN OF CUSTODY RECORD

ENVIRONMENTAL PROTECTION AGENCY – REGION II
Environmental Services Division
EDISON, NEW JERSEY 08817

Name of Unit and Address:		
Sample Number	Number of Containers	Description of Samples

Person Assuming Responsibility for Sample:	Time	Date

Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody

★ GPO: 512-721

Designate: Grab / Comp.	Samplers (Signatures)	**Preservative:** Yes ☐ No ☐	
		ANALYSES	
Time		BOD Anions Solids (TSS) (TDS) (SS)	
		COD, TOC, Nutrients	
		Phenolics	
		Mercury	
		Metals	
		Cyanide	
Month/Day/Year		Oil and Grease	
		Organics GC/MS	
		Priority Pollutants	
		Volatile Organics	
		Pesticides	
Station No.		Mutagenicity	
		Bacteriology	
	Station Location	Remarks:	
Project Code		Tag No. **02-** 2951	Lab Sample No.

REGION II

FEDERAL EXPRESS

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
DO NOT USE FOR PUERTO RICO OR INTERNATIONAL DESTINATIONS.
COMPLETE PURPLE AREAS, SEE BACK OF AIRBILL FOR MORE INSTRUCTIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 8523961961

8523961961

Sender's Federal Express Account Number	Date

1 From (Your Name) Please Print | Your Phone Number (Very Important) ( )

Company | Department/Floor No.

Street Address

City | State | ZIP Required For Correct Invoicing

2 To (Recipient's Name) Please Print | Recipient's Phone Number (Very Important) ( )

Company | Department/Floor No.

Exact Street Address *(Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result in Extra Charge.)*

City | State | ZIP Street Address Zip Required

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT ☐ Bill Sender ☐ Bill Recipient's FedEx Acct. No. Fill in Account Number below ☐ Bill 3rd Party FedEx Acct. No. Fill in Account Number below ☐ Bill Credit Card Fill in Credit Card Number below ☐ Cash

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:
Street Address (See Service Guide or Call 800-238-5355)

City | State

ZIP ® Zip Code of Street Address Required

4 SERVICES CHECK ONLY ONE BOX

1 ☐ **PRIORITY 1** Overnight Delivery Using Your Packaging
When using ICAO regulations, please mark appropriate box(es). Do not mark for CFR 49.
☐ Cargo Aircraft only
☐ Dangerous goods as per attached Dangerous Goods Transport Document

5 ☐ **STANDARD AIR** Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.
STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 ☐ HOLD FOR PICK-UP (Fill in Section H at right)
2 ☐ DELIVER WEEKDAY
3 ☐ DELIVER SATURDAY (Extra charge)
4 ☒ DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)
5 ☐ CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)
6 ☐ DRY ICE _____ Lbs.
7 ☐ OTHER SPECIAL SERVICE _____
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐

PACKAGES	WEIGHT	YOUR DECLARED VALUE (See right)	OVER SIZE
	LBS		
	LBS		
	LBS		
	LBS		
Total	Total	Total	

Received At
1 ☐ Regular Stop
2 ☐ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No.

Date/Time For Federal Express Use

YOUR DECLARED VALUE

DAMAGE OR LOSS
We are liable for no more than $100 per package in the event of physical loss or damage, unless you fill in a higher **Declared Value** to the left and document higher actual loss in the event of a claim. We charge 30¢ for each additional $100 of declared value up to the maximum shown in our Service Guide. Declared value restrictions are shown on the back of the Sender's Copy of this airbill. We make no expressed or implied warranties.

DELAY
There is always a risk of late delivery or non-delivery. In the event of a late delivery Federal Express will, at your request and with some limitations, refund all transportation charges paid. See back of Sender's Copy of this airbill for further information.

CONSEQUENTIAL DAMAGES
We will not be responsible or liable for any loss or damage resulting from delay, non-delivery or damage to a package, except as noted above. This includes loss of sales, income, interest, profits, attorney fees and other costs, but is not limited to these items. Such damages are called "consequential damages."

DO NOT SHIP CASH OR CURRENCY

Federal Express Use	
Base Charges	
Declared Value Charge	
Origin Agent Charge	
Other	
Total Charges	

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SHIPPER'S CERTIFICATION FOR RESTRICTED ARTICLES/DANGEROUS GOODS

CHECK ONE ➡ ☐ 49 CFR ☐ ICAO (TYPE OR PRINT)

NO. OF PKGS	DANGEROUS GOODS IDENTIFICATION: PROPER SHIPPING NAME	CLASS OR DIVISION	UN OR ID NO.	SUBSIDIARY RISK	TOTAL NET QUANTITY	PACKING INSTRUCTIONS	AUTHORIZATION

ADDITIONAL DESCRIPTION REQUIREMENTS FOR **RADIOACTIVE MATERIALS** (SEE BACK)

RADIONUCLIDE	FORM	ACTIVITY	CATEGORY OF LABELS	TRANS. INDEX	PACKAGE IDENTIFICATION
			☐ WHITE I ☐ YELLOW II ☐ YELLOW III ☐ NONE		

TRANSPORT DETAILS — THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR ➡ PASSENGER AIRCRAFT / CARGO AIRCRAFT ONLY (DELETE-NONAPPLICABLE)

AIRPORT OF DEPARTURE | AIRPORT OF DESTINATION | SHIPMENT TYPE ➡ NON-RADIOACTIVE / RADIOACTIVE (DELETE-NONAPPLICABLE)

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN, OR INCIDENT TO, RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT.

I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME AND ARE CLASSIFIED, PACKED, MARKED, AND LABELED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT BY AIR ACCORDING TO THE APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENT REGULATIONS.

NAME AND TITLE OF SHIPPER | PLACE AND DATE

EMERGENCY TELEPHONE NUMBER | SIGNATURE OF SHIPPER

SEE WARNING ON BACK

SECTION 01430
CHEMICAL TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SUMMARY

This section describes the minimum specification requirements for laboratory services to be provided in support of the field sampling and analysis program.

The laboratory specification requirements presented in this section apply to analyses to be performed on site soil, liquid and solid wastes, and treated soil samples.

PCB analyses shall be performed on site soil samples to identify those soils to be chemically treated. Refer to Section 02220 - Excavation, for sampling requirements. PCBs and selected additional analyses shall be performed on the PCB Dechlorination System discharges to insure compliance with discharge limits requirements as specified in Section 11505 - PCB Dechlorination System. Air analyses shall be performed during all construction activities. Treated soil from the on-site treatment system shall be tested to determine appropriate on-site disposal procedures. Finally, any waste (liquid and solids) generated during the construction activities shall be drummed and sampled and chemically characterized to determine appropriate disposal procedures. Further details of the field sampling and chemical analyses program are presented in this section and also in the Chemical Quality Control Program (Chemical QC program) presented in Section 01420.

1.2 RELATED SECTIONS

Related work that is specified in other sections of the contract documents includes, but is not limited to, the following:

Section 01065 - Health and Safety Requirements
Section 11505 - PCB Dechlorination System
Section 01400 - Site-Specific Quality Management Plan
Section 01420 - Chemical Quality Control
Section 01600 - Equipment and Material Handling
Section 01640 - Off-Site Transportation and Disposal
Section 02220 - Excavation

1.3 LABORATORY SERVICE SUBMITTALS

At the Pre-Work Conference the Contractor shall submit for review and approval by the USACE Missouri River Division (MRD), the laboratory(ies) formal QA/QC program and procedures. If the laboratory chosen does not participate in the EPA - CLP program, the labs QA/QC Manual must be submitted to the EPA Region II MMB branch for review.

Laboratory Quality Management Plan - LQMP - It is anticipated both on and off-site laboratory facilities will be required during execution of the field program. QA/QC programs for all on and off-site laboratories to be utilized in this program shall be submitted to the Contracting Officer for approval prior to the start of the work.

The Contractor shall provide an on-site laboratory facility with appropriate analytical apparatus and qualified laboratory personnel. The Contractor may elect to have certain analytical work performed either on or off-site provided that all data quality requirements of the analytical program are met. Facilities shall be selected to optimize the scheduling of site remediation processes.

1.4 GENERAL LABORATORY REQUIREMENTS

The Contractor shall provide lists of laboratory analytical instrumentation (manufacturer, model) and complete chronological resumes for supervisors, quality control personnel, chemists, and analysts listing all appropriate education (minimum B.S. in chemistry) and experience (1-5 years depending on techniques). Any changes such as the laboratory, instrumentation, personnel, or delegation of laboratory work from those specified by the Contractor in the CQMSP must be approved in advance by the Contracting Officer.

Measuring and testing devices, laboratory equipment, instruments, transportation, and supplies necessary to accomplish the required testing shall be provided by the Contractor. Measuring and testing devices shall be calibrated at established intervals against certified standards. A list (including models, manufacturers, and date of purchase) of both field and laboratory instruments used, and their calibration frequencies, ranges and procedures shall be provided in the Chemical QC Program. Upon request, certain measuring and testing devices shall be made available for use by the Contracting Officer for verification tests.

For air sampling analysis, the laboratory (on-site or off-site) shall be American Industrial Hygiene Association (AIHA) accredited or currently successfully participating in appropriate National Institute for Occupational Safety and Health (NIOSH) proficiency tests.

1.4.1 Laboratory Qualifications - The qualifications of laboratory(ies) proposed by the Contractor for inclusion in the analysis program will be reviewed by the Contracting Officer. In particular, all laboratories proposed shall be identified with respect to relevant regulatory certifications including:

- Certification by the U.S. Army Toxic Hazardous Materials Agency.

- o Participation in the USEPA Contract Laboratory Program (CLP).

- o New York State Department of Environmental Conservation (NYSDEC) certifications.

- o Inclusion in the current list of laboratories approved by NYSDEC for analysis of state superfund samples.

1.4.2 Laboratory Approval and Validation - Prior to project specific sample collection, the laboratory must be validated by USACE Missouri River Division (MRD) for anticipated analytical methods and environmental media prior to site start-up. If the Contractor selects a laboratory which has a current (within one year) validation, this option shall not be exercised. This validation is a three step process. If the laboratory does not meet criteria of any of the three steps specified below, the laboratory shall not be considered further and the Contractor shall select another laboratory.

- o Submittal of a Laboratory Quality Management Manual (LQMM) to MRD and its subsequent approval. The LQMM should include, but may not be limited to the following QA/QC criteria:

  - the objectives of its QA/QC program;

  - laboratory organization and key personnel;

  - general QA/QC program involving program requirements, goals and data requirements;

  - guidelines for QA/QC procedures involving: baseline laboratory assurance, sample handling assurance, analytical methods assurance and data handling assurance;

  - procedures in generating quality control decontamination and control charts;

  - management of out-of-control events (example: procedures of corrective action if the determined detection limit is greater than what the data user requires);

  - sample collection;

  - facilities, equipment, and supplies; and

  - data generation and processing procedures. Data processing procedures may include steps for validation, storage, transfer and reduction of the generated data.

- o Successful analysis of Performance Evaluation Samples supplied by MRD and/or EPA. As previously indicated when the laboratory is chosen, EPA MMB must be notified in order to determine whether PE analysis is necessary.

- o Laboratory inspection which will include:

  - Initial interview;

  - Walk-through of the laboratory;

  - Personnel interviews;

  - Assessment of facilities and instrumentation;

  - Review and analytical methodology, calibration and detection limits;

  - Review of QA/QC practices and data documentation; Comparison of activities with LQMM; and

  - Exit interview.

1.5 LABORATORY CAPABILITIES

The on-site and off-site laboratory(ies) shall have the capabilities, including equipment and qualified personnel, to perform all required tests within the project time specifications, including:

- o Excavated Soil Tests (PCBs);

- o Post-Excavation Soil Analysis (PCBs);

- o Chemical Treatment trial run and Operation tests;

- o Treated Soil Characterization (PCBs and Soil Acceptance Criteria);

- o Drummed Waste (liquid and solids) Disposal Tests including; Characterization/Compatibility;

- o Air Monitoring (Perimeter and Personnel);

1.5.1 Site Specific Analysis Requirements - The anticipated sampling and data reporting schedule requirements are presented in Table 1430-1. The principal analysis methods to be utilized in this program are summarized in Table 1430-2. These are discussed as follows:

1.5.1.1 Excavated Soils - Excavated soil samples collected to identify soils to undergo chemical treatment shall be analyzed for PCB Levels. PCB analyses shall be performed according EPA SW-846 methods 8080.

1.5.1.2 Post-Excavation Soil Samples - The Contractor shall collect samples for PCBs analysis after excavation to the limits shown on the Contract Drawings. These samples shall document post-excavation conditions.

In conformance with NYSDEC guidelines, post excavation soil samples to be analyzed for PCBs must be documented by NYSDEC Tier I or EPA CLP deliverables.

1.5.1.4 Liquid and Solid Wastes - All wastes (liquid and solids) generated during site activities shall be drummed. All drummed waste shall be sampled and analyzed to determine whether the drum contents are hazardous. Sampling for these drums shall be used to determine the appropriate disposal procedure.

1.5.1.5 Chemical Treatment Operations - Prior to the chemical treatment of soil, a trial treatment shall be conducted. The Contractor shall present details of the trial treatment program in the Chemical QC Program. The trial treatment program shall be conducted in accordance with relevant EPA requirements as detailed in EPA-SW-846 3rd Edition. All chemical analyses of air, soil, and treated soil required therein shall be included in the Chemical QC Program. Analytical methodologies to be utilized shall be identified along with appropriate EPA, NIOSH or USACE references.

Time requirements for performance of the trial treatment and subsequent chemical analyses shall be identified in the Chemical QC Program.

During the chemical treatment operation, all EPA and State of New York requirements for air sampling and analysis shall be followed. The Contractor's program of sampling and analyses to comply with these requirements shall be identified in detail in the Chemical QC Program.

During operation the Contractor shall also be responsible for sampling and analyzing the treated soil to determine whether it complies with the Acceptance Criteria and the PCBs test limits specified in Section 11505 - PCB Dechlorination System.

1.5.2 Alternative Analytical Methods - Alternative analytical methodology programs may be proposed in the Contractor's Chemical QC Program. All such proposed programs, however, must be accompanied by a detailed technical rationale and identification of all proposed analytical methods including EPA or other appropriate method references. All such proposed programs require the written approval of the Contracting Officer.

1.6 LABORATORY DATA REPORTING SCHEDULES

The Contractor may use an off-site laboratory in addition to the required on-site laboratory. However, the Contractor shall meet all laboratory data reporting requirements as specified in Table 1430-1. As indicated in Table 1430-1, results for certain PCB analyses of soil must be received by the Contracting Officer within 24 hours of sample collection. All other reporting requirements must be met. The on-site laboratory is expected to generate data with limited (screening) data quality. Requirements for higher level data quality shall be met by a qualified off-site laboratory.

1.7 LABORATORY PERSONNEL

The Contractor's laboratory organization shall be experienced in the type of testing work to be performed. A representative(s) of the laboratory shall be at the work site as necessary for sampling, inspection, and testing to control the quality of the work. The laboratory personnel will be evaluated and approved by the Contracting Officer with reference to their education and related professional experience in the performance of specified analytical and QA/QC activities.

1.7.1 Personnel Requirements - In general, the minimum requirements for a chemist or analyst is a B.S. in chemistry and the appropriate experience as listed below. Staff with degrees in other areas of science or engineering shall show equivalency in education and experience. The laboratory QC chemist shall have a minimum of three years previous chemical sampling and analysis experience for hazardous waste disposal projects and shall be available to assist the QC System Manager in his duties. This individual shall be on site at the times indicated in the Chemical QC Program. His/her responsibility shall be to assist the System Manager in monitoring, sampling, and analysis activities for compliance with the approved specifications. Technicians shall have a minimum of 2 years of college science or the equivalent and shall work under the close and continuous supervision of a chemist.

The following additional guidelines will be used by the Contracting Officer in evaluating the backgrounds of the laboratory personnel:

- A GC/MS Analyst: shall have one year of GC/MS experience and possess a B.S. in chemistry or related field;
- A GC/MS Interpretation Chemist: shall have at least two years of GC/MS interpretation experience and a B.S. in chemistry or related field;
- A GC Analyst: shall have at least one year of GC experience and possess a B.S. in chemistry or related field;

- o A GC Interpretation Chemist: shall have a least one year of GC interpretation experience and possess a B.S. in chemistry or related field;

- o An Inorganic (metal) Analyst: shall have at least one year of related inorganic experience in the analyses to be performed and possess a B.S. in chemistry or related field;

- o An Inorganic (metal) Interpretation Chemist: shall have at least one year in metals interpretation and possess a B.S. in chemistry or related field;

- o Preparation Technician: All inorganic (metals preparation and traditional wet chemistry analysis (sulfide, cyanide, etc.) shall be performed by an analyst with at least one year of method related experience and a B.S. in chemistry or related field;

- o Laboratory Director/Supervisor: shall have at least three years of related laboratory experience including three years of laboratory management experience and possess a B.S. in chemistry or related field.

1.8 LABORATORY ANALYTICAL EXPERIENCE

The laboratory shall provide detailed information demonstrating the laboratory's capabilities to perform the required analyses. This information shall include summaries of past relevant project experience in environmental and hazardous waste analyses. For the on-site analyses past project experience in the use of on-site mobile laboratory operations for field hazardous waste site programs shall be presented. Relevant project experience should focus on the types of contaminants of particular concern to this site.

1.9 ON-SITE CHEMICAL LABORATORY

The on-site laboratory will be responsible for the analysis and QA/QC involved in chemically decomposing PCB's (PCB Dechlorination Process). Within the appendix section to this document are the historical field practices and observations detailing the utilization of the KPEG-Chemical Treatment Process. The KPEG-Chemical Treatment Process requires:

- o The monitoring of reagents utilized within the process to assure proper mixing ratios with the PCB contaminated soil;

- o The accurate determination of the Total PCB concentration of the soil during the decomposition process and when leaving for redeposition into the environment; and

- Other on-site testing outside the chemical testing requirements of the KPEG-Chemical Treatment Process.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

* * * * * *

TABLE 01430-1

SAMPLING ANALYSIS AND SCHEDULE REQUIREMENTS(1)

SAMPLE TYPE	SAMPLING PARAMETER	ANTICIPATED SAMPLE	SAMPLING FREQUENCY	DATA REPORTING
Excavated Soil and Asphalt Pavement Sampling	Total PCBs	Daily	3-6/Day	24 hrs or better; on-site testing; laboratory
Post Excavation Sampling	Total PCBs	Daily	3-6/Day	24 hrs or better; on-site testing; laboratory
Chemical Treatment System (Field test) Sampling	Total PCBs	Single Event	-	24 hrs or better; on-site testing; laboratory
Chemical Treatment System Operation Sampling	Total PCBs	Continues and As Required	As Required	24 hrs or better on-site testing; laboratory
Surface Water (rainwater run-off) from materials staging area	SPDES (parameter specific, refer to Table 1420-6)	Continues and As Required	As Required	24 hrs or better on-site testing; laboratory
Liquid Wastes from Activities for Off-site RCRA incineration	Table 1420-4 parameter requirements	Continues and As Required	As Required	7 days
Solid Waste from Site Activities	Table 1420-5 parameter requirements	Continues and As Required	As Required	7 days
On-site Air Particulate within exclusion-zone (filters)	Total PCBs	TWA: (Analyzed Weekly)	-	7 days
Wipe Samples (Slabs)	PCBs	Single Event	-	7 days

NOTES:

1) Data Reporting Requirements time period within which analytical results will be transmitted to the Contracting Officer.

REFERENCES

1) SW-846: Test Methods for Evaluating Solids Wastes: Physical/Chemical Methods (EPA-SW-846 3rd Edition).

2) MCAWW: Methods for Chemical Analysis of Water and Wastes (EPA 600/4-79-020 and EPA 600/4-82-057).

TABLE 01430-2

LABORATORY ANALYSIS PROTOCOLS

Sample Type	Parameter	Analysis Method
Soil (including post excavation soil testing) and excavated asphalt pavement	Total PCBs	EPA 600/4-81-045 or EPA SW-846-8080 protocols
Surface Water	NYSDEC SPDES Parameters	Table 01420-6
Chemical Treatment System		
o Trial Treatment Run	Total PCB's	EPA 600/4-81-045
o Operation		
Treated Soil	Acceptance Criteria	EPA 600/4-81-045
On-Site Air Samples Particulate (filters)	Total PCBs	NIOSH Method 5503
Equipment Pads for decontamination	Total PCBs	Extraction followed by EPA 600/4-81-045 or EPA SW-846-8080 protocols

REFERENCES

1) Test Methods for Evaluating Solids Wastes: Physical/ Chemical Methods (EPA-SW-846-8080 Latest Edition).

2) Methods for Chemical Analysis of Water and Wastes (EPA 600/4-79-020 and EPA 600/4-82-057)

3) Federal Register, Friday November 7, 1986, Vol. 51, No. 216/Rules and Regulations

4) NIOSH Manual of Analytical Methods, 3rd Edition, Current Revision.

SECTION 01505
MOBILIZATION/DEMOBILIZATION

PART 1 - GENERAL

1.1 Summary

1.1.1 This section covers the requirements for proper site mobilization prior to the start of construction activities and demobilization at completion of all work required under this Contract.

1.1.2 The work shall consist of the mobilization and demobilization of the Contractor's personnel, forces and equipment necessary for performing the intended work of this Contract.

It shall include the purchase of contract bonds; transportation of personnel, equipment, and operating supplies to the site; establishment of offices, all necessary temporary facilities and utilities; installation of all temporary access roads, stockpile areas, security fences and gates, and other necessary facilities at the site, along with proper decontamination and removal of such.

Indiscriminate construction of roads and travel by the Contractor's vehicles will not be permitted.

It shall not include any specific item of work for which payment is provided elsewhere in the contract.

1.1.3 The Contractor shall supply, provide and maintain all materials, fabrication, installation, and delivery of services as specified in this section for complete and proper site mobilization/demobilization.

1.2 Related Sections

Related work which is specified in other sections of the technical specification includes, but is not limited to, the following:

Section 01050 Field Engineering
Section 01510 Temporary Site Facilities and Utilities
Section 01540 Security
Section 01560 Temporary Controls/Environmental Protection
Section 01562 Dust Control
Section 01563 Erosion and Sediment Control
Section 01564 Spill Control
Section 01700 Project Closeout

1.3 Regulatory Requirements

OSHA Part 1904, 1910 and 1926

PART 2 - PRODUCTS

2.1 Materials

2.1.1 Signs

The Contractor shall supply two types of sign as described below. The signs shall be 4' x 8' supported by three 4x4 pressure treated wooden posts. They shall be set at 5 feet above the ground.

The Project Sign shall be as shown on the attachment to this section.

The Safety Sign shall read:

Think Safety
Protective Clothing Required
Beyond
This Point

Letters shall be black on a white background, each being six inches high.

2.1.2 Other materials required in this section are specified in the individual sections of the Technical Specifications referenced.

PART 3 - EXECUTION

3.1 Mobilization

3.1.1 All work shall be performed by competent, trained workmen, skilled in the field to which they are executing the work.

3.1.2 The Contractor shall design, construct and maintain an access road for residential traffic detour during construction as shown on Drawing WB-02. Also refer to Section 01510-Temporary Site Facilities and Utilities.

In addition, the Contractor shall design, construct and maintain all other on-site access roads as required for his operations and approved by the Contracting Officer.

3.1.3 Mobilization shall also include the furnishing, installation, and maintenance of all temporary site facilities and utilities. Refer to Section 01510 - Temporary Site Facilities and Utilities. Also refer to ~~Contract~~ Drawings WB-02, 05 and 06.

3.1.4 The Contractor shall contact all local, county and state road authorities and with their advice and approval, establish haulage routes which the Contractor shall be obligated to follow.

3.1.5 Prior to mobilization and construction activities, a joint inspection by the Contracting Officer and the Contractor of the approved routes shall be made and an appraisal of the routes conditions shall be signed by both parties.

3.1.6 At the conclusion of the mobilization, the Contractor shall be responsible for restoring the local, county and state roads to their previous condition.

3.2 Demobilization

3.2.1 The Contractor shall dismantle, decontaminate where required, and properly dispose of and/or remove from the site all temporary and supporting facilities furnished and installed by the Contractor.

3.2.2 All access roads and stockpile areas within the job site shall be removed after the completion of all work required by this Contract except for the section of the access road specifically instructed to remain by the Contracting Officer. These locations shall be graded and landscaped after the removal. All materials above the HDPE base liner within the contaminated soil stockpile area shall be sampled, tested, and treated or decontaminated where required.

3.2.3 All contaminated equipment shall be decontaminated prior to demobilization. Decontaminated vehicles and Contractor's equipment shall be inspected and approved by the Contracting Officer prior to removal from the project site.

3.2.4 The Contractor shall disconnect and remove all temporary utilities installed by the Contractor. The Contractor shall submit to the Contracting Officer evidence of final payment for all utility services.

3.2.5 Under the direction of the Contracting Officer, the Contractor shall clean the exterior of residential homes by washing prior to demobilization.

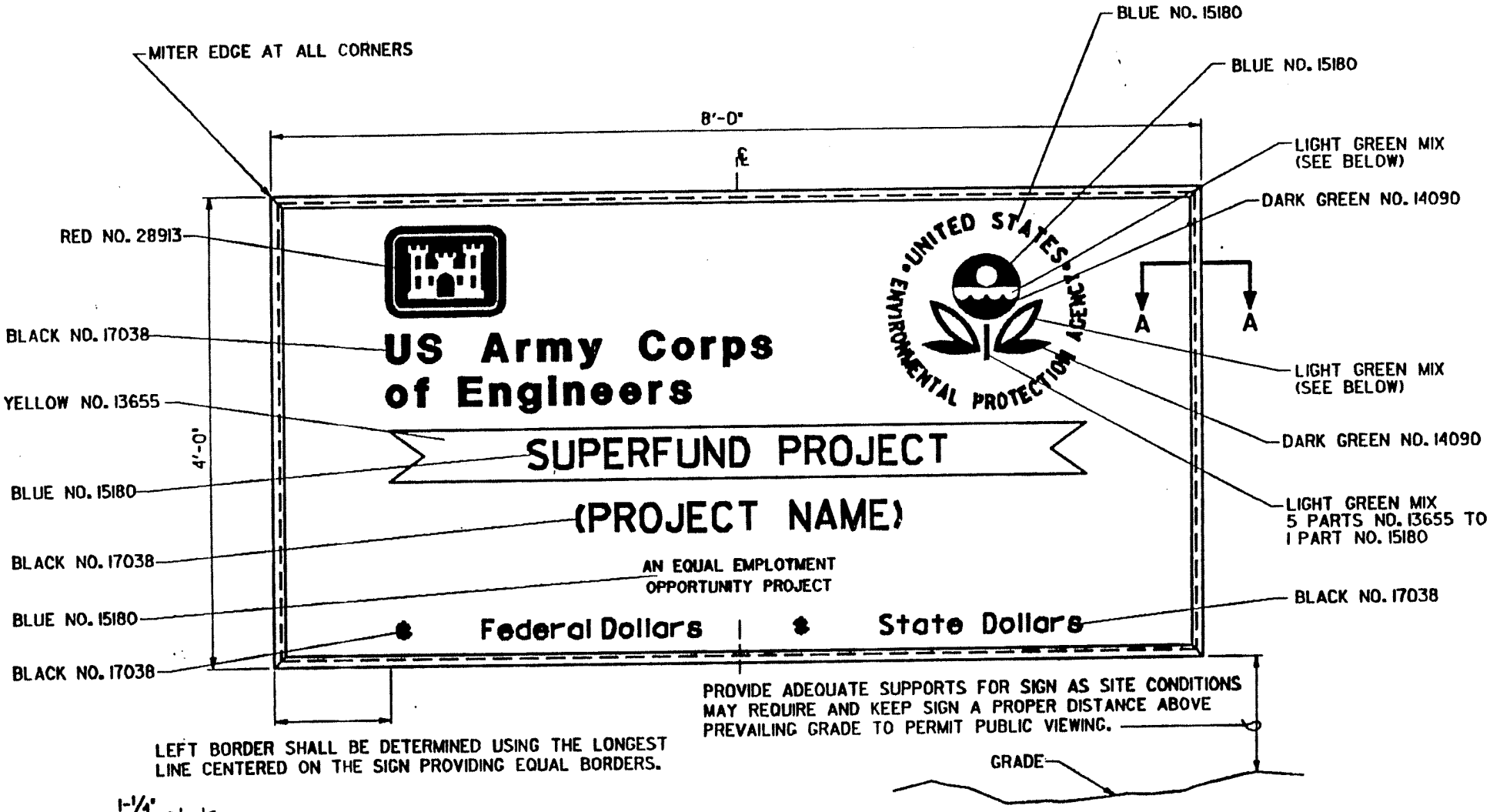
3.2.6 The Contractor shall submit or turn over the final approved As-Built drawings to the Contracting Officer and all other final reports and documents related to this project. Refer to Section 01720 - Project Record Documents and Section 01725 - As-Built Drawings for requirements.

3.2.7 The Contractor shall repair any erosion or runoff related damage to the final covers, and reseed as specified in Section 02900 - Landscaping and/or as directed by the Contracting Officer or his representatives.

3.3 Inspection

The Contracting Officer will inspect all work as mobilization and demobilization proceeds to ensure conformance with the requirements of the contract documents.

* * * * * *


MITER EDGE AT ALL CORNERS
BLUE NO. 15180
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8'-0"
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LIGHT GREEN MIX (SEE BELOW)
DARK GREEN NO. 14090
RED NO. 28913
BLACK NO. 17038
YELLOW NO. 13655
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US Army Corps of Engineers
UNITED STATES • ENVIRONMENTAL PROTECTION AGENCY •
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SUPERFUND PROJECT
(PROJECT NAME)
AN EQUAL EMPLOYMENT OPPORTUNITY PROJECT
Federal Dollars
State Dollars
PROVIDE ADEQUATE SUPPORTS FOR SIGN AS SITE CONDITIONS MAY REQUIRE AND KEEP SIGN A PROPER DISTANCE ABOVE PREVAILING GRADE TO PERMIT PUBLIC VIEWING.
GRADE
LEFT BORDER SHALL BE DETERMINED USING THE LONGEST LINE CENTERED ON THE SIGN PROVIDING EQUAL BORDERS.
1-1/4"
1/2"
EASE ALL EDGES
4"
EXTERIOR TYPE HIGH DENSITY OVERLAID PLYWOOD OR OTHER APPROVED MATERIAL SUITABLE FOR SIGNS
SECTION "A-A"
COLOR NUMBERS REFER TO FEDERAL COLOR STANDARD NO.595a (1-68) WHICH ARE AVAILABLE FROM GSA SUPPLIES
BACKGROUND AND ALL OTHER SIGN COMPONENTS NOT DESIGNATED ARE PAINTED WHITE NO. 17886

SECTION 01510
TEMPORARY SITE FACILITIES AND UTILITIES

PART 1 - GENERAL

1.1 SCOPE OF WORK

This section includes design, layout, furnishing, installing operating and maintaining the following temporary facilities and utilities and their removal on completion of the project.

1.1.1 Facilities:

a. Contracting Officer's office
b. Contractor's Office
c. EPA Office
d. NYSDEC Office
e. Security Guard Station
f. Laboratory
g. Emergency Medical Facilities
h. Lunch Room
i. Personnel Decontamination Facilities
k. Health and Safety Equipment Storage
l. Contaminated Soil Stockpile Area and Collection Pond
m. Geotextile Fabric and Geomembrane (HDPE liner)
n. Stockpiling and Storage Areas
o. Access Road and Parking Areas
p. Equipment Decontamination and Treatment Area Concrete Slab
q. Fencing

1.1.2 Utilities:

a. Electricity and lighting
b. Telephone service
c. Water supply
d. Contaminated washwater handling
e. Sanitary facilities

1.2 SUBMITTALS

The following information shall be submitted to and approved by the Contracting Officer prior to delivery and installation at the site:

1.2.1 General arrangement of site facilities - layout and location of all facilities.

1.2.2 Buildings/Trailers - floor plans, fixtures, materials of construction and siting locations.

1.2.3 Electricity supply and lighting - source point, layout locations, fixtures and materials.

1.2.4 Water supply, contaminated washwater handling and sanitary facilities - source point, layout locations, fixtures, materials and methods of disposal.

1.2.5 Stockpiling and storage areas including collection pond, haul road and perimeter berm - design calculations (if any), layout, locations, source and documentation of materials and construction details.

1.2.6 Concrete slab - Design calculations, sump details material certifications, layout and construction details.

1.2.7 Crushed stone access road and parking - Source of material, material certifications, layout and construction details.

1.2.8 Geotextile Fabric and Geomembrane (HDPE Liner)

Prior to furnishing and installation of the geotextile and geomembrane, the Contractor shall submit to the Contracting Officer for approval, the following:

a. The name of the manufacturer, type and thickness of geotextile and geomembrane chosen for use.

b. Manufacturer certification that the materials are in compliance with the requirements of the standard specified herein.

c. Shop drawings showing the proposed layout of material and details of jointing the material, anchoring, connections and other construction details.

1.2.9 Fences and Gates

Contractor shall submit the name of the fence fabricator, size of fabric and type of posts, to the Contracting Officer at the Pre-Work Conference.

1.3 RELATED SECTIONS

Section 01065 - Health and Safety Requirements
Section 01420 - Chemical Quality Control
Section 01430 - Chemical Testing Laboratory Services
Section 01505 - Mobilization/Demobilization
Section 01540 - Security
Section 01560 - Temporary Controls/Environmental Protection
Section 01562 - Dust Control
Section 01563 - Erosion and Sediment Control
Section 01640 - Off-Site Transportation and Disposal
Section 01700 - Project Closeout
Section 02100 - Site Preparation
Section 02220 - Excavation
Section 02221 - Backfill and Grading

Section 03200 - Concrete Reinforcement
Section 03310 - Structural Concrete
Section 11305 - Aqueous Waste Treatment System
Section 11505 - PCB Dechlorination System

1.4 REQUIREMENTS OF REGULATORY AGENCIES

1.4.1 Electricity and lighting shall be in accordance with Federal, State and local regulations as well as local utility company requirements. All work shall be in accordance with the National Electric code.

1.4.2 Sanitary facilities, and disposal of sanitary wastes, shall be in accordance with State and local regulations.

1.5 APPLICABLE STANDARDS AND SPECIFICATIONS

ASTM - American Society for Testing and Materials

- o A 53-88 Standard Specifications for Pipe, Steel, Black Hot-Diped Zinc Coated (galvanized) Welded and Seamless
- o A 123-84 Standard Specifications for Zinc (Hot-Dipped Galvanized) coatings on Iron and Steel Products
- o A 153-87 Standard Specifications for Zinc Coatings (Hot-Dipped) on Iron and Steel Hardware
- o A 392-84 Specifications for Zinc Coated Steel Chain - Link Fence Fabric
- o A 817-86 Specifications for Metallic-Coated Steel Wire for Chain Link Fence Fabric
- o D 4253-83 Test Methods for Maximum Index Density of Soils Using Vibratory Table
- o D 4254-83 Test Methods for Minimum Index Density of Soils and Calculations of Relative Density.

1.6 LOCATION

A suggested layout of the temporary site facilities is shown on Drawing WB-02. Any changes shall be approved by the Contracting Officer.

1.7 QUALITY ASSURANCE

1.7.1 Geotextile Fabric and Geomembrane

The materials supplied under these specifications shall be first quality products designed and manufactured specifically for the purpose of this work and which have been satisfactorily demonstrated by prior use to be suitable and durable. The installer of the geotextile fabric and geomembrane shall have demonstrated, by previous experience their ability to do the work. A representative of the fabric and geomembrane manufacturer(s) shall be available a minimum of one day during the installation and shall provide technical assistance for the installation of such, if required.

1.7.1.1 Testing

The Contractor shall submit to the Contracting Officer certification that the geomembrane liner was installed in accordance with this specification and with aproved shop drawings and that all liner joints were inspected, tested and approved within two weeks of installation.

1.7.1.2 Warranty

The geomembrane manufacturer shall warrant the liner against manufacturing defects and chemical incompatibility for a period of at least one year from the date of installation. The manufacturer shall replace, at no expense, any material which fails from the above causes within the warranty period. The manufacturer shall furnish a written warranty certifying the requirements of this paragraph.

1.8 RESPONSIBILITY

1.8.1 The Contractor shall be responsible for the operation and maintenance of all systems to assure that necessary services are provided without disruption.

1.8.2 The Contractor shall be responsible for all electrical charges including source connection, installation, service charges and shut-off.

1.8.3 The Contractor shall be responsible for all telephone charges including installation, service charges (except Contracting Officer's toll charges) and discontinuance.

PART 2 - PRODUCTS

2.1 MATERIALS

All materials shall be suitable for their intended use and shall conform to applicable codes and standards. Manufacturers'

requirements shall be strictly adhered to. Used materials may be utilized provided that they are sound and capable of performing the intended function.

2.2 CRUSHED STONE

For material requirements refer to Section 02221 - Backfill and Grading

2.3 GEOTEXTILE FABRIC

The geotextile fabric shall be a nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester, formed into a stable network by needle punching. The fabric shall be inert to commonly encountered chemicals and hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistent. The thickness of geotextile fabric shall be 60-90 mils.

2.4 GEOMEMBRANE (HDPE LINER)

The geomembrane liner shall be high density polyethylene (HDPE) 80 mils in thickness and shall be manufactured of new first-quality products designed and manufactured specifically for the purpose of soil and liquid containment. The liner material shall be produced free of any sign of contamination by foreign matter. Any defect shall be repaired using the manufacturer's recommendations.

2.5 WATERPROOF STOCKPILE COVER

The contaminated soil stockpile cover shall be puncture and tear resistant nylon reinforced polyethelene sheets with a minimum thickness of six (6) mils manufactured specifically to provide a waterproof cover over the soil stockpile.

2.6 FENCING

2.6.1 Posts and Rails

All post, rails, gate frames, and post braces shall be Schedule 40 standard steel pipe produced to the requirements of ASTM A53, (no hydrostatic testing is required) and hot-dip galvanized in accordance with ASTM A123, except for sliding gate posts which shall be Schedule 80.

2.6.1.1 Minimum NPS pipe diameters shall be as follows:

End, corner and pull posts	2-1/2 in.
Line posts	2 in.

Swing gate posts

o Double swing (up to 12 feet)	2 in.
o Double swing (from 12 to 26 feet)	3-1/2 in.
Top rail	1-1/4 in.
Horizontal post braces	1-1/4 in.

2.6.1.2 All posts shall be equipped with pressed steel combination tops. Tops shall be provided with a hole to permit through passage of the top rail.

2.6.1.3 Post tops, extension arms, rail sleeves, and miscellaneous clamps shall be hot-dip galvanized in accordance with ASTM A123.

2.6.2 Fence Fabric

2.6.2.1 Wire for chain link fence fabric shall be No. 9 coated wire gage carbon steel produced in accordance with ASTM A817.

2.6.2.2 Fence fabric shall be zinc coated steel mesh.

2.6.2.3 Coated fence fabric shall be produced from helically wound and interwoven steel wire forming a continuous 2 inch mesh in accordance with ASTM A392.

2.6.2.4 Ties or clips of adequate strength shall be provided in sufficient number for attachment of the fabric to line posts at intervals not exceeding 15 inches and to the top rail at a maximum 24 inch spacing.

2.6.3 Tension Bars

Tension bars shall be minimum 3/16 inch by 3/4 inch flat steel plates and no more than 2 inches shroter than the fabric height. Bars shall be hot-dip galvanized in accordance with ASTM A123.

2.6.4 Terminal Post Bands

Bands or clips of adequate strength shall be provided in sufficient number for attachment of the fabric and stretcher bars to all terminal posts at intervals not exceeding 15 inches. Tension bands shall be formed from No. 12 gage flat or beveled steel and attached with 3/8 inch diameter carriage bolts hot-dip galvanized in accordance with ASTM A153.

2.6.5 Gates

Gates shall be double swing as indicated on the drawings, complete with latches, stops, keepers and hinges.

2.6.5.1 Gate frames shall be constructed of Schedule 40, 1-1/4 inch NPS diameter standard steel pipe produced to the requirements of ASTM A 53 and hot-dip galvanized in accordance with ASTM A123. Frames shall be welded at corners or assembled with fittings, and when fittings are used, 3/8 inch minimum diameter truss rods shall be provided to prevent sag or twist.

2.6.5.2 Gate leaves shall have vertical intermediate bracing as required, spaced so that no members are more than 8 feet apart.

2.6.5.3 Gate fabric shall be the same type as used in the fence construction.

2.6.5.4 Hinges for swing gates shall permit full opening to a position paralleled to the fence. Hinges shall not twist or turn under gate motion, and shall be non-removable after installation. The gate should be easily opened by one person.

2.6.5.5 Gate latches, stops, and keepers shall be provided for all gates. Latches shall have a plunger-bar arranged to engage the center stop, except that for single gates with openings less than 10 feet wide, a forked latch may be provided. Catches shall be arranged for locking. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger bar of the latch of double gates. No stop is required for single gates. Keepers shall consist of a mechanical device for securing the free end of the gate in the full open position.

2.6.5.6 All gate hardware shall be zinc coated in accordance with ASTM A153.

PART 3 - EXECUTION

3.1 GENERAL

The Contractor shall be responsible to design, furnish and install all temporary site facilities required for the performance of work.

3.2 ELECTRICITY AND LIGHTING

3.2.1 All temporary electric service for the project site shall be provided where required. It shall be the responsibility of the Contractor to coordinate electric service installation with the electric company.

3.2.2 Site electric service shall originate at a source(s) adjacent to Lake Shore Road. It shall be the responsibility of the Contractor to ascertain site power requirements and provide appropriate service.

3.2.3 Service shall be brought to the PCB Dechlorination and aqueous waste treatment systems by buried conduit or from conventional above ground poles.

3.2.4 Service shall be brought to immediate work areas of the site, as required, by construction-type power cords. Distribution boxes and circuit wiring shall be provided, if required, to meet the required power needs.

3.2.5 Lighting shall be provided for the PCB Dechlorination and aqueous waste treatment systems and all work areas for night work and where natural light is inadequate to perform the work safely.

3.3 TELEPHONE SERVICE

The Contractor shall make all arrangements with the New York Bell Telephone Company and pay all costs for providing telephone services as specified herein and for his requirements.

3.4 WATER SYSTEM

3.4.1 The Contractor shall determine the site water requirements and provide adequate water from approved sources.

3.4.2 Site water may be stored in holding tanks and distribution piping or by tank trucks or any combination thereof.

3.4.3 A high pressure wash system shall be provided for equipment decontamination and shall be suitably sized to provide a minimum pressure of 500 psi with a 0.5 to five gallons per minute flow range and a nominal temperature of 200 °F. A storage tank of minimum size of 200 gallons shall be provided for water supply to the high pressure wash equipment. The wash equipment hose shall be a minimum of 50 feet in length, (refer to Section 01065 - Health and Safety Requirement).

3.5 DISPOSAL OF DECONTAMINATION WASHWATER

3.5.1 Washwater from the personnel decontamination facility, floor drains, and laundry (if present on site) shall be collected and transferred to the on-site aqueous waste treatment system.

3.5.2 Washwater from the equipment decontamination slab shall drain into the adjacent sump. The Contractor shall be responsible for transferring decontamination water from the sump to the aqueous waste treatment system.

3.6 SANITARY WASTE SYSTEM

3.6.1 Waste from sanitary facilities shall be collected in holding tanks for subsequent transfer to the treatment facility

under the jurisdicaton of Erie County Sewer District. Holding tanks may be stationary or tank trucks of suitable size.

3.6.2 Temporary toilet facilities shall be the chemical type, insofar as possible, in order to minimize water requirements.

3.7 FACILITY REQUIREMENTS

3.7.1 All buildings and trailers other than storage sheds shall be provided with the following minimum requirements:

3.7.1.1 Lighting; electric, non-glare type producing a minimum illumination level of 50 foot-candles measured at desk height.

3.7.1.2 Heating and cooling; capable of maintaining ambient temperatures within the structure to 70 degrees Fahrenheit (plus or minus three degrees).

3.7.1.3 Adequate number of windows covered with shades or blinds.

3.7.1.4 Potable bottled water.

3.7.1.5 Fire extinguisher; non-toxic dry chemical type, UL-approved for Class A, B and C fires (minimum rating of 2A, 10B, 10C).

3.7.1.6 Telephone; separate telephones lines shall be supplied for each of the offices.

3.7.2 Separate male and female sanitary facilities shall be provided at the work site.

3.7.3 Janitorial services shall be supplied on a daily basis.

3.7.4 Buildings and/or trailers shall be structurally sound and weather-tight, with floors raised above ground and open to allow free circulation of air.

3.7.5 At the Contractor's option, portable or mobile buildings may be used as on-site project facilities.

3.7.6 Living quarters shall not be permitted for personnel working at the site.

3.8 CONTRACTING OFFICER'S OFFICES

3.8.1 The Contractor shall supply and maintain a lockable field office for use by the Contracting Officer. The office shall consist of a trailer or adjoining trailers. Trailers shall be placed on concrete blocks and leveled, with adequate wooden steps and handrails provided at each exterior door. The

trailers and their associated equipment shall be new or recently renovated to a like-new condition subject to the Contracting Officer's approval. The interiors shall consist of a pastel-shade paneling. The following shall be provided by the Contractor:

3.8.2 Two partitioned offices with doors, one having a floor area of 110 square feet and the other 160 square feet. Each office shall contain at least two operable windows and shall be supplied with the following equipment:

3.8.2.1 Office desk (60 inches x 30 inches laminated top) with lockable drawers, swivel chair and table (60 inches x 30 inches laminated top).

3.8.2.2 The 160 square foot office shall include one additional office desk (60 inches x 30 inches laminated top) with lockable drawers and swivel chair.

3.8.2.3 Telephone - a separate telephone line with extension and intercom connection to the secretarial station.

3.8.2.4 Fire resistant, two drawer, lockable filing cabinet, legal size.

3.8.2.5 One scientific electronic calculator with tape record and answer registered to at least eleven figures. One business electronic calculator with tape record and answer registered to at least eleven figures. The supply of tapes shall be replenished by the Contractor as required by the Contracting Officer.

3.8.2.6 Shelf set, two shelves 12 inches deep x three feet long (attachable to wall).

3.8.2.7 Waste Basket.

3.8.3 One partitioned meeting area having a minimum of 140 square feet of floor area. The meeting area will contain the following equipment:

3.8.3.1 One office table with laminated top two feet six inches x 10 feet and one drawing board five feet x three feet six inches.

3.8.3.2 Eight straight-backed chairs.

3.8.3.3 Bulletin board, four feet x six feet (attachable to wall).

3.8.3.4 Waste basket.

3.8.3.5 Vertical filing plan rack for two sets of 22 inch x 36 inch plans each rack.

3.8.3.6 A chalkboard three feet x five feet.

3.8.4 An open secretarial area having a minimum of 150 square feet of floor area. This area shall contain, as a minimum, the following equipment:

3.8.4.1 One L-type clerical desk and secretarial chair.

3.8.4.2 One typewriter, IBM Selectric or equivalent.

3.8.4.3 One telephone with extension and interconnection to each of the two office areas, with current local telephone directory.

3.8.4.4 One office table with laminated top three feet x eight feet.

3.8.4.5 One desk top, heavy duty, electric, dry process photocopying machine and an adequate supply of copy paper. The supply of copy paper shall be replenished by the Contractor as required by the Contracting Officer.

3.8.4.6 One desk top facsimile unit capable of high-speed transmission and reception of documents through telephone lines.

3.8.4.7 IBM or Compatible Personal Computer with minimum of one 20 megabyte hard disk, one floppy disk drive, and minimum capacity of 640K random access memory (RAM), and a dot matrix printer with a minimum of 9 pins head and 200 CPS (Characters per second) for the use of 15 inch computer paper.

3.8.4.8 One additional telephone line and telephone shall be provided for dedication to computer and facsimile transmission equipment to be located as directed by the Contracting Officer.

3.8.4.9 One fire resistant, four drawer, lockable filing cabinet, legal size.

3.8.4.10 Three-tier book case, three feet wide x three feet high x 12 inches deep.

3.8.4.11 Waste basket.

3.8.5 All buildings, trailers and equipment supplied to the Contracting Officer by the Contractor shall be returned to the Contractor's care at the close of construction.

3.9 CONTRACTOR'S OFFICE

The Contractor shall provide an office for his own use. This office should have adequate furniture to conduct everyday site operations and maintain records.

3.10 EPA AND NYSDEC OFFICES

3.10.1 The Contractor shall supply and maintain separate lockable field offices for the use of the EPA and NYSDEC representatives.

3.10.2 Each office shall have a minimum of 96 square feet of floor area and furnished as described in paragraph 3.8.2 above.

3.11 SECURITY GUARD STATION

A separate office having a minimum floor space of 96 square feet shall be provided for security guard station. This area shall contain, as a minimum, the following equipment:

a. One office desk with lockable drawers, and three office chairs.

b. One telephone having a circuit separate from all others on site.

c. One office table measuring three feet by eight feet.

d. One lockable, fire resistant, four drawer filing cabinet.

e. A minimum of two windows providing visibility of the site.

f. Six portable two-way radios and one base station. All sets shall be capable of transmitting to and receiving from any other set, at any point within the project boundary. All portable units shall be rechargeable, and shall be capable of operating continuously without recharge for three hours. Two two-way radios, on the same frequency as the others, shall be assigned to the Contracting Officer, one for office and one for field use.

g. The security guard station shall be moved to the entrance to the access road at Lake Shore road during remediation of the roadway adjacent to the main entrance shown as Section 3 on Drawing WB-21.

3.12 LABORATORY

Refer to Section 01430 - Chemical Testing Laboratory Services for laboratory requirements.

3.13 EMERGENCY MEDICAL FACILITIES

A separate building with a minimum of 96 square feet of floor area shall be provided in the Support Zone for emergency medical

facilities. Refer to Section 01065 - Health and Safety Requirements for equipment and supplies to be provided.

3.14 LUNCH ROOM

The Contractor shall supply and maintain a separate building/ trailer (10' x 40') to be used as a lunch room. This trailer shall be provided with an adequate number of tables and chairs for the on-site personnel.

3.15 PERSONNEL DECONTAMINATION FACILITIES

3.15.1 A separate trailer shall be provided for personnel decontamination.

3.15.2 The equipment and fixtures specified below shall be provided:

a. Shower facilities with at least one shower for every six on-site personnel. Separate showers shall be provided for men and women. The showers shall provide adequate amount of hot and cold water for personnel required to take showers. The temperature of hot water shall be limited to 135°F to prevent burns.

b. Locker room with one locker for each employee.

c. A room where all personnel safety equipment and protective clothing can be stored.

d. Laundry area equipped with automatic washing and drying machines or sub-contract laundering to a service firm approved by the Contracting Officer.

e. Boot rack for washed boots to drain.

f. Toilet facilities with at least one toilet and hand basin for every six on-site personnel. Separate toilet facilities shall be provided for men and women.

g. Sanitary waste holding tank and piping from the decontamination facility and site offices.

3.15.3 All equipment and fixtures shall be maintained in clean condition.

3.16 HEALTH AND SAFETY EQUIPMENT STORAGE

A partitioned equipment storage area shall be provided and shall have access through a lockable door. The size of the equipment

storage area shall not be less than 96 square feet. Sufficient shelving shall be installed for storage and inventory control of small items. Refer to Section 01065 - Health and Safety Requirements for equipment and supplies required.

3.17 CONTAMINATED SOIL STOCKPILE AREA AND COLLECTION POND

3.17.1 Contaminated Soil Stockpile Area

The Contractor shall design, provide, install, and maintain a stockpile area as shown on drawing WB-02 to store all excavated contaminated soil prior to treatment. The Contractor shall calculate the area required to accomoodate the maximum amount of soil to be stockpiled at any time.

3.17.1.1 The contaminated soil stockpile area shall, upon clearing and grubbing, be graded in such a manner that runoff water will be directed to the collection pond shown on drawing WB-02.

3.17.1.2 In addition to stockpiling contaminated soil, this area shall also be utilized for staging and preparation of the contaminated soil for treatment, and storage of contaminated material that requires off-site disposal.

3.17.1.3 This area shall be a restricted area and shall be secured by fences and gates supplied and installed by the Contractor. All security and safety procedures for the Exclusion Zone shall be followed for this area.

3.17.1.4 The contaminated soil stockpiling area shall be lined with a 80 mil geomembrane (HDPE liner) over a geotextile fabric to prevent infiltration of precipitation. Surface runoff shall be diverted away from adjoining areas and collected in the collection pond shown on drawing WB-02. A perimeter berm shall be provided to direct surface runoff toward the collection pond.

3.17.1.5 Contractor shall also provide, install and maintain a haul road to accomodate the largest construction equipment expected to be utilized. This haul road shall be considered as part of the stockpile area and shall be provided with a 80 mil geomembrane (HDPE liner) over a 60-90 mil geotextile fabric to prevent infiltration of contaminated water to the ground below. The haul road shall also be utilized as part of the perimeter berm to prevent surface runoff from entering adjoining areas.

3.17.1.6 The crushed stone haul road shall be compacted sufficiently to form a hard, smooth surface capable of withstanding the anticipated loads associated with the site work without puncturing the liner.

3.17.1.7 Contractor shall provide a culvert where the haul road crosses the existing dike and make provisions for collecting any precipitation collected within the geomembrane (HDPE liner) in this area.

3.17.1.8 The Contractor shall furnish, install and maintain a silt screen around the perimeter berm as shown on Drawing WB-05.

3.17.1.9 The Contractor shall seed the berms and stabilize them to prevent erosion until a viable grass cover is established.

3.17.2 Collection Pond

3.17.2.1 The Contractor shall layout, design and construct a temporary collection pond to collect runoff from the contaminated soil storage area as shown on Drawing WB-02. Water collected in the pond shall be transferred to the onsite aqueous waste treatment system for treatment and discharge as soon as practical.

3.17.2.2 The collection pond shall be designed to accomodate runoff from the entire contaminated soil stockpile area using a rainfall intensity of 0.09 in/hr for a 24 hour storm having a 2 year recurrence period.

3.17.2.3 The bottom and sides of the collection pond shall be lined with a 80 mil geomembrane (HDPE) liner over a 60-90 geotextile fabric as shown on Drawing WB-05.

3.17.3 Geotextile Fabric and Geomembrane (HDPE LINER)

Contractor shall furnish and install geotextile fabric and geomembrane lining for the contaminated soil stockpiling area, the haul road and the collection pond as specified and shown on the Contract drawings. All work shall be performed in strict accordance with the Contract drawings, these specifications, and geotextile and membrane lining fabricator's approved shop drawings.

3.17.3.1 Soil surfaces to be lined shall be cleared, grubbed, graded to a smooth and uniform surface in accordance with Section 02100 - Site Preparation and shall be free of debris, roots, and angular or sharp rocks larger than one (1) inch in diameter within the top four (4) inches. The surface shall be compacted to provide a firm unyielding foundation sufficient to permit the movement of vehicles without causing rutting or other deleterious effects. Surfaces to be lined shall be inspected and approved by the Contracting Officer prior to installation of any geotextile fabric or geomembrane. The collection pond shall be excavated in accordance with Section 02220-Excavation. All surfaces shall be free of angular rocks, roots, grass and vegetation and the surface made uniformly sloping as indicated on the Contract drawings.

3.17.3.2 Mechanical equipment shall not be driven on top of the fabric or liner unless permitted by the Contracting Officer.

3.17.3.3 Liner material shall not be installed when the temperature is lower than 40°F or greater than 100°F.

3.17.3.4 All areas of the liners damaged during installation or use, shall be repaired by the Contractor in accordance with the manufacturers repair procedure at no additional cost.

3.17.3.5 Geotextile Fabric Installation

The fabric shall be installed as specified and as shown on the Contract drawings and in accordance with the manufacturer's recommendations. Separate rolls or panels shall be joined by an 18-inch minimum overlap.

3.17.3.6 Geomembrane (HDPE Liner) Installation

Each panel of the HDPE geomembrane shall be laid out and installed in accordance with the manufacturer's recommendation and the approved shop drawings prepared by the Contractor. The layout shall be designed to keep field joining of the HDPE membrane to a minimum and consistent with proper methods of HDPE membrane installation.

3.17.3.7 Field Joints

Individual panels of geomembrane liner material shall be laid out and overlapped a minimum of 4-inches prior to welding. Extreme care shall be taken in the preparation of the areas to be welded. The area to be welded shall be cleaned and prepared according to the procedures specified by the material manufacturer. All sheeting shall be welded together by either of the two processes:

a. A homogenous overlap extrusion process.

b. Double track hot wedge process.

The composition of any extrusion shall be identical to the lining material.

3.17.3.8 Field Quality Control

A quality-control technician provided by the geomembrane manufacturer shall inspect the entire length of each seam. Any area showing defect shall be marked and repaired in accordance with manufacturer's repair procedures.

3.17.3.9 Non-Destructive Testing

The Contractor shall perform non-destructive testing on all welds to ensure watertight homogenous seams in accordance with the manufacturers recommendations.

3.17.3.10 Inspection

Upon completion of the work, the geotextile fabric and geomembrane liner installation shall be subjected to a final inspection. All work in the system therein being inspected shall be complete and ready for use. All work shall meet the requirements as to line, grade, and workmanship as determined by the Contracting Officer. All discrepancies shall be noted and repaired by the Contractor at no additional cost to the EPA.

3.17.3.11 Soil Cover

A minimum of 12 inches of soil cover between equipment tires or treads and liner is required at all times to avoid damage to the liner. Particular applications may require more.

a) The protective soil cover shall consist of well-graded contaminated soil free of organics, trash, claybolts or other deleterious matter. No sharp edged stones, stones larger than 3/4 inch in diameter or hard objects shall be acceptable. The cover shall be installed using low ground pressure equipment.

b) The soil cover shall be of a uniform thickness, free of ruts and irregularities.

c) In heavily trafficked areas such as access ramps, soil cover thickness should be at least 2 to 3 feet.

d) Equipment used for placing soil shall not be driven directly on the geomembrane.

3.17.3.12 Repairs

Damage to the fabric or liner occurring during the placement of soil shall be repaired immediately by the Contractor at no additional cost to the EPA.

3.18 STOCKPILING AND STORAGE AREAS

3.18.1 Contractor shall provide separate areas for stockpiling treated soil, soil borrow, crushed stone, asphalt pavement, timber and storage of equipment as shown on Drawings WB-02 and WB-05.

3.18.2 The stockpiling and storage areas shall, upon clearing and grubbing, be graded and compacted in such a manner that runoff water will be diverted away from the contaminated soil stockpiling area.

3.19 EQUIPMENT DECONTAMINATION AND TREATMENT AREA CONCRETE SLAB

3.19.1 The Contractor shall construct a reinforced concrete slab for the equipment decontamination and treatment area where the PCB dechlorination and aqueous waste treatment systems are located as shown on Drawing WB-05. The Contractor shall provide an adequately sized sump to collect wastewater from the decontamination slab as well as a suitable steam generation unit for decontaminating equipment. The Contractor shall also provide a separate sump in the treatment area to collect, contain and remove potential spills that may arise from the treatment system operation.

3.19.2 The PCB dechlorination base slab and equipment decontamination pad shall be designed to withstand the anticipated loads imposed on them during the construction period.

3.19.3 At the completion of all remediation activities, the Contractor shall decontaminate the concrete by hydroblasting. Wastewater from hydroblasting shall be treated in the aqueous waste treatment system. Wipe samples shall then be collected and analyzed as specified in Section 01420 - Chemical Quality Control. The concrete shall be disposed of in a sanitary landfill unless found to be contaminated, in which case it shall be disposed of in a RCRA landfill in accordance with Section 01640 - Off-Site Transportation and Disposal.

3.20 ACCESS ROAD AND PARKING AREAS

3.20.1 Access Road

The Contractor shall construct a crushed stone access road for residential traffic detour in the location and to the dimensions shown on Drawing WB-02.

3.20.1.1 Prior to the placing crushed stone, the subgrade shall be shaped and compacted and shall be free from water pockets. Crushed stone material shall not be placed on soft, muddy, or frozen areas, nor shall it be placed until all irregularities in the prepared areas, have been corrected.

3.20.1.2 The crushed stone material shall be deposited on prepared areas as uniformly as possible to avoid segregation. The crushed stone road shall be constructed in one layer of a minimum thickness of 12 inches and compacted to a hard, smooth surface capable of withstanding the anticipated loads. The access road shall be compacted to 85% of the maximum relative

density in accordance with ASTM D4253 and D4254. Contractor shall maintain the road in satisfactory condition throughout the course of the project.

3.20.2 Parking Area

The areas designated for trailers and parking (including the temporary parking for residents) on drawings WB-02 and WB-05 shall, after clearing and grubbing, be graded appropriately, compacted and covered with a minimum of 6 inches of compacted layer of crushed stone. The depth of crushed stone in areas which may be subjected to heavy construction equipment shall be increased to 12 inches.

3.20.2.1 The Contractor shall provide a parking area sufficient to accomodate a minimum of 30 vehicles.

3.20.2.2 The parking area shall be regulated to insure free entry and egress to and from the site.

3.21 FENCING

Contractor shall furnish and install the fences and gates shown on the Contract drawings.

3.21.1 Perimeter fence and gates shall be 8 feet overall in height above the ground, including 3 strands of barbed wire on the top as shown on Drawing WB-06.

3.21.2 Line posts shall be spaced equally not more than 10 feet on centers.

3.21.3 All end and corner posts shall be braced horizontally to the adjoining line post at the mid-height of the fabric by means of standard steel pipe.

3.21.4 Diagonal tension bracing shall be provided from end, corner, or gate posts to line posts, consisting of 3/8 inch minimum diameter steel truss rods with turnbuckles or equivalent provision for adjustment.

3.21.5 One tension bar shall be provided for each end and gate post, and two (2) for each corner and pull post.

3.21.6 The fence and gates shall be installed in accordance with the requirements specified herein and the manufacturer's instructions and recommendations.

3.21.7 Contractor shall construct footings and install all fencing and accessories to the extent indicated on the contract

drawings. Concrete post footings shall be poured monolithically, and the top surface shall be approximately 2 inches above the surrounding ground line. A concrete block or flat stone shall be placed at the bottom of an augered hole before the post concrete is placed.

3.21.8 Concrete shall conform to ASTM C94, using 3/4 inch maximum-size aggregate, and having a minimum compressive strength of 3000 psi after 28 days, and shall be cured for a minimum of 72 hours after posts are set before fence installation continues. Refer to Section 03310 for further requirements.

3.21.9 Fence shall be grounded at each side of every gate, at points 150 feet each side at overhead power lines, and at intervals of every every 500 to 750 feet. Fence shall be grounded at locations where fence alignment changes more than 15 degrees.

3.21.10 Each fence post to be grounded shall be connected to a ground electrode consisting of a copper-clad steel ground rod 3/4 inch in diameter and 10 feet long, driven not less than 11 feet into the ground with rod located at the fence line or as near the fence line as is practicable. Connection of fence post to ground electrode shall be made below grade with not less than No. 4 AWG Stranded-Copper wire with TW insulation by approved molded exothermic weld process or approved clamp-type fittings of copper on fence post and electrode. Each gate panel shall be bonded with a flexible bond strap to its gate post.

3.22 CLOSURE

3.22.1 The Contractor shall disconnect and remove all temporary utilities installed by the Contractor. The Contractor shall submit to the Contracting Officer evidence of final payment for all utility services.

3.22.2 On completion of the site work, the Contractor shall dismantle, decontaminate where required, and properly dispose of and/or remove from the site all temporary and supporting facilities furnished and installed by the Contractor. The geotextile fabric and geomembrane liner shall be removed from all areas and disposed of off-site in accordance with Section 01640- Off-Site Transportation and Disposal.

3.22.3 All fences, berms, access roads and stockpile areas constructed by the Contractor within the job site shall be removed at the Contractor's expense after the completion of all work required by this Contract. These locations shall be graded and landscaped after the removal of site facilities. All materials above the HDPE base liner within the contaminated soil stockpile area shall be sampled, tested, and decontaminated where required.

3.22.4 The Contractor shall repair any erosion or runoff related damage and reseed as specified in Section 02900 - Landscaping and/or as directed by the Contracting Officer or his representatives.

SECTION 01540
SECURITY

PART 1 - GENERAL

1.1 Summary

1.1.1 This section describes the minimum security measures and equipment to be used by the Contractor for the Wide Beach job site.

1.1.2 The Contractor shall be responsible for maintaining site security within the limits of this contract as identified in the contract drawings, 24 hours a day, 7 days a week including holidays throughout the duration of the field activities from mobilization to demobilization.

1.2 Related Sections

Section 01065 - Health and Safety Requirements
Section 01505 - Mobilization/Demobilization

1.3 Submittals

The Contractor shall prepare and submit at the Pre-Work Conference a Security Plan to the Contracting Officer for his review and approval.

1.4 Applicable Publications

U.S. Army Corps of Engineers, Safety and Health Requirement Manual (EM 385-1-1, Revised Oct. 1987).

PART 2 - PRODUCTS

2.1 Security Guard Station

The Contractor shall provide and maintain a security guard station on-site as specified in Section 01510.

PART 3 - EXECUTION

3.1 Security Plan

At the Pre-Work Conference, the Contractor shall submit a security plan to the Contracting Officer. This plan shall address as a minimum, the following:

- Number of security personnel
- Duties

- o Names and qualification of security personnel
- o Description of proposed daily security operations
- o Method and frequency for conducting security checks
- o Description of how a breach of security will be handled. A breach of security shall include, but not be limited to, unauthorized personnel located on the site working area, unauthorized personnel attempting to gain access to the site working area, broken fences and unlocked gates, and unauthorized personnel on the hazardous work zones.
- o Location of security check points.
- o Number of handheld two-way radios with channel frequencies and appropriate license.

3.2 Personnel

3.2.1 Security Officer

The security officer is the Contractor's employee with overall responsibility for the preparation, implementation and enforcement of the site security plan. The security officer shall have a minimum of three years specialized experience in the chemical hazardous waste industry security systems. The security officer shall have a broad working knowledge of State and Federal safety regulations. In addition to responsibilities of site securities, the security officer shall supervise site communication system and manage the communication control center.

3.2.2 Security Monitors

The security monitors are the Contractor's employees assigned to each security point on site and shall report to the security officer. Security monitors shall have a minimum of one year in related security work and a sound working knowledge of state and Federal safety regulations.

3.3 Site Security

3.3.1 The Security Officer or his designee shall be on site during construction activities. A security guard shall be on site at all other times.

3.3.2 The Contractor shall maintain a guard house at the entrance to the site. The guard house shall have communication link with the security office.

3.3.3 The Exclusion and Contamination Reduction Zones are identified as active hazardous work areas. The active hazardous work areas shall be posted with signs at 40 foot intervals along the perimeter declaring "WARNING, HAZARDOUS WORK AREA, DO NOT ENTER UNLESS AUTHORIZED". The design of signs shall conform with the Section 10.6.02 of the U.S. Army Corps Engineers' Safety and Health Requirements Manual EM 385-1-1, revised October, 1984.

3.3.4 Temporary lighting shall be provided by the Contractor to ensure sufficient visibility for security at night without creating nuisance to the residents.

3.3.5 The Contractor shall be responsible for insuring that all security personnel have complied with the requirements for personnel as defined in Section 01065 - Health and Safety Requirements, including training and medical monitoring.

3.3.6 The Contractor shall be responsible for maintaining a log of all security incidents. This log shall be furnished to the Contracting Officer upon request.

3.3.7 The Contractor shall insure that all gaps in all fences are closed to provide security of the active hazardous work areas.

3.3.8 The Contracting Officer will have the right of approval and rejection of any and all security-assigned personnel of the Contractor for the duration of the contract.

3.4 Personnel Identification

3.4.1 The Contractor shall provide security identification cards specific to the site for all residents, on-site personnel, and visitors. These cards shall be color-coded as follows:

Red for Exclusion Zone authorization
Blue for Contamination Reduction Zone authorization
White for all other areas

The identification card shall have the following information:

- Job Identification
- Name of the individual
- Occupation
- Name of employer

3.4.2 The Contractor shall be responsible for and guarantee that such identification will be worn by each individual and visible at all times while the individual is on site.

3.4.3 The Contractor shall exclude improperly identified personnel from the site.

3.5 Entrance Control

Control of all persons, equipment, and vehicles entering and leaving the site shall be provided by the Contractor.

3.5.1 The Contractor shall require each person to display proper identification.

3.5.2 The Contractor shall maintain a list of persons authorized for site entry and submit a copy of the list to the Contracting Officer on request.

3.5.3 The Contractor shall require all personnel and visitors having access to the site to sign in and sign out, and shall keep a record of all site access. A log of all visitors shall be maintained.

3.5.4 Site visitors shall not be permitted to enter active hazardous work areas unless authorized by the Contracting Officer.

3.5.5 Vehicular access beyond the guard house to the site shall be restricted to authorized vehicles only. Use of site-designated parking areas shall be restricted to vehicles of Government, Contractor, Subcontractor, service personnel assigned to the site and actually on duty, and those residents for whom vehicular access to their homes is temporarily suspended.

3.5.6 Personal vehicles shall not be authorized to enter the Exclusion Zones on-site. Vehicular access to residential homes within the Exclusion Zones shall only be provided by the Contractor, to the extent practicable, on a reasonable schedule not to exceed four times a day.

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SECTION 01560
TEMPORARY CONTROL AND ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK: This section covers the furnishing of all labor, material and equipment and performing all work required for the protection of the environment during construction operations except for those measures set forth in other sections of these specifications.

1.2 DEFINITION: For the purpose of this specification, environmental protection is defined as the retention of the environment in its natural state to the greatest extent possible during project construction and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air, water, and land resources and involves noise, solid waste-management and mangement of other pollutants. In order to provide for abatement and control of any environmental pollution arising from the construction activities in performance of this contract, the Contractor and his subcontractors shall comply with all applicable or relevant and appropriate Federal and State Laws.

1.3 NOTIFICATION: The Contracting Officer will notify the Contractor in writing of any non-compliance with the Federal, State and/or local laws. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. The Contractor shall, after receipt of such notice, immediately inform the Contracting Officer of proposed corrective action and take such action as may be approved. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Claims for extension of time or for excess costs or damages by the Contractor due to the stop orders described above, will be denied.

1.4 SUBCONTRACTORS: The Contractor shall ensure that all subcontractors comply with the provisions of this section.

1.5 SUBMITTALS: The Contractor shall submit his/her Environmental Protection Plan at the Pre-Work Conference for the Contracting Officer's review and acceptance.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 GENERAL: The land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. The Contractor shall confine his construction activities to areas defined by the Drawings and Specifications. The following additional requirements are intended to supplement the requirements set forth in other sections of these specifications.

3.1.1 Prevention of Landscape Defacement: Except in areas indicated on the Drawings or specified to be cleared, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without the authority of the Contracting Officer. Ropes, cables, or guys shall not be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized. Where such special emergency use is permitted, it shall be performed in such a manner as to avoid damage to the trees. The Contractor shall in any event be responsible for any damage resulting from such use. Where the possibility exists that trees may be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or operations, the Contractor shall adequately protect such trees. Stone, earth or other material that is displaced into uncleared areas shall be removed. Monuments and markers shall be protected before construction operations commence.

3.1.2 Restoration of Landscape Damage: Any tree, turfed areas or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored to a condition satisfactory to the Contracting Officer. Restoration of scarred and damaged trees shall be performed in an approved manner by experienced workmen. Trees damaged beyond restoration shall be removed and disposed of under the contract requirements. Trees that are to be removed because of damage shall be replaced at the Contractor's expense by nursery-grown trees of the same species approved by the Contracting Officer. The size and quality of nursery-grown trees shall also be approved by the Contracting Officer. Any disturbed turfed (grassed) areas shall be seeded and mulched as directed by the Contacting Officer.

3.1.3 Location of Storage Facilities: Contractor's storage and other construction buildings, which are required in the performance of the work, shall be located upon cleared portions of the job site and shall require the written approval of the Contracting Officer. The preservation of the landscape shall be considered in the selection of all sites and in the construction of buildings. A drawing showing storage and other construction facilities shall be submitted with the Contractor's Mobilization Plan for approval by the Contacting Officer.

3.1.4 Post Construction CLeanup or Obliteration: The Contractor shall obliterate all signs of temporary construction facilities, excess materials, or any other vestiges of construction as directed by the Contracting Officer. The area will be restored to near natural conditions which will permit the growth of vegetation. Construction debris shall be disposed of in accordance with Section: Mobilization and Demobilization,

3.2 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS: All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archaeological find undisturbed and shall immediately report the find to the Contracting Officer so that proper authorities may be notified.

3.3 PROTECTION OF WATER RESOURCES

3.3.1 General: The Contractor shall not pollute any streams, rivers, or waterways with fuels, oils, bitumens, calcium chloride, acids, insectacides, herbicides or other harmful materials. The Contractor shall comply with all applicable or relevant and appropriate Federal and State Laws.

3.3.2 Soil Erosion and Sediment Control: The Contractor shall conduct his operations in conformance with his certified Soil Erosion and Sediment Control Plan (refer to Section 01563 - Erosion and Sediment Control for requirements). Surface drainage from cuts and fills within the limits of the work shall be held in suitable sedimentation ponds or low excavation areas and removed for treatment (Section 11305). Temporary erosion and sediment control measures shall be provided and maintained until the permanent work is completed and operative. The area of bare soil exposed at any given time shall be restricted to a minimum. Fill and waste areas shall be constructed by selective placement of materials to eliminate silts or clays on the surface which may erode and contaminate the adjacent wetland. The Contractor shall comply with all applicable or relevant and appropriate Federal and State laws concerning soil erosion and sediment control.

3.3.3 Disposal: Disposal of any debris resulting from the contract work and any wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in or adjacent to the work area is not acceptable. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to its original condition. If necessary, contaminated areas shall be excavated, disposed of as directed by the Contracting Officer, replaced with suitable fill material, compacted and finished with topsoil, and planted as required to reestablish vegetation.

3.4 PROTECTION OF FISH AND WILDLIFE: The Contractor shall at all times perform all work and take such steps as required to minimize interference with or disturbance to fish and wildlife. The Contractor shall not alter water flows or otherwise disturb native habitat and areas adjacent to the work area which, in the opinion of the Contracting Officer, are critical to fish and wildlife.

3.5 DISPOSAL OF DEBRIS: All contaminated debris resulting from construction operations of this contract shall be disposed of in accordance with Section: Mobilization and Demobilization. Such disposal shall comply with all applicable or relevant and appropriate Federal and State Laws. Such materials shall be removed from the site of the work before the date of completion of the work under these specifications.

3.6 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION: During the life of this contract, the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating or treating the particular pollutant are being carried out or until the material of concern has been equipped with suitable devices to uniformly control distribution.

SECTION 01562
DUST CONTROL

PART 1 - GENERAL

1.1 SCOPE OF WORK

The Contractor shall conduct operations and maintain the project site so as to minimize the creation and dispersion of dust. Dust control shall be used throughout the work at the site, especially during contaminated soil excavation, handling and transport, rough grading, and placement of final soil cover.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 The Contractor shall provide clean water, free from salt, oil, and other deleterious material to be used for on-site dust control in any area.

2.1.2 If foam is required, it shall be 3M Foam Concentrate FX 9162 or an equivalent approved by the Contracting Officer.

2.2 EQUIPMENT

The Contractor shall supply water spraying equipment capable of accessing all work areas. Foam spraying equipment shall be used in conjunction with the water spraying equipment so as to allow foam application of 1% to 6% concentrations.

PART 3 - EXECUTION

3.1. GENERAL

3.1.1 The Contractor shall implement strict dust control measures during active construction periods on-site. These control measures will generally consist of water applications that shall be applied a minimum of once per day during dry weather or more often as required to prevent dust emissions.

3.1.2 If air monitoring indicates a stop-work condition as specified in Section 01065, foam shall be utilized to suppress excessive dust. The foam shall be sprayed at a 1% to 6% concentration to be determined by the Contracting Officer depending on site conditions. Foam shall also be used for odor suppression at the direction of the Contracting Officer.

3.2. APPLICATION

3.2.1 For water application to soil surfaces, the Contractor shall:

a. Apply water with equipment consisting of a tank, spray bar, pump with discharge pressure gauge.

b. Arrange spray bar height nozzle spacing and spray pattern to provide complete coverage of ground with water.

c. Disperse water through nozzles on spray bar at 20 psi, minimum. Keep areas damp without creating nuisance conditions such as ponding.

3.2.2 For water application to soil surfaces during excavation, the Contractor shall:

a. Apply water with equipment consisting of a tank, pump with discharge gauge, hoses and mist nozzles.

b. Locate tank and spraying equipment so that the entire excavation area can be misted without interfering with excavation equipment or operations. Keep areas damp without creating nuisance conditions such as ponding.

c. Apply water spray in a manner to prevent movement of spray beyond the site boundaries.

3.2.3 For foam application to soil surfaces during excavation, the Contractor shall:

a. Apply foam with equipment consisting of a tank, hoses, pump with discharge gauge and concentration control, used in conjunction with the water spraying equipment.

b. Locate tank and spraying equipment so that the entire excavation area can be foamed without interfering with excavation equipment or operations.

c. Apply foam in a manner to prevent movement of foam beyond the site boundaries.

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SECTION 01563
EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 Summary

1.1.1 This section provides the technical requirements for the design of erosion and sediment control and systems to limit discharge of turbid or contaminated water into streams and waterways from construction operations in accordance with state and local ordinances.

1.1.2 The Contractor shall design, furnish, install and maintain all erosion control measures as specified in this section.

1.1.3 The Contractor shall be responsible for diverting all noncontaminated runoff from rainfall away from the contaminated areas and direct it to the natural drainage pathways.

1.1.4 All runoff or runon which comes into contact with contaminated material within the site work areas and/or the contaminated material stockpile areas shall be collected and transferred to the on-site treatment system. Refer to Section 11305 - Aqueous Waste Treatment System.

1.1.5 Dikes placed in uncontaminated areas shall be constructed of uncontaminated materials, and shall be removed when they are no longer required for runoff/runon control purpose. Dikes which have been contaminated shall be removed for on-site treatment. Refer to Section 11505 - PCB Dechlorination System.

1.1.6 Dikes placed in contaminated areas may be constructed of either contaminated or uncontaminated materials. These dikes shall be removed when they are no longer required for runoff/ runon control purpose and shall be treated on-site. Refer to Section 11505 - PCB Dechlorination System.

1.1.7 The Contractor shall construct and maintain all necessary dikes, silt fences, hay bales, and/or temporary diversion, surface impoundments and protection works. He shall furnish all material required and shall furnish, install, maintain and operate all necessary pumps, piping, and other equipment for removal of water from the various parts of work and for maintaining the work free from water as required for constructing each part of the work. After having served their purpose, all dikes, ditches, or other diversion systems shall be removed, or leveled so as not to interfere in any way with the operation and other facilities, and in a manner approved by the Contracting Officer.

1.2 Related Sections

Related work and/or equipment that is specified in other sections of the contract documents includes but is not limited to the following:

Section 01560 Temporary Controls / Environmental Controls
Section 02220 Excavation
Section 02221 Backfilling and Grading
Section 11305 Aqueous Waste Treatment System
Section 11505 PCB Dechlorination System

1.3 References

Materials and services furnished shall be in accordance with state or local laws and ordinances and the regulations listed below.

EPA - Environmental Protection Agency

EPA-430/9-73-007 - Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity

New York Guidelines for Urban Erosion and Sediment Control

1.4 Submittals

At the Pre-Work Conference the Contractor shall submit to the Contracting Officer, for review and acceptance, his Erosion and Sediment Control Plan (EASP). The EASP shall be prepared and sealed by a Professional Engineer registered in the State of New York. . An accepted Erosion and Sediment Control Plan will not relieve the Contractor of his responsibility for adequate and continuing control of erosion and sediment at the site. However, the Contractor must have his EASP accepted prior to any soil disturbance on site. A copy of the EASP shall be kept at the Contractor's site office at all times during construction.

PART 2 - PRODUCTS

2.1 Materials

2.1.1 Materials shall conform to the requirements of the State of New York "Standards for Soil Erosion & Sediment Controls".

2.1.2 Waterproof coverings used for the stockpiles shall meet the approval of the Contracting Officer.

2.1.3 Hay bales, silt fencing or mulching shall be utilized by the Contractor, as necessary, to control erosion from construction activities.

PART 3 - EXECUTION

3.1. General

The Contractor shall conduct his operations in conformance with his Soil Erosion and Sediment Control Plan. Surface drainage from cuts and fills within the limits of work shall be held in suitable collection ponds or shall be graded to control erosion within acceptable limits. Temporary erosion and sediment control measures shall be provided and maintained until the permanent work is completed and operative. The area of bare soil exposed at any given time by construction shall be restricted to a minimum. Fills and waste areas shall be constructed by selective placement of materials to eliminate silts or clays on the surface which may erode and contaminate the adjacent waterway. The Contractor shall comply with the all applicable laws concerning soil erosion and sediment control.

3.2 Installation

3.2.1 The Contractor shall design, furnish, install and maintain all erosion control measures during the course of construction. He shall make every effort to minimize erosion from clearing and grubbing, excavation, and earthfill operations.

3.2.2 The Contractor shall provide, install and maintain waterproof coverings for the contaminated soil and the treated soil stockpiles to prevent infiltration.

3.2.3 The Contractor shall grade and maintain the contaminated soil stockpile area in such a manner that runoff water will be directed to the collection pond.

3.2.4 Runoff water collected from the contaminated soil stockpile area shall be transferred to the on-site treatment system. Refer to Section 11305 - Aqueous Waste Treatment System.

3.2.5 Erosion and sediment control measures shall be phased-out upon completion of the construction work and the stabilization of the drainage areas. Any standing water shall be removed from basin(s) prior to regrading.

SECTION 01564
SPILL CONTROL

PART 1 - GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall develop, implement, maintain, supervise, and be responsible for a comprehensive Spill and Discharge Control Plan. This plan shall provide contingency measures for potential spills and discharges from handling of contaminated soil, tank and drum residuals, the PCB dechlorination process (see Section 11505), the Aqueous Waste Treatment (see Section 11305), and off-site transportation. (See Section 01640). The Spill and Discharge Control Plan shall be part of the Material Handling Plan (see Section 01600-Equipment and Material Handling) to be submitted to and approved by the Contracting Officer.

1.1.2 The Contractor shall provide methods, means, and facilities required to prevent contamination of soil, water, atmosphere, uncontaminated structures, equipment, or material by the discharge of wastes from spills due to Contractor's operations.

1.1.3 The Contractor will provide equipment and personnel to perform emergency measures required to contain any spillages and to remove spilled materials and soils or liquids that become contaminated due to spillage. This collected spill material will be properly disposed of at the Contractor's expense, in accordance with this specification.

1.1.4 The Contractor will provide equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, material, or existing ground. Decontamination residues must be properly disposed of at the Contractor's expense and in accordance with this specification.

1.2 DEFINITIONS

1.2.1 "Spill" means both intentional and unintentional spills, leaks, and other uncontrolled discharges where the release results in any quantity of PCBs running off or about to run off the external surface of a container or other PCB sources. The concentration of PCBs spilled is determined by the PCBs concentration in the material spilled as opposed to the PCBs concentration in the material onto which PCBs were spilled. Other potential spills include chemicals and reagents utilized in the chemical testing laboratory (Section 01430), Aqueous Waste Treatment System (Section 11305), and PCB Dechlorination System (Section 11505).

1.2.2 "Spill Area" means the area of soil on which visible traces of spill can be observed plus a buffer zone of one foot beyond the visible tracks. Any surface or object (e.g., concrete slabs or sidewalks, or vehicle) within the visible traces area or on which visible traces of the spill material are observed is included in the spill area. This area represent the minimum area which must be cleaned.

1.3 RELATED SECTIONS

Section 01065 - Health and Safety Requirements
Section 01420 - Chemical Quality Control
Section 01430 - Chemical Testing Laboratory Services
Section 01600 - Equipment and Material Handling
Section 01640 - Off-Site Transportation and Disposal

1.4 SUBMITTALS

At the Pre-Work Conference the Contractor shall submit the Spill and Discharge Control Plan as part of his Material Handling Plan to the Contracting Officer for his review and approval. See Section 01300 for submittal requirements.

1.5 REPORTING REQUIREMENTS

In addition to the immediate notification of the Contracting Officer and reporting the applicable requirements under the Clean Water Act (CWA) or the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), the Contractor shall follow the following reporting procedures:

a. Where a spill directly contaminates surface water, sewers, or drinking water supplies, the Contractor shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and obtain guidance for appropriate clean-up measures in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

b. Where a spill directly contaminates grazing lands or vegetable gardens, the Contractor shall notify the appropriate EPA regional office (the office of Pesticides and Toxic Substances Branch) and proceed with the immediate requirements specified in this section, in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

c. Where a spill exceeds 10 pounds of PCB contaminated material (generally one gallon of PCB dielectric fluid) and is not addressed in (a) or (b) above, the Contractor shall notify the appropriate EPA regional office and proceed to decontaminate the spill area in accordance with TSCA policy in the shortest possible time after discovery, but in no case later than 24

hours after discovery. For the purposes of the notification requirement, the 10 pounds are measured by weight of the material containing PCB's which was spilled rather than by the weight of only the PCBs spilled.

d. Spills of 10 pounds or less which are not addressed in (a) or (b) above, must be cleaned in according to this section (in order to avoid EPA enforcement liability), but notification of EPA is not required.

1.6 DISPOSAL OF CLEAN-UP DEBRIS AND MATERIAL

All contaminated soils, solvents, rags, and other materials resulting from the cleanup of PCBs under this section shall be properly stored, labeled, and disposed of in accordance with this Contract Specification.

1.7 DETERMINATION OF SPILL BOUNDARIES IN THE ABSENCE OF VISIBLE TRACES

For spills where there are insufficient visible traces yet there is evidence of a leak or spill, the boundaries of the spill are to be determined by using a statistically based sampling scheme

PART 2 - PRODUCTS

2.1 EQUIPMENT REQUIREMENTS

The Contractor will provide for any unexpected spill or discharges through provision of the following minimum equipment to be kept on site at all times during site work activities:

a. Sand, clean fill, or other noncombustible absorbent

b. Front-end loader

c. Drums (55 gallon, U.S. DOT 17-E or 17-H)

d. Shovels

e. Solvent for decontamination of tools and equipment

PART 3 - EXECUTION

3.1 SPILL CONTROL AND CONTINGENCY PLAN

3.1.1 Spills: If a spill occurs, the following actions shall be taken by the Contractor:

a Immediately notify the Contracting Officer and the appropriate agencies (see item 1.5 above).

b Take immediate measures to control and contain the spill within the site boundaries. This will include the following actions:

- o Keep unnecessary people away, isolate hazardous areas, and deny entry
- o Do not allow anyone to touch spilled material
- o Stay upwind; keep out of low areas
- o Keep combustibles away from the spilled material
- o Use water spray or foam to reduce vapors, as needed
- o Take samples for analysis to determine that clean-up is adequate (see Sections 01420 and 01430 for Sampling Procedures and Laboratory Services).
- o Other actions, as needed

3.1.1.1 Solid Spills - The Contractor shall immediately remove and place contaminated materials into staging piles and cover; identify the pile as contaminated; test the material for treatability; chemically treat the contaminated material if appropriate or dispose of off-site at an approved off-site disposal facility. See Section 01640 for off-site disposal requirements.

3.1.1.2 Liquid and/or Sludge Spills - The Contractor shall absorb with sand, clean fill, or other absorbent material and dispose of the absorbent/spill mixture in the manner specified in the previous subsection, 3.1.1.1 Solid Spills. The Contractor shall provide a sump in the PCB Dechlorination Process area to contain potential spills from the system operation.

3.2 DISCHARGES

3.2.1 If a discharge of material stored in an impoundment, tank or container occurs, the following actions shall be taken by the Contractor to reduce potential migration to adjacent properties:

a Immediately notify the Contracting Officer and the appropriate agencies (see item 1.5 above).

b. Take immediate measures to control the discharge within the site boundaries or beyond the site boundaries, if necessary. This will include the following actions:

- o Contain and eliminate the discharge, if possible

- o Remove or retrieve any discharged liquids or sludges, if possible

- o Keep unnecessary people away; isolate the hazardous area and deny entry.

- o Do not allow anyone to touch the discharged materials

- o Other actions, as needed.

3.2.2 If intentional off-site discharges of contaminated material are necessary to implement the remedy, the Contractor shall obtain the appropriate permits (see Section 01060, Regulatory Requirements). All reasonable efforts shall be taken to prevent intentional or unintentional off-site discharges.

3.3 LIQUID AND/OR SLUDGE DISCHARGES TO SOIL

The Contractor shall immediately identify the point of discharge, and take measures to eliminate further spills. Also, the Contractor shall absorb discharged material with sand, clean fill, or other noncombustible absorbent material. Place the absorbent/discharge mixture into dry containers.

3.4 DECONTAMINATION PROCEDURES

Decontamination procedures may be required after cleanup to eliminate traces of the substance spilled or reduce it to an acceptable level as determined by the Contracting Officer. Complete cleanup may require removal of contaminated soils. Personnel decontamination shall include showers and cleansing or disposing of clothing and equipment. All contaminated materials including solvents, cloth, soil, and wood that cannot be decontaminated must be properly containerized, labeled, and properly disposed of as soon as possible.

3.5 RECORD AND CERTIFICATION

At the completion of cleanup, the Contractor shall document the cleanup with records and certification of decontamination. The record and certification shall consists of the following:

a. Identification of the source of the spill;

b. Estimated or actual date and time of the spill occurrence;

c. The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather, the nature and duration of the delay);

d. A brief description of the spill location;

e. Sampling data take prior to the cleanup boundaries and a brief description of the sampling methodology used to establish the spill boundaries;

f. A brief description of the solid surface cleaned and the double wash/rinse method used;

g. Approximate depth of soil excavation and the amount of soil removed;

h. A certification statement signed by the Contractor stating that the cleanup requirements have been met and that the information contained in the record is true to the best of his knowledge;

i. Copies of the documents and certifications which were submitted to the Contracting officer for review and acceptance.

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SECTION 01600
EQUIPMENT AND MATERIAL HANDLING

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 The Contractor shall supply all equipment, material and labor required to excavate, sample, analyze, stage, treat, backfill, and resurface roads as specified and shown in the Contract Documents. The Contractor shall be responsible to insure that all equipment and material are supplied in good working condition and not contaminated in any way.

1.1.2 This section describes the minimum requirements the Contractor shall follow in preparing his Material Handling Plan (MHP). The Contractor shall also record sufficient information concerning the above aspects of the project such that the Contracting Officer can reconstruct the excavation, sample collection, sample results, chemical treatment of contaminated soils and proper disposal of contaminated wastes generated during site activities.

1.1.3 The Contractor shall handle potentially contaminated material in a manner to protect site personnel, the public, and the environment in accordance with all applicable Federal, state, and local laws and regulations.

1.1.4 The Contractor shall decontaminate all equipment prior to removal from the site in accordance with the requirements listed in Section 01065 - Health and Safety Requirements.

1.2 RELATED SECTIONS

Section 01065	Health and Safety Requirements
Section 01400	Site Specific Quality Management Plan
Section 01450	Spill Control
Section 01640	Off-Site Transportation and Disposal
Section 02100	Site Preparation
Section 02220	Excavation
Section 02221	Backfill and Grading
Section 11305	Aqueous Waste Treatment System
Section 11505	PCB Dechlorination System

1.3 SUBMITTALS

Material Handling Plan: At the Pre-Work Conference, the Contractor shall submit a Material Handling Plan to the Contracting Officer for his review and approval. The Material Handling Plan, at a minimum, shall consist of the Contractor's procedures for safely handling contaminated solids and contaminated water (including surface water collected in the excavation areas and the contaminated soil stockpile area, and

waste water from the Contamination Reduction Zone) and on-site traffic control. The Contractor shall include in his Material Handling Plan the spill and discharge control plan (see Section 01564), and the proposed program for off-site transportation (see Section 01640).

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 CONTAMINATED SOIL (SOLID) MATERIAL

3.1.1 The Contractor shall include the handling of uncontainerized contaminated solid material as part of his Material Handling Plan.

3.1.2 The Contractor shall institute procedures to protect site personnel and the public from potentially contaminated material and to prevent additional contamination. The requirements specified within pertain to all non-drummed solid contaminated material.

3.1.3 Excavation and Backfill

As part of the Material Handling Plan, the Contractor shall submit to the Contracting Officer a complete design and layout plan for the methods of excavation, backfill and resurfacing including a list of all equipment the Contractor intends to use for his work and an on-site traffic control plan. The Contractor shall illustrate in his submitted methods the continuity and sequence of all on-site construction activities to assure the Contracting Officer that a smooth and continuous excavation and backfill operation will be performed and that environmental releases of contaminants will be minimized.

3.1.4 Spill Control Plan (Section 01564)

3.2 AQUEOUS WASTE

The Contractor shall collect, analyze and dispose of aqueous waste encountered or generated on site during construction activities. The Contractor shall describe in the Material Handling Plan how he will collect, store, and/or dispose of aqueous waste.

3.2.1 Wetland Excavation - Contaminated surface water collected as a result of dewatering operation during excavation and all other aqueous waste generated by the Contractor during the activities on-site shall be treated prior to discharging. The effluent resulting from the treatment shall meet the

discharge requirement of the NYDES. The Contractor shall describe the collection, storage and treatment in the Material Handling Plan.

3.2.2 Other aqueous waste generated by the Contractor at the demobilization stage (i.e., after the removal of the treatment facilities) shall be disposed off-site at a facility as specified in Section 01640 - Off-Site Transportation and Disposal.

3.3 Vegetative Material

All vegetative material shall be handled according to which on-site area it is taken from; contaminated or non-contaminated.

The Contractor shall describe in his Material Handling Plan how he will clear, grub, handle and dispose of all vegetative material. Refer to Section 02100 - Site Preparation for additional requirements.

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SECTION 01640
OFF-SITE TRANSPORTATION AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 The work specified hereunder in this section shall involve transportation and off-site disposal and treatment of contaminated solid and liquids according to the type of material and degree of contamination.

1.1.2 The Contractor shall ensure that all operations in the loading and hauling of contaminated materials are in compliance with the Federal and State Departments of Transportation regulations, 40 CFR Parts 262 and 264, "Revised Procedures for Implementing Off-Site Response Actions", (EPA OSWER Directive Number 9834.11, November 13, 1987), and all local requirements.

1.2 RELATED SECTIONS

Section 01065 Health and Safety Requirements
Section 01305 Letters of Commitment
Section 01600 Equipment and Material Handling

1.3 APPLICABLE REGULATIONS

Hazardous waste material transportation regulations shall include, but not be limited to, the requirements in Section 01060, Paragraph 3.1.5 and the following:

a. U.S. Department of Transportation regulations, 49 CFR 171 through 179.

b. USEPA, 1986, "Drum Handling Practices at Hazardous Waste Sites, EPA/600/2-86/013.

c. Federal Resource Conservation and Recovery Act, as amended.

d. Department of Transportation Regulations applicable to method of transport.

e. USEPA: 40 CFR 263 (48 FR 14153).

f. OSHA Standards (29 CFR 1904, 1910, and 1926).

g. Posted weight limitations on roads and bridges.

h. "Revised Procedures for Implementing Off-Site Response Actions," EPA OSWER Directive Number 9834.11, November 13, 1987.

i. "Off-Site Policy: RFA or Equivalent Investigations Requirement at RCRA Treatment and Storage Facilities," EPA Memorandum from J.W. Porter to Waste Management Division Directors, January 4, 1988.

1.4 SUBMITTALS

1.4.1 As part of the Material Handling Plan specified in Section 01600 of this contract, the Contractor shall provide to the Contracting Officer at the Pre-Work Conference a program for the proposed transportation and disposal of material generated by the execution of the overall site work which cannot be treated on-site (Refer to section 11505 for soil chemical treatment) including identification of transport routes and needed traffic control items. As specified in Section 01305, the Contractor shall submit commitment letter(s) from the properly licensed and insured hauler/transporter(s) and disposer(s) for this project. Any deviations from the proposed list of transporter(s) and disposer(s) shall become the responsibility of the Contractor with no additional costs incurred by the EPA and shall have a written approval from the Contracting Officer.

1.4.2 As part of the bidding documents, the Contractor shall submit to the Contracting Officer the proposed list of treatment storage and disposal (TSD) facilities, with the facility's assurance (in writing) that to their best knowledge, they will be open for business during the contract duration.

PART 2 - PRODUCTS

2.1 EQUIPMENT

The Contractor shall utilize appropriate vehicles and operating practices to prevent spillage or leakage of contaminated material from occurring enroute.

2.2 Facilities

The Contractor shall provide, install and maintain any temporary loading facilities as required for completion of material handling activities. The location and design of any facilities shall be included in the Material Handling Plan and be approved by the Contractor Officer.

PART 3 - EXECUTION

3.1 GENERAL

3.1.1 Manifests - The Contractor shall organize and maintain the material shipment records/manifests required by the Federal Resource Conservation and Recovery Act (RCRA) (Public Law 94-580), the State of New York and the state where the treatment/disposal facility is located.

3.1.2 The Contractor shall coordinate the schedule for truck arrival and material deliveries at the disposal site to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations.

3.1.3 The Contractor shall obtain letters of commitment from the waste haulers and the treatment, disposal or recovery facility to haul and accept shipments as specified in Section 01305. The letters shall indicate agreement to handle and accept the specified estimated quantities of material and types as described in this Contract during the time period specified in the project schedule and any time extension as deemed necessary.

3.1.4 All vehicles leaving the Exclusion zone shall be decontaminated at the Contamination Reduction Zone. The Contractor shall inspect all vehicles leaving the project site to ensure that the least possible amount of soil adheres to its wheels or undercarriage. All excess non-contaminated soil shall be removed at the vehicles washdown pad.

3.1.5 The Contractor shall periodically inspect all routes that the vehicles take from the job site to the treatment/disposal facility to ensure that no leakage or tracking of mud has occurred.

3.2 Hauling

3.2.1 The Contractor shall not deliver waste to any facility other than the disposal facility(ies) listed on the shipping manifest except as stated in Paragraphs 3.3.1 and 3.3.5 of this Section.

3.2.2 The Contractor shall coordinate vehicle inspection and recording of quantities leaving the site with the Contracting Officer. These quantities shall be verified with recorded quantities at the disposal facility(ies). If any deviation between the two weight records occurs, the matter is to be reported immediately to the Contracting Officer.

3.2.3 The Contractor shall be held responsible for any and all actions necessary to remedy situations involving material spilled in transit or mud and dust tracked off-site. This cleanup shall be accomplished at the Contractor's expense.

3.2.4 The Contractor shall be responsible for inspecting the access routes for road conditions, overhead clearance, and weight restrictions, and shall provide traffic control when needed.

3.2.5 The Contractor shall ensure that trucks are protected against contamination by properly covering and lining them with compatible material or by decontaminating them prior to any use other than hauling contaminated materials.

3.2.6 The Contractor shall only use the transporter(s) identified in his bid for the performance of work. Any use of substitute or additional transporters must have previous written approval from the Contracting Officer with no additional cost to the EPA.

3.2.7 The Contractor shall develop, document, and implement a policy for accident prevention see Section 01065 for requirements.

3.2.8 The Contractor shall not combine contaminated materials from other projects with material from the Wide Beach Community Site.

3.2.9 Liquid-containing trucks shall be sealed by the Contractor in a manner such that tampering with the contents cannot occur.

3.2.10 The Contracting Officer will provide a hazardous waste generator identification number for use on the manifest.

3.2.11 The Contracting Officer, as an agent of the EPA, will sign the manifest as the generator.

3.3 OFF-SITE DISPOSAL

3.3.1 The Contractor shall use only the treatment, disposal, and recovery facility(ies) identified in his bid for the performance of the work. Substitutions or additions shall not be permitted without prior written approval from the Contracting Officer, and if approved, shall be with no extra cost to the EPA.

3.3.2 The Contractor shall be responsible for acceptance of the specific material at an approved treatment, disposal, or recovery facility, for ensuring that the facility is properly permitted to accept the stated material, and that the facility provides the stated treatment and/or disposal services.

3.3.3 The Contractor shall submit to the Contracting Officer, along with his bid, a letter of commitment from the proposed TSD facility(ies) as specified in Section 01305. This letter of commitment will be used by the Contracting Officer to evaluate the acceptability of the Contractor's proposed facility(ies) in accordance with "Revised Procedures for Implementing Off-Site Response Actions" (EPA OSWER Directive Number 9834.11, November 13, 1987) and "Off-Site Policy: RFA or Equivalent Investigation Requirement at RCRA Treatment and Storage Facilities" (EPA Memorandum from J.W. Porter, January 4, 1988). Briefly, the Directive describes procedures for response actions under CERCLA or Section 7003 of RCRA involving the off-site treatment, storage, or disposal of CERCLA waste. The memorandum states that, as an interim measure, the policy has been revised to include all, not just land disposal, Subtitle C facilities.

3.3.4 The Contracting Officer reserves the right to contact and visit the disposal facilities and regulatory agencies to verify the agreement to accept the stated material and to verify any other information provided. This does not in any way relieve the Contractor of his responsibilities under this contract.

3.3.5 In the event that the identified and approved facility(ies) ceases to accept the stated materials or the facility(ies) ceases operations, it is the Contractor's responsibility to locate an alternate approved and permitted facility(ies) for accepting materials. The Contractor is responsible for making the necessary arrangements to utilize the facility(ies), and the alternate facility(ies) must be approved in writing the Contracting Officer in the same manner and with the same requirements as for the original facility(ies). This shall be done with no extra cost to the EPA.

3.4 RECORD KEEPING

The Contractor shall obtain manifest forms, obtain material code numbers, and complete the shipment manifest records as required by the appropriate regulatory agencies for verifying the material type (Code No.) and quantity of each load in unit of volume and weight. Copies of each manifest shall be submitted to the Contracting Officer within two (2) business days following shipment, and within two (2) business days after notification of receipt of the disposal facility. Any manifest discrepancies shall be reported immediately to the Contracting Officer and be resolved by the Contractor.

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SECTION 01700
PROJECT CLOSEOUT

PART I - GENERAL

1.1 SUMMARY

This section covers the requirements for final cleaning, inspection and other procedures necessary for contract closeout.

1.2 SCOPE

The work shall consist of the complete decontamination of all equipment, cleaning the project site, inspection, and administrative provisions for substantial completion and for final acceptance.

1.3 RELATED SECTIONS

Related work which is specified in other sections of the technical specifications include but is not limited to the following:

Section	01300	Submittals
Section	01505	Mobilization/Demobilization
Section	01640	Off-Site Transportation and Disposal
Section	01720	Project Record Documents
Section	01725	As-Built Drawings
Section	02900	Landscaping

1.4 SUBMITTALS

Contractor shall submit, in the manner and within the time limit set forth in the Contract documents, Project Record Documents under the provisions of Section 01720, as-built drawings in accordance with the requirements set forth in Section 01725, and application for final payment. Also see Section 01300 Submittals.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 DECONTAMINATION:

3.1.1 The final decontamination shall include the following:

- o Decontamination and removal of all of the Contractor's equipment and materials;

- o Collection and disposal of all Contractor generated contaminated material and equipment on the site for which decontamination is inappropriate;

- o Wash down of equipment decontamination pad and sumps, including collection of sediments and washwater for disposal off site at an approved disposal facility. Refer to Section 01640 for off site disposal requirements.

3.1.2 Equipment Decontamination - Decontamination shall take place on the equipment decontamination pad and shall consist of degreasing (if required) followed by high pressure water and/or steam cleaning supplemented by detergents or solvents as appropriate. Special attention shall be paid to removal of material on and within the undercarriage, trucks and sprockets of crawler equipment, and undercarriage, tires and axles of trucks and rubber tire mounted equipment.

3.1.3 Tools Decontamination - Tools and items for which decontamination is difficult or impossible to verify shall remain on site, until completion of the work, for subsequent packing and disposal by the Contractor at an approved disposal facility. (Example of such items are wire, rope, lumber, personnel protective equipment and apparel.)

3.1.4 Temporary Facilities - Decontamination of temporary facilities located within the Support Zone shall be limited to exterior cleaning prior to removal from site.

3.1.5 Final Approval

3.1.5.1 Prior to removal from site, all decontaminated equipment and material shall be inspected and approved by the Safety Officer and the Contracting Officer.

3.1.5.2 Certification of decontamination shall be attested to the Safety Officer and the Contracting Officer.

3.1.5.3 A copy of each decontamination certificate will be provided to the Safety Officer. The original certificate will be maintained at the Contracting Officer's office.

3.2 CLEARING THE PROJECT SITE:

3.2.1 The clearing work shall include the following:

- o Removal of all waste such as excess construction material, wood, bituminous concrete, debris and any other foreign material;

- o Disconnection of all temporary utilities to the site;

- o Removal of temporary site facilities and utilities;

- o Removal of existing security fence and gates;
- o Removal of treatment systems (on-site PCB Dechlorination and aqueous waste treatment systems);
- o Removing all Contractor constructed access roads, and parking areas;
- o The site shall be cleared, graded, and seeded in accordance with Section 02900.

3.3 ADMINISTRATIVE PROVISIONS

3.3.1 Substantial Completion

3.3.1.1 Prior to substantial completion, the Contracting Officer shall convene a prefinal construction conference, initiate a prefinal inspection, and present to the Contractor a punch list of work items to be completed in accordance with the Contract Documents.

3.3.1.2 When Contractor considers the work on the punch list to be substantially complete, he shall submit written notice with a list of items to be completed or corrected, and the estimated dates of the completion or correction.

3.3.1.3 Should prefinal inspection by the Contracting Officer find the work is not substantially complete, the Contracting Officer will promptly notify Contractor in writing, listing observed deficiencies. The Contractor shall remedy the deficiencies and send a new written notice of substantial completion. This procedure shall continue until such time when the Contracting Officer is satisfied with such repairs and corrections.

3.3.1.4 When the Contracting Officer finds the work to be substantially complete, he will prepare a Certificate of Substantial Completion with a list of deficiencies which require timely correction and/or non construction deficiencies in accordance with the provisions of the General Requirements.

3.3.2 Final Acceptance

3.3.2.1 When the Contractor considers the work to be complete, he shall submit to the Contracting Officer written certification that:

1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
4. Work is complete and ready for final inspection.

3.3.2.2 The Contracting Officer shall initiate a final inspection upon Contractor's notification that the work is complete. Should the final inspection find work incomplete, he will promptly notify the Contractor in writing listing observed deficiencies. The Contractor shall remedy the deficiencies and send a second certification of final completion. This procedure shall continue until such time when the Contracting Officer is satisfied with such repairs and corrections.

3.3.2.3 When the Contracting Officer finds work is complete, he will consider closeout submittals, and a Final Acceptance Certificate will be issued to the Contractor.

3.3.2.4 When the Contractor receives the Final Acceptance Certificate, he shall submit his final invoice for final payment.

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SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

This section covers the requirements for maintenance and submittal of record documents and samples.

1.2 RELATED SECTIONS

Related Work that is specified in other sections of the Contract Documents includes but is not limited to the following:

Section	01050	Field Engineering
Section	01300	Submittals
Section	01400	Site Specific Quality Management Plan
Section	01700	Project Closeout

1.3 MAINTENANCE OF DOCUMENTS AND SAMPLES

1.3.1 The Contractor shall maintain at the site for the Contracting Officer one record copy of:

a. Construction schedule and progress record

b. The Technical Specification and drilling logs

c. Addendum and Modifications

d. Change Orders and other modifications to the Contract

e. Engineer Field Orders

f. Manufacturer's certificates

g. Daily work activity summary reports, including:

- o Reports on any emergency response actions
- o Test records
- o Records of all site work
- o Chain-of-custody documents
- o Reports on all spill incidents

1.3.2 Record Documents and samples shall be stored in the Contractor's Field Office apart from documents used for construction. The Contractor shall provide files, racks, and secure storage for Record Documents and samples.

1.3.3 Record Documents are to be maintained in a clean, dry and legible condition and not used for construction purposes.

1.3.4 The Contractor shall keep Record Documents and samples available for inspection by Contracting Officer.

1.4 RECORDING

1.4.1 The Contractor shall record information on a set of blue line drawings, provided by the Contracting Officer. A list of these drawings are included in the Special Clauses of this specification.

1.4.2 Information shall be recorded concurrently with construction progress. No work shall be concealed or covered in a manner that would prevent inspection until required information is recorded and approved by the Contracting Officer.

1.4.3 Contract Drawings and Shop Drawings shall be legibly marked and each item of actual construction recorded including:

- o Measured depths of elements of construction in relation to survey datum.
- o Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
- o Field changes of dimension and detail.
- o Changes made by Modifications.
- o Details not on original Contract Drawings.
- o References to related shop drawings and Modifications.

1.4.4 Specifications shall be legibly marked and each item of actual construction recorded including:

- o Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
- o Changes made by Addenda and Modifications.

1.4.5 Additionally the Contractor shall maintain manufacturer's certifications, inspection certifications, field test records required by individual Specification Sections.

1.5 SUBMITTALS

1.5.1 Record Documents and samples shall be delivered at Final Acceptance under provisions of Section 01700 - Project Closeout.

1.5.2 The Contractor shall transmit the Record Documents with a cover letter in triplicate, listing:

- o Date.
- o Project title and number.
- o Contractor's name, address, and telephone number.
- o Number and title of each Record Document.
- o Signature of Contractor or authorized representative.

Documents must be submitted to and accepted by Contracting Officer at Completion of Work as a condition of final payment.

1.5.3 All submittals and samples shall become the property of the EPA once delivered.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

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SECTION 01725
AS-BUILT DRAWINGS

PART 1 - GENERAL

1.1 SUMMARY

This section covers the preparation of final as-built drawings as a requirement of this Contract.

1.2 SUBMITTALS

1.2.1 Preliminary Submittal: The Contractor shall prepare two copies of the progress marked as-built prints and these shall be delivered to the Contracting Officer, at the time of final inspection for his review and approval. These marked as-built prints shall be neat, legible and accurate. The review by Government personnel will be expedited to the maximum extent possible. Upon approval, one copy of the marked as-built prints will be returned to the Contractor for use in preparation of final as-built drawings. If upon review, the prints are found to contain errors and/or omissions, they shall be returned to the Contractor for corrections. The Contractor shall complete the corrections and return the marked as-built prints to the Contracting Officer within 10 calendar days.

1.2.2 Final Submittal - When the marked as-built prints are approved by the Contracting Officer, they will be returned to the Contractor along with reproducibles of the Contract Drawings. After receipt of the approved marked as-built prints and reproducibles of the Contract Drawings, the Contractor shall, within 60 days, make the final as-built drawings, including two blue line prints of these drawings and submit them to the Contracting Officer with the returned approved marked as-built prints. They shall be complete in all details. All paper prints and reproducible drawings will become the property of the Government upon final approval. Failure to submit as-built drawings and marked prints as required herein shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.3 RELATED SECTIONS

Section 01505 Mobilization/Demobilization
Section 01700 Project Closeout

PART 2 - PRODUCTS

2.1 MATERIALS

All paper prints and reproducible drawings will become the property of the Government upon final approval and will be part of the permanent records of this project.

PART 3 - EXECUTION

3.1 PROGRESS AS-BUILT MARK UPS

The Contractor shall mark up one set of paper prints to show the as-built conditions. These marked as-built prints shall be kept current and available on the jobsite at all times. All changes from the Contract Drawings which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. The marked as-built prints will be jointly inspected for accuracy and completeness by the Contracting Officer's representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. The prints shall show the following information, but not be limited thereto:

- Utility Lines: The location and description of any utility lines or other installations of any kind or description known to exist within the project site.
- Structures: The location and dimensions of any building or structure constructed by the Contractor.
- Roads: Correct grade or alignment of roads.
- Site Grading: Correct elevations if changes were made in site grading.
- Contractor Drawings: Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including, but not limited to, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
- Drainage: The topography and grades of all drainage installed or affected as a part of the project construction.
- Final Inspection: All changes or modifications which result from the final inspection.

- o Options: Where Contract Drawings or Specifications allow options, only the option selected for construction shall be shown on the marked as-built prints.

3.2 DRAWING PREPARATION

3.2.1 As-Built Contract Drawings - Upon approval of the marked as-built prints by the Contracting Officer, the Contractor will be furnished the original set of Contract Drawings with all amendments incorporated. These drawings shall be modified as may be necessary to correctly show all the features of the project as it has been constructed by bringing the contract set into agreement with the approved marked as-built prints, adding such additional drawings as may be necessary. These drawings are part of the permanent records of this project and the Contractor shall be responsible for the protection and safety thereof until returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at his expense.

3.2.2 Drafting Personnel: Only personnel proficient in the preparation of engineering drawings to standards satisfactory and acceptable to the Government shall be employed to modify the original Contract Drawing or prepare additional new drawings. All additions and corrections to the Contract Drawings shall be neat, clean and legible, and shall match the adjacent existing linework and/or lettering being annotated in type, density, size and style. All drafting work shall be done using the same medium (pencil, plastic lead, or ink) that was employed on the original Contract Drawings and with graphite lead on paper base material. The Contracting Officer will review all as-built drawings for accuracy and conformance to the above specified drafting standards. The Contractor shall make all corrections, changes, additions, and deletions required to meet these standards. The title block to be used for any new as-built drawings shall be similar to that used on the original Contract Drawings.

3.2.3 Record Drawing As-Built - When final revisions have been completed, each drawing shall be lettered or stamped with the words "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 3/16" high. All As-Built Contract Drawings shall be marked either "As-built" drawing denoting no revisions on the sheet, or "Revised As-Built" denoting one or more revisions. All As-Built Contract Drawings shall be dated in the revision block and signed by the Contractor.

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SECTION 01730
OPERATING AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 Summary

a. This section covers the requirements for the content and arrangement of the operating and maintenance manuals for the equipment that is part of the Wide Beach Remediation PCB-Dechlorination and Aqueous Waste Treatment Systems.

b. The work shall include the compilation into a complete and comprehensive volume any and all instructions, procedures and techniques for the continued operation and proper maintenance of various components of the system.

1.2 Submittals

a. The Contractor shall submit, in the manner and within the time limit as set forth in the contract documents the required number of sets of Operation and Maintenance instructions, compiled as detailed in this section.

Also see Section 01300 - Submittals.

b. Review of the operating and maintenance manual by the Engineer shall not relieve the Contractor of the entire responsibility for its content.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION

3.1 Organization

Each system component shall be described and must have it own operating and maintenance manual section so it can be incorporated into a system operating and maintenance instruction manual.

3.2 General Instructions

a. The operating and maintenance manual for plant equipment shall be issued at the due dates as specified in the Contract documents. Shop test curves and data shall not delay shipment of the manuals at the due dates; but rather, characteristic performance curves, etc., shall be included and the shop test information forwarded as soon as possible thereafter.

b. When Vendor dimensioned prints for equipment supplied are considered proprietary, the manufacturer shall provide general assembly drawings, outline drawings and detailed drawings (including cutaway drawings of the equipment) required to permit installation, operation and maintenance of the equipment. The Manufacturer shall provide dimensioned prints when spare parts are not available.

c. When standard manuals are provided which include, among other typs and models, the equipment purchased and its auxiliary components, the specific sections or parts of the manual, along with any and all modifications which apply to the item, shall be clearly stated. Explanation of special features or components shall include:

   - Why special features or components were supplied;
   - How special features or components operate;
   - How special features or components are to be adjusted or set to meet State, Local and Insurance Company requirements.

d. If the purchased equipment requires lubrication, the manuals shall contain a complete description of the lubrication system, which should include, but not be limited to, the following:

   - Total capacity of system
   - Recommended lubricant
   - Recommended operating pressures and temperatures
   - Adjustments, settings, and points requiring periodic maintenance and/or inspection.

3.3 Manual Contents

The operating and maintenance shall conform to the following format and will include, but not be limited to, these sections.

a. Cover

The cover shall list as a minimum:

1. Client and project name
2. System or component title
3. Plant identification
4. Supplier's name
5. Purchase order number

b. Title Page

The title page shall include the information from the cover as indicated above plus the following as applicable:

1. Contractor's address, telephone number
2. Supplier's addresses, telephone numbers
3. Manual identification number
4. Date of issue
5. Nameplate & serial number

c. Table of Contents

The table of contents shall include section, title, and page number, headings and applicable data descriptions for all sections. The table of contents shall be divided by volume if applicable.

d. List of Illustrations, Drawings and Tables

The list of illustrations shall include titles and figure numbers for all illustrations in the manual. All illustrations shall be prepared to indicate clear, sharp distinction of lines. Illustrations shall be consistent in style and lettering.

The list of drawings shall include the drawing and revision numbers in effect at the time of shipment for all drawings in the manual.

The list of tables shall include the table number, title and page number for all tables in the manual.

e. Equipment Description

This section shall provide overall concepts of the equipment and its purpose. It shall include rating and normal and emergency short-time performance limits of the equipment's main characteristics and functions. Subsections shall identify and describe important features of all major components or

subassemblies. The identity and function of each shall be tabulated with rating data, drawing numbers and other descriptive references. Designation, function and setting of all controls and indicators shall be given with detailed instructions to aid understanding.

This section shall include all equipment identifying symbols, including those for terminals and remotely mounted components. Diagrams, charts, schematics, drawings, and tables shall be used liberally for clarity and brevity. Pictures of the equipment shall be used to identify adjustments and indicators, when required.

Electrical power sources and other inputs including permissible variations shall be listed.

Controlled or driven loads shall be listed.

f. Storage

Instructions regarding handling, extended storage prior to operation and extended idle periods after the equipment has been placed in operation shall be included.

g. Installation

This section shall contain instructions for unpacking, inspection prior to installation, installing, and initial and future charging of equipment when required. This includes reference to applicable standards, handling, mounting, aligning mechanical parts, connecting, shielding, grounding, preoperational checking (equipment de-energized) and instructions for removal of equipment from service. These procedures shall be listed in numbered, step-by-step sequence.

h. Operation

This section shall provide the operator with information that describes when and how to operate the equipment, including precautions, limitations and set points. Procedures listed in step-by-step sequence shall include preoperational checkout, start-up, normal, remote or emergency modes of operation and stopping or shutting down part or all of the subject equipment.

i. Equipment Maintenance

This section shall provide servicing procedures and time intervals required to ensure proper operation. Instructions shall cover removing, dismantling and/or replacing components. These procedures shall include, but not be limited to:

i. Mater table listing the what, when and how of servicing, in brief, and referencing detail servicing instructions as required - acceptable operating limits shall be stated with action to be taken when these limit are exceeded.

ii. A series of routine electrical and mechanical procedures tests and checks for cleaning, lubricating, inspecting and otherwise caring for the equipment at scheduled times to ensure continuity of optimum performance. These procedures shall clearly indicate whether the check is to be accomplished with installed (or included) facilities or by customer-furnished instruments.

iii. Special instructions pertaining to: a) maintenance of interlocks and other safety features, b) the protection of personnel and c) errors in assembly which could damage equipment.

j. Inactivation Procedures

Special actions required prior to, or following a shutdown shall be described in the order that they are to be performed for removal from, or restoration to service.

k. Alignment and Calibration

Step-by-step procedures shall instruct the operator in making every adjustment or performing a system calibration check. Input and output values with acceptable tolerances shall appear in tabular form for each checkpoint in the system test procedure.

All referenced instruments shall be positively identified and verifiable accuracy shown. Procedures shall show which calibration equipment is installed (or included) and which is to be user-furnished.

l. Troubleshooting

Charts and tables shall be used to list likely evidence of malfunction and to show what wear, component failures or maladjustments could be responsible. These shall reference the diagnostic tests, disassembly, inspection, reassembly, verification and alignment procedures required. Voltage levels and test points and critical part dimensions shall be given and/or the appropriate paragraph references.

Detailed fault isolation procedures may be limited to module or circuit isolation. However, necessary voltages and wave shapes shall be provided to provide aid in isolating failed components.

m. Parts Lists

All replaceable parts, components, or subassemblies used in the equipment shall be listed in the instruction book. Lists on drawings included in the manual need not be repeated, but all parts essential to a clear understanding of text material shall be referenced - even those of a subassembly. A list of recommended spare parts shall be included in this section.

n. Special Tools and Instruments List

A list of all tools and other unattached items furnished with the equipment shall be provided. the list shall fully identify each item, giving model number and where applicable, manufacturer.

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SECTION 02090
PAVEMENT REMOVAL

PART 1 - GENERAL

1.1. SUMMARY

1.1.1 This work includes demolition and removal of existing asphalt pavement from the roadways, driveways, and drainage ditches as indicated and specified in the Contract drawings.

1.1.2 All asphalt pavement materials resulting from the demolition work shall become the property of the EPA and shall be stored in the stockpile areas suggested in the Contract drawings. Such materials shall be recycled for reuse (see Section 02500 - Paving and Surfacing).

1.1.3 The Contractor shall designate the work area where the asphalt pavement is being demolished as Exclusion Zone (see Section 01065 - Health and Safety Requirements), and shall enclose such work area with temporary barricades to preclude unauthorized entry. The Contractor shall extend the boundary of the Exclusion Zone as the demolition work progresses and only as necessary to enclose the demolished area to minimize disruption to the residential traffic.

1.1.4 The Contractor shall protect the existing utilities and appurtenances and shall repair any damages at his/her own expense.

1.1.5 The Contractor shall protect all existing monitoring wells (MW), observation wells (OW), and sewer trench wells (SW) shown on the contract drawings; and shall repair any damage to these wells at his/her own expense.

1.1.6 The Contractor shall furnish all equipment, materials and labor required to demolish, remove, sample, haul and stockpile.

1.1.7 A suggested sequence of removing the pavement is shown on Drawing WB-21, however, the Contractor shall have the ultimate responsibility for developing his/her pavement removal plan. The Contractor shall sequence the pavement removal with the soil excavation and backfilling so as to minimize exposure of the residents to contaminated soils, migration of the contaminants, and inconvenience to the residents. Contracting Officer's approval of Contractor's plan shall not relieve the Contractor of his responsibility to meet the requirements of this Contract.

1.2 RELATED SECTIONS

Related work that is specified in other sections of this Contract includes but is not limited to the following:

Section 01065 Health and Safety Requirements
Section 01562 Dust Control
Section 01563 Erosion and Sediment Control
Section 10600 Equipment and Material Handling
Section 02220 Excavation
Section 02500 Paving and Surfacing

1.3 SUBMITTALS

The Contractor shall submit a pavement removal plan for review and approval by the Contracting Officer prior to proceeding with the work.

PART 2 - PRODUCTS

2.1 MATERIALS

Demolished asphalt pavement shall be stockpiled for reuse and shall be kept free of contaminated soil.

PART 3 - EXECUTION

3.1 DEMOLITION AND REMOVAL

3.1.1 The demolition and removal of asphalt pavement shall be at the locations and to the extent shown on the Contract drawings.

3.1.2 The Contractor shall exercise caution not to excavate potentially contaminated soils beneath the pavement during this operation. Visible soils adhered to the pavement shall be removed or otherwise washed prior to loading the demolished pavement onto haul trucks.

3.1.3 The Contractor shall transport the demolished pavement to the designated stockpile areas. To permit hauling via the existing paved roadways in the Support Zone (see Section 01065 - Health and Safety Requirements), the haul trucks shall remain uncontaminated or otherwise be decontaminated if the trucks inadvertently come in contact with the contaminated soil.

3.2 STOCKPILING

3.2.1 The Contractor shall prepare stockpile areas adequate in capacity to store the entire demolished pavement material (see Section 02100 - Site Preparation).

3.2.2 The demolished pavement stockpile areas shall be designated as uncontaminated materials storage. The stockpiled pavement material shall be sampled and tested to verify that the PCB concentrations are less that 10 mg/kg. At least one sample

shall be taken from each 50 tons of demolished pavement material. The demolished pavement material found to be contaminated with PCB concentrations greater than 10 mg/kg shall be disposed of at an approved off-site TSD facility.

3.3 DUST CONTROL

The Contractor shall maintain the work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to the residents. Dust control shall be performed as the work proceeds and whenever a potential for dust nuisance or hazard exists (see Section 01562 - Dust Control).

SECTION 02100
SITE PREPARATION

PART 1 - GENERAL

1.1 Summary

1.1.1 The work under this section shall include clearing and grubbing all areas within the limits indicated on Drawing WB-02.

1.1.2 The Contractor shall clear and grub the site on an as-needed basis as his work progesses.

1.1.3 The Contractor shall stockpile timber from trees removed from clean areas for the use of residents.

1.1.4 All grubbing holes and depressions larger than 3 feet in depth resulting from tree root and stump removals shall be backfilled with available material approved by the Contracting Officer.

1.1.5 The Contractor shall uniformly grade the cleared and grubbed areas to conform to the surrounding ground contours. Piles of soil resulting from stump removal shall be leveled by rough grading.

1.1.6 Backfill material shall be compacted to the required percentage of the maximum density.

1.1.7 The Contractor shall grade all areas required for temporary site facilities for the intended use.

1.1.8 The Contractor shall not use explosives without written permission from the Contracting Officer.

1.1.9 In the performance of clearing and grubbing, the Contractor shall be responsible for the preservation of all public and private property, utilities, fences, existing trees, plant, and other vegetation that are to remain adjacent to the project site and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall repair or replace any damaged material to a condition equal to that existing before such damage or injury was done, and reseed (by approved seeding method) all grass areas beyond the limits of construction which have been damaged by his work. The Contractor shall not remove, cut, injure, or destroy trees or shrubs outside the limits of construction without written authority from the Contracting Officer.

1.1.10 When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct, on the part of the Contractor in the execution of the work, such property shall be restored by the Contractor, at his expense, to a condition equal to that existing before such damage or injury was done, or he shall make good such damage or injury in such manner as may be acceptable to the property owner and the Contracting Officer.

1.1.11 The Contractor shall use all approved means necessary to prevent the spread of dust during the performance of the work of this section. Refer to Section 01562 Dust Control.

1.2 Related Section

Section 01065 - Health and Safety Requirements
Section 01562 - Dust Control
Section 01563 - Erosion and Sediment Control
Section 01640 - Off-Site Transportation and Disposal
Section 02220 - Excavation
Section 02221 - Backfill and Grading
Section 11505 - PCB Dechlorination System

1.3 Regulatory Requirements

1.3.1 Contaminated material shall not be buried or used for backfill at the site.

1.3.2 Burning is not permitted on site except as specified in this specification.

1.3.3 Off-site disposal of debris shall be performed in accordance with all applicable laws and regulations.

PART 2 - PRODUCTS

2.1 Equipment

The Contractor shall provide all equipment, labor and materials required to perform the required work as specified in this section.

PART 3 - EXECUTION

3.1 Clearing and Grubbing

3.1.1 Clearing shall consist of removal and disposal of all trees, logs, brush, stumps, shrubs, debris and rubbish or encumbrances that are free to float. Grubbing shall consist of removal and proper disposal of all stumps, roots and root clusters. Clearing and grubbing operations shall differ for contaminated and clean areas. Contaminated areas are those where the PCB concentration from soil samples are equal to or greater than 10 mg/kg and clean areas are those where the PCB concentration is less than 10 mg/kg.

3.1.2 Within the clearing and grubbing limits indicated on Drawing WB-02, clean areas are all areas located outside the work zone (i.e., for clearing and grubbing purposes, clean areas consist of areas designated with the Support Zone symbol, the

contaminated soil stockpile area, collection pond and haul road). Clean areas shall be cleared to a degree suitable for the installation of temporary site facilities. All holes caused by clearing shall be filled with clean soil in layers to the lower level of adjacent area and each layer compacted to a density equal to that of the adjoining undisturbed soil.

3.1.3 Contaminated areas are those areas within the excavation limits on Drawings WB-07 through WB-13. Clearing and grubbing is to be performed in a manner that minimizes the generation of dust. All designated contaminated areas shall be cleared and grubbed and all vegetative material shall be considered contaminated and handled accordingly. Trees larger than 4 inches in diameter or taller than 8 feet will not be removed during clearing and grubbing unless soil can not be excavated to the required depth without damaging the tree. In such cases the tree shall be removed during excavation.

3.2 Protection

The Contractor shall contact local utility companies to determine the location of all existing utilities within the work zone and take all precautions to protect them during construction. Hand digging may be required in the vicinity of known or suspected utility lines. If active utility lines are encountered, necessary steps shall be taken to assure that any service interruption, if required, is kept to a minimum. The Contractor shall consider temporary relocation or rerouting of utility lines where necessary.

3.3 Dust Control

The Contractor shall maintain all work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to others. Approved temporary methods such as sprinkling with water will be permitted to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs. See Section 01562 - Dust Control for requirements.

3.4 Disposal

3.4.1 Material from clean areas may be removed from the site provided that any adhering soil has been sampled and tested in accordance with Section 01420 - Chemical Quality Control and is not found to be contaminated. Such material shall be disposed of in accordance with local, state and Federal regulations. Clean material may also be buried on-site, if permitted by the Contracting Officer, or chipped for use as mulch. Mulch shall conform to mulch requirements in this specification. Clean material shall not be burned on the site premises. Timber from clean areas shall be stockpiled in the timber stockpile area shown on Drawing WB-02 for the use of the residents.

3.4.2 Material resulting from clearing and grubbing activities within the contaminated areas, shall be considered contaminated and shall be disposed of off-site in accordance with Section 01640 - Off-Site Transportation and Disposal or treated along with the contaminated soil material in accordance with Section 11505 - PCB Dechlorination System of this specification. If necessary, vegetative material shall be cut and/or chipped to be compatible with the handling and treatment methods employed.

SECTION 02220
EXCAVATION

PART 1 - GENERAL

1.1 Summary

1.1.1 The work under this section shall include furnishing all labor, equipment and performing all activities required for excavating, hauling and stockpiling associated with the following:

a) Soil within the limits shown on Drawings WB-07 through WB-13 for PCB dechlorination. This shall include the removal of sediments from the two (2) existing storm drains leading to the wetland as shown on Drawing WB-09 and the excavation of the existing catch basins and culverts.

b) The roadway shown on Drawings WB-14 through WB-16.

c) The drainage system installation shown on Drawings WB-17 and WB-18.

1.1.2 All equipment and material supplied shall be in good working condition and shall not be contaminated.

1.1.3 The Contractor shall handle potentially contaminated material in a manner that will protect site personnel, the public, and the environment in accordance with all applicable Federal, state, and local laws and regulations.

1.1.4 The Contractor shall decontaminate all equipment in accordance with the requirements listed in Section 01065 - Health and Safety Requirements, prior to their removal from the site.

1.1.5 The Contractor shall maintain all work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to others. Dust control shall be performed as the work proceeds and wherever a dust nuisance or hazard occurs. Refer to Section 01562 - Dust Control for dust control requirements.

1.1.6 The Contractor shall design, furnish, install and maintain all erosion control measures during the course of excavation in accordance with Section 01563 - Erosion and Sediment Control.

1.1.7 The Contractor shall contact local utility companies to determine the location of all existing utilities within the area to be excavated and take all precautions to protect them during excavation. The Contractor shall also make the necessary

arrangements for a utility company representative to be present during excavation around undergound utilities to insure that any service interruptions, if required, are minimized. The known underground public utilities are the sanitary sewer system and gas lines for which location drawings/maps are obtainable (see Drawing WB-03). In addition, water lines from private wells and electric lines exist in some residential yards. The Contractor shall obtain the locations of these private utilities from the residents prior to proceeding with the work.

1.1.8 The Contractor shall provide a four (4) feet high temporary wooden fence with silt screen around the work zone in progress to prevent the residents from entering the excavation area.

1.1.9 The Contractor shall develop a cost effective excavation plan considering the following factors:

a. Capacity of the PCB dechlorination system

b. Time required for sampling and testing of contaminated soil

c. Minimum disruption and hazard to the resident community

d. Location and preservation of above ground and below ground utilities.

e. All other factors required to meet the scheduled completion date.

1.2 Related Section

Section 01065 - Health and Safety Requirements
Section 01400 - Site Specific Quality Management Plan
Section 01420 - Chemical Quality Control
Section 01560 - Temporary Controls/Environmental Protection
Section 01562 - Dust Control
Section 01563 - Erosion and Sediment Control
Section 01640 - Off-Site Transportation and Disposal
Section 02221 - Backfill and Grading
Section 02090 - Pavement Removal
Section 11505 - PCB Dechlorination System

1.3 Regulatory Requirements

Excavation activities specified in this section shall conform to safety requirements as specified in OSHA part 1910.

1.4 Quality Assurance

1.4.1 The Contractor shall survey and stake all excavations (See Section 01050 - Field Engineering). Locations of elevation benchmarks and concrete control monuments are provided on Drawing WB-03.

1.4.2 The Contractor shall assist inspection and test personnel performing elevation checks during excavation operations and cross-section surveys for quantities at the completion of the excavation, as requested by the Contracting Officer.

1.5 Submittals

1.5.1 The Contractor shall submit the excavation plan to the Contracting Officer for review and approval prior to proceeding with the work.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION

3.1 Excavation of Contaminated Soil

3.1.1 The extent and depth of the excavation under this item shall be as shown on Drawings WB-07 through WB-13. Excavation limits for contaminated soil shown in the drawings are from earlier field investigations and are meant to include all known contaminated material on-site. However, additional excavation may be required if it is determined, by sampling and testing, that contamination exists in deeper soil or beyond the excavation limits shown. (See Paragraph 3.2 for sampling requirements).

3.1.2 All material excavated from areas described in paragraph 3.1.1 shall be stockpiled in the area shown on the Contract drawings and shall be designated as "Contaminated material stockpiling area." Contractor shall exercise caution to avoid stress on the geomembrane (HDPE) liner at all times. Equipment operators must avoid sharp turns or quick stops that could pinch and tear the liner. If damage to the liner does occur, the Contracting Officer shall be immediately notified and the liner repaired before proceeding with work.

3.1.3 The Contractor shall keep the contaminated soil stockpile covered at all times to effectively minimize precipitation infiltration. The cover shall be adequately anchored to prevent being blown away by wind and placed in such a manner to allow runoff to be collected at the collection pond. All precautions shall be taken not to damage the covers during the entire course of the project. The Contractor shall be responsible for all the necessary cover repairs, subject to approval by the Contracting Officer.

3.1.4 Sampling and Testing: The Contractor shall sample soils prior to on-site PCB dechlorination. Sampling and testing are required to determine the chemical treatment input characteristics of the contaminated soils. Refer to Section 01420 - Chemical Quality Control for sampling and testing requirements. Large objects encountered during the excavation which can not be treated by the PCB dechlorination process shall be disposed of off-site (refer to Section 01640 - Off-Site Transportation and Disposal).

3.2 Post-Excavation Sampling

3.2.1 Because of the time elapsed between site investigations and the actual construction work, it is possible that some contamination may have migrated vertically to deeper layers of soils and horizontally beyond those shown on the Contract drawings.

3.2.2 The Contractor shall sample and test the soil below the depth and beyond the horizontal excavation limits shown on the Contract drawings to verify that the remediation level has been satisfied. Refer to Section 01420 - Chemical Quality Control for post-excavation sampling.

3.2.3 The results of the sample analysis shall be submitted to the Contracting Officer within 24 hours from the time the sample was taken. The Contracting Officer will determine if further excavation is required.

3.2.4 The Contractor shall provide transportation for the contaminated soil from the stockpiling area to the PCB dechlorination system, and from the PCB dechlorination system to the "treated soil stockpiling area". The treated soil shall be used as backfill upon approval by the Contracting Officer in accordance with Section 02221 - Backfill and Grading.

3.3 Excavation for Roadway Construction

The Contractor shall excavate additional soil, if required, beyond the extent and depth shown on Drawings WB-07 through WB-13 to construct the roadways to the lines and grades specified on Drawings WB-14 through WB-16.

3.4 Excavation for Installation of Drainage System

3.4.1 The Contractor shall excavate additional soil, if required, beyond the extent and depth shown on Drawings WB-07 through WB-13 to install the drainage system shown on Drawings WB-17 and WB-18.

3.4.2 The width of the trenches shall be as shown on the drawings and, at any point below the top of the pipe, shall not be greater than necessary to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe. Care shall be taken to limit excavation to a minimum, and not to excavate below the grades required for the installation of piping.

3.4.3 Sheeting and bracing of the trench, if required, shall be provided, as required by applicable safety codes and standards, to protect the workmen and the banks. Rocks or boulders over 3 in., encountered during the excavation of the trench, shall be removed and replaced with the appropriate backfill materials. Soft, or otherwise unstable material which, in the opinion of the Contracting Officer will not provide a firm foundation for the pipe shall be removed to a depth ordered by the Contracting Officer for a full width of the trench. The excavated material shall be replaced with the appropriate backfill material specified on the drawings.

3.4.4 The excavation for catch basins shall be sufficient to leave one (1) foot in the clear between their outer surfaces and the earth bank.

3.5 Any material excavated from areas outside the contaminated soil excavation limits designated on the Contract drawings WB-07 through WB-13 shall be tested for possible contamination in accordance with Section 01420 - Chemical Quality Control. Material which turns out to be contaminated shall be treated in accordance with Section 11505 - PCB dechlorination.

SECTION - 02221
BACKFILL AND GRADING

PART 1 - GENERAL

1.1 Summary

1.1.1 This section covers the requirements for the materials, placement, compaction, grading and testing of soil, backfill and fill at the site as shown on the Contract drawings.

1.1.2 The Contractor shall supply all materials, equipment and services required for backfilling, filling, compacting and grading operations.

1.1.3 The Contractor shall backfill as soon as practicable after excavation to minimize inconvenience to the residents.

1.1.4 The Contractor shall maintain all work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to others. Dust control shall be performed as the work proceeds and wherever a dust nuisance or hazard occurs. Refer to Section 01562 - Dust Control for dust control requirements.

1.2 Related Sections

Section 01065 - Health and Safety Requirements
Section 01400 - Site-Specific Quality Management Plan
Section 01420 - Chemical Quality Control
Section 01560 - Temporary Controls/Environmental Plan
Section 01562 - Dust Control
Section 01563 - Erosion and Sediment Control
Section 02220 - Excavation
Section 02720 - Storm Drainage System
Section 02900 - Landscaping
Section 11505 - PCB Dechlorination System

1.3 Regulatory Requirements

Backfill, filling, compacting and grading activities specified in this section shall conform to safety requirements as specified in OSHA Part 1910.

1.4 APPLICABLE STANDARDS AND SPECIFICATIONS

ASTM - American Society for Testing and Materials

- o C 88-83 Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
- o C117-87 Materials Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing

- o C131-81 Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- o C136-84a Sieve Analysis of Fine and Coarse Aggregates
- o D 698-78 Standard Test Methods for Moisture - Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305 mm) Drop
- o D1556-82 Density of Soil in Place by the Sand-Cone Method
- o D1557-78 Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 kg) Rammer and 18 inch (457 mm) Drop.
- o D2167-84 Density of Unit Weight of Soil in Place by the Rubber-Balloon Method
- o D2487-85 Standard Test Method for Classification of Soils for Engineering Purposes.
- o D2922-81 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- o D3017-88 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

NYSDOT - New York State Department of Transportation

- o Standard Specifications - Construction and Materials

1.5 Quality Assurance

1.5.1 The Contractor shall ensure that the material and workmanship provided will properly reflect the specified requirements.

1.5.2 The Contractor shall assist the inspection and test personnel for elevation checks and soil tests as requested by the Contracting Officer.

1.6 Submittals

The Contractor shall submit the following to the Contracting Officer for review and approval:

1.6.1 Samples and Test Data of the proposed earthfill along with the documentation indicating source, location, and unified soil classification in accordance with ASTM D2487, Standard

Proctor Compaction test results besed on ASTM D698 and Modified Proctor tests based on ASTM-1557 as applicable.

1.6.2 Test results of in-place density and moisture content measurements specified in Paragraph 3.6.

PART 2 - PRODUCTS

2.1 Excavated Soil

All contaminated soil shall, upon treatment, be reused for backfilling or filling the excavated areas provided that material placed in areas designated on the drawings to be backfilled with subbase, base course and topsoil conform to the requirements specified herein. Where the available treated material does not meet the specified requirements, the Contractor shall import the required backfill from approved sources. Excess treated soil, if any, shall be used to grade the areas shown on drawing WB-20. Where treated material is too wet, it shall be aerated or dried to provide the moisture content specified for compaction.

2.2 Soil Borrow

The Contractor shall furnish sufficient amounts of soil borrow from approved on-site or off-site locations, as needed, to ensure a continuous excavation and backfill operation and to minimize inconvenience to the residents. Soil borrow shall contain no sod, brush, roots or other perishable materials. Rock particles larger than 6 inches shall be removed prior to compaction. The maximum size limit shall be reduced to 2 inches within the top 6 inches of fill.

2.3 Sub-base Material

The sub-base material shall be natural or prepared mixtures consisting of fragments of stone, slag, gravel or sand and containing some silt-clay or stone dust. Aggregates shall be reasonably uniform in density and quality, durable and sound free from lumps and balls of clay, organic matter and other foreign material. The maximum size shall not exceed 2 inches.

2.4 Base Course Material

Base course material shall consist of clean, sound, durable particles of crushed stone, crushed slag, or crushed gravel, and screenings. The aggregates shall be of uniform density free from angular silt and clay, vegetable matter and other objectionable materials.

2.4.1 Coarse Aggregate

The percentage of loss shall not be greater than 10 percent weighted averaged at five cycles when tested for soundness in magnesium sulfate in accordance with ASTM C 88. The aggregate shall have a percentage of wear not to exceed 40 after 500 revolutions as determined by ASTM C131. The percentage of flat and/or elongated particles shall not exceed 20 in the fraction retained on the 1/2-inch sieve and in the fraction passing the 1/2-inch sieve. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than 3. When supplied from more than one source, aggregate from each source shall meet the requirements set forth herein. Crushed gravel shall be manufactured from gravel particles 90 percent of which by weight are retained on the maximum-size sieve listed in Section 2.4.2. In the portion retained on each sieve specified, the crushed gravel shall contain at least 90 percent by weight of crushed pieces having two or more freshly fractured faces with the area of each face being at least equal to 75 percent of the smallest midsectional area of the place. When two fractures are contiguous, the angle between planes of the fractures must be at least 30 degrees in order to count as two fractured faces.

2.4.2 Gradation

Gradation requirements specified herein shall apply to the completed base course. The aggregates shall have a maximum size of 2 inches and be graded continuously well within the limits specified below. Particles having diameters less than 0.02 mm shall not be in excess of 3 percent by weight of the total sample tested.

Sieve Size	% Passing by Weight
2-inch	100
1-1/2 inch	70-100
1-inch	45-80
1/2-inch	30-60
No. 4	20-50
No. 10	15-40
No. 40	5-25
No. 200	0-10

2.5 Crushed Stone

Crushed stone shall consist of fragments of sound, durable stone free from disintegrated stone, salt, alkali, vegetable matter, or adherent coatings and shall be reasonably free from thin or elongated pieces.

2.5.1 Crushed stone shall have a percent of wear of not more than 40 percent.

2.5.2 The crushed stone shall be well graded within the following limits:

Sieve Size	% Passing by Weight Minimum	Maximum
1-1/4 Inc.	100	--
1-Inch	95	100
3/4-Inch	70	100
3/8-Inch	50	85
No. 4	33	65
No. 10	20	45
No. 40	8	25
No. 200	0	10

2.6 Topsoil

For topsoil material requirements see Section 02900 - Landscaping.

PART 3 - EXECUTION

3.1 Backfilling and Filling

3.1.1 Fill shall not be placed until the excavated area has been inspected and approved by the Contracting Officer. Fill shall not be placed upon a frozen surface, nor shall snow, ice, or frozen material be incorporated in the fill.

3.1.2 Fill shall be placed in approximately horizontal layers. The thickness of each layer before compaction shall not exceed 9 inches. Materials placed by dumping in piles or windows shall be spread uniformly to not more than 9 inches before being compacted.

3.1.3 Density of the earthfill shall be a minimum of 95% of the maximum dry density acheived in standard proctor tests (ASTM D698) unless otherwise specified. The water content shall not vary more than plus or minus 2% of the optimum moisture content according to test results submitted to the Contracting Officer.

3.2 Storm Drainage Backfill

3.2.1 Backfill material shall be spread and levelled in layers not to exceed 6 in. thick after compaction. Compaction shall be to 95 percent of the maximum density obtained from the Modified Proctor Test ASTM D1557 (Method D).

3.2.2 Backfill shall be placed and brought up evenly on both sides of the pipe for its full length, and shall be thoroughly compacted under the haunches of the pipe. Care shall be taken to avoid pipe displacement. To prevent excessive live loads on

the pipe, at least 2 feet of compacted backfill over the pipe shall be in place before power operated hauling or rolling equipment travels over the pipe.

3.3 Sub-base Placement

3.3.1 Prior to placing any sub-base, the subgrade for roadways and driveways shall be cleared of rocks larger than 2 inches and other unsuitable material and then compacted with a minimum of 3 passes of a vibratory roller or equivalent and shall be free from water pockets.

3.3.2 Sub-base material shall not be placed on soft, muddy, or frozen areas, or until all irregularities in the prepared areas, including soft areas in the foundation, have been corrected.

3.3.3 The sub-base material shall be deposited on parepared areas as uniformly as possible to avoid segregation.

3.3.4 Density of the sub-base shall be within 5% of the maximum dry density (ASTM D698) and the water content shall be between 95% and 100% optimum moisture content according to test results submitted to the Contracting Officer.

3.4 Base Course Placement

3.4.1 Base courses shall be placed when the temperature is above 35 degrees F. Areas of completed base course that are damaged by freezing, rainfall, or other weather conditions shall be corrected to meet the specified requirements.

3.4.2 Prior to constructing the crushed-aggregate base course, the underlying course shall be cleaned of all foreign substances. At the time of construction of the base course, the underlying course shall contain no frozen material. The underlying course shall conform to the sub-base material in paragraph 2.3. Ruts or soft, yielding spots in the underlying courses, areas having inadequate compaction, and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements.

3.4.3 The base course shall be placed on the prepared subbase in layers of uniform thickness with an approved spreader. When a compacted layer 6 inches or less in the thickness is required, the material shall be placed in a single layer. No layer shall exceed 6 inches or be less than 3 inches when compacted. The layer shall be so placed that when compacted they will be true to the grades or levels required with the least possible surface disturbance. Where the base course is placed in more than one layer, the previously constructed layers shall be cleaned of loose and foreign matter by sweeping with power sweepers, power

brooms, or hand broom. Adjustments in placing procedures or equipment shall be made as required to obtain true grades, to minimize segregation and degradation, to adjust the water content, and to insure an acceptable base course.

3.4.4 Each layer of base course shall be compacted to produce a minimum of 95% of the maximum dry density in accordance with the test procedure in ASTM D1557 and the water content shall not vary more than plus or minus 2% of the optimum moisture content according to test results submitted to the Contracting Officer.

3.4.5 Finishing: The surface of top layer of base course shall be finished after final compaction, and proof rolled, where required, by cutting any overbuild to grade and rolling with a steel-wheeled roller. In no case will thin layers of material be added to the top layer of base course to meet grade. If the elevation of top layer of base course is 1/2 inches or more below the grade, the top layer of base shall be scarified to a depth of at least 3 inches, new material shall be added, and the layer shall be blended and recompacted to bring to grade. Adjustments in rolling and finishing procedures shall be made to obtain grades, to minimize segregation and degradation of base course material, to adjust the water content, and to insure an acceptable base course. Material found unacceptable shall be removed and replaced with acceptable material.

3.4.6 Along the edges of the base course the same material shall be placed in such quantity as will compact to the thickness of the course being constructed. The full width of roadway including the shoulder shall be rolled and compacted simulteneously.

3.4.7 The completed thickness of the base course shall be within 1/2 inch of the thickness indicated.

3.5 Topsoil Placement

For placement of topsoil see Section 02900 - Landscaping.

3.6 Sampling and Testing

Sampling and Testing shall be the responsibility of the Contractor. Sampling and Testing shall be performed by an approved commercial testing laboratory, or by the Contractor subject to approval by the Contracting Officer.

3.6.1 Sieve analyses shall be made in conformance with ASTM C117 and C136.

3.6.2 Soundness tests shall be made in conformance with ASTM, C88.

3.6.3 Wear tests shall be made in conformance with ASTM C131.

3.6.4 Density shall be measured in the field in accordance with ASTM D1556, ASTM D2167 or ASTM 2922. For the method presented in ASTM D2922 the calibration curves shall be checked and adjusted if necessary using only the sand cone method. For every ten (10) tests performed, the results shall be verified by the sand-cone method. Tests performed in accordance with ASTM D2922 results in a wet unit weight of soil and when using this method, ASTM D3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gages shall also be checked.

3.6.5 Tests for gradation and moisutre content shall be made on 10 lb samples from each 100 cubic yards of fill brought to site but at least once a day during placing operations. In place mositure content and density tests shall be carried out by the Contractor on each 1,000 cubic yards of compacted fill, but atleast once a day, at randomly selected locations or at specific locations directed by the Contracting Officer.

3.6.6 Failure of the sub-base material to meet the requirements of this Section will require the Contractor to remove and replace all sub-base material at his own expense.

3.7 Grading

3.7.1 The sub-base for the roadway shall be rough graded prior to the placement of the base course.

3.7.2 The base course of the roadway and driveways shall receive a finish grading to the elevations shown on the Contract drawings.

3.7.3 Earthfill areas shall receive a rough grading prior to placement of the topsoil.

3.7.4 The topsoil shall receive a finish grading to the contours shown on the Contract drawings to achieve proper drainage. This grading shall be to a reasonably smooth surface subject to acceptance by the Contracting Officer.

SECTION 02500
PAVING AND SURFACING

PART 1 - GENERAL

1.1 Summary

1.1.1 The work under this section shall include the construction of the asphalt concrete pavement on a prepared base for the roads, shoulder and driveways as specified in this Contract. The Contractor shall recycle the demolished asphalt pavement material (refer to Section 02090 - Pavement Removal) and shall supply all other materials, equipment and services for this work.

1.1.2 The Contractor shall conduct repaving activities in such a manner so as to minimize inconvenience to the residents.

1.1.3 It is not the intent of this section and associated drawings (WB-14, 15, 16) to specify all details of design and construction. It shall be the responsibility of the contractor to provide high standards of design, engineering, and workmanship that are suitable for the specified service.

1.1.4 The bituminous plant shall be of such capacity to produce the quantities of hot-mixed recycled asphalt mixtures required for the project. Hauling equipment, paving machines, rollers, miscellaneous equipment, and tools shall be provided in sufficient numbers and capacity and in proper working condition to place the recycled asphalt paving mixtures at a rate equal to the plant output.

1.2 Related Sections

Related work that is specified in other sections of the technical specifications included but is not limited to the following:

Section 01400 Site-Specific Quality Management Plan
Section 01560 Temporary Controls/Environmental Protection
Section 01600 Equipment and Materials Handling
Section 02090 Pavement Removal
Section 01563 Erosion and Sediment Control
Section 02221 Backfill and Grading
Section 02720 Storm Drainage System

1.3 Specifications and Standards

The applicable specifications and standards shall include but are not limited to the following:

1.3.1 New York State Department of Transportation (NYSDOT) Standard Specifications - Construction and Materials

1.3.2 American Society for Testing and Materials (ASTM)

ASTM C183-83 - Sampling and Acceptance of Hydraulic Cement
ASTM D75-87 - Sampling Aggregates
ASTM D140-70 (R 1981) - Sampling Bituminous Materials
ASTM D3515-84 - Hot-Mixed, Hot-Laid Bituminous Paving Mixtures

1.3.3 Military Standard (MIL-STD)

MIL-STD-620A - Test Methods for Bituminous Paving Materials & Notice 1

1.4 Submittals/Samples

The Contractor shall submit the following prior to proceeding with the work:

1.4.1 Detailed design of roadways and driveways including necessary claculations for the roadway geometric design and pavement thickness design, and drawings sufficient in detail for construction.

1.4.2 Samples and Test Data of new aggregates and bituminous materials including reports providing sources of aggregates.

1.4.3 Proposed job mix formula for recycled asphalt concrete with samples and test data supporting mix design.

1.4.4 Test results of laboratory and field tests for mat and joint density measurement as specified in paragraph 3.3.

1.5 Quality Assurance

The Contractor shall have a quality assurance program which ensures that the equipment and services provided will properly reflect the requirements of this contract.

The Contracting Officer or his representative shall have sufficient access to the bituminous plant facility for inspection at all times.

The Contractor shall certify to the Contracting Officer, in writing, that the materials for asphalt concrete are in complete compliance with specified codes, standards and specifications. Any exceptions to original codes and specifications must be documented with written approval from the Contracting Officer.

PART 2 - PRODUCTS

2.1 Asphalt Pavement

The asphalt pavement for the roads shall consist of a 2-inch binder course and a 2-inch top course conforming to Type 3 and Type 6, respectively, of the NYSDOT Standard Specification (NYSDOT 400).

The driveways and the road shoulder shall be paved with a 2-inch top course conforming to Type 6 of the NYSDOT Standard Specification (NYSDOT 400).

The recycled asphalt concrete shall consist of reclaimed asphalt pavement, coarse aggregate, fine aggregate, mineral filler, asphalt cement, recycling agent, and approved additives, if required, of the qualities and in the proportions to meet the specified requirements of Table 401-1 of NYSDOT 400. The Contractor shall formulate and submit to the Contracting Officer for approval, a job mix formula that satisfies the general limits imposed by Table 401-1 of NYSDOT 400.

2.1.1 Aggregates

Aggregates shall consist of those contained in the reclaimed asphalt pavement and new coarse and fine aggregates. Fine aggregates shall consist of material conforming to the requirements of Sub-section 703-01, Fine Aggregates (NYSDOT 703). Coarse aggregates shall conform to the requirements of Sub-section 703-02, Coarse Aggregates (NYSDOT 703).

2.1.2 Mineral Filler

Mineral filler, required to meet gradation requirements shall conform to the requirements of Sub-section 703-08, Mineral Filler of NYSDOT 703.

2.1.3 Asphalt Cement

The grade of new asphalt cement shall be AC-10 conforming to the requirements of Table 702-1 of Section 702, Bituminous Materials of NYSDOT 702.

2.1.4 Reclaimed Asphalt Pavement

The amount of reclaimed asphalt pavement used in the recyled mixture shall not exceed 70 percent by weight.

2.1.5 Recycling Agent

Recycling agents used in preparation of recycled mixtures shall have a proven record of satisfactory performance. The recycling agent shall be submitted to Contracting Officer for approval before use.

2.1.6 Additives

The use of additives shall be subject to approval of the Contracting Officer.

2.2 Prime Coat

The prime coat shall use rapid curing type liquid asphalt, grade RC 70 conforming to the requirements of Table 702-3 of NYSDOT Standard Specification (NYSDOT 702).

2.3 Tack Coat

The tack coat shall use rapid curing type liquid asphalt, grade RC 70 conforming to the requirements of Table 702-3 of NYSDOT Standard Specification (NYSDOT 702).

2.4 Surface Sealer

New road pavement surface shall be sealed by applying asphalt emulsion. The asphalt emulsion shall be submitted to Contracting Officer for approval before use.

2.5 Delivery, Storage, and Handling of Materials

The bituminous materials shall be maintained at appropriate temperature during storage but shall not be heated by application of direct flame to walls of storage tanks or transfer lines.

PART 3 - EXECUTION

3.1 Asphalt Concrete Pavement

3.1.1 Preparation of Bituminous Mixtures

Aggregates, reclaimed asphalt pavement, mineral filler, bitumen, and recycling agent shall be conveyed into the mixer in proportionate quantities required to meet the job mix formula. Mixing time shall be as required to obtain a uniform coating of the aggregate with the bituminous material. Overheated and carbonized mixtures or mixtures that foam shall not be used.

3.1.2 Storage

The storage of bituminous paving mixture shall conform to the applicable requirements of ASTM D 3515. However, in no case shall the mixture be stored for more than 4 hours.

3.1.3 Transportation

Transportation of bituminous paving mixture shall be in trucks having tight, clean, smooth beds lightly coated with an approved releasing agent to prevent adhesion of mixture to truck bodies. Hauling over freshly placed material will not be permitted.

3.1.4 Surface Preparation of Underlying Course

Prior to placing of binder or top course, the underlying course shall be cleaned of all foreign or objectionable matter with power brooms and hand brooms.

3.1.5 Prime Coating

The surface of previously constructed base course shall be sprayed with a coat of liquid asphalt in quantities not less than 0.15 gallon nor more than 0.40 gallon per square yard of surface.

3.1.6 Tack Coating

The contact surfaces of previously constructed pavement, curbs, manholes and other structures shall be sprayed with a coat of asphalt emulsion in quantities not less than 0.05 gallon nor more than 0.15 per square yard of surface.

3.1.7 Asphalt Concrete Installation

The construction of the asphalt concrete pavement shall be in compliance with the lines, grades, thicknesses and typical cross-sections shown on the contract drawings. Asphalt concrete pavement construction shall meet the requirements of Section 401 of NYSDOT standard specifications.

Compaction shall achieve a mat density of 98 to 100.0 percent and a joint density of 96.5 to 100.0 percent of density of laboratory-compacted specimens of the same mixture.

3.1.8 Surface smoothness and thickness tolerances shall meet the requirements of Section 401 of NYSDOT Standard Specifications.

3.1.9 Weather and seasonable limitations shall be in accordance with the requirements in Section 401 of NYSDOT Standard Specifications.

3.1.10 Protection of Pavement

After final rolling, no vehicular traffic of any kind shall be permitted on the pavement until pavement has cooled to 140 degrees F.

3.2 Access to Plant and Equipment

The Contracting Officer shall have access at all times to all parts of the bituminous plant for checking adequacy of equipment in use, inspecting operation of plant, verifying weights proportions and character of all aggregates and checking temperatures maintained in preparation of mixtures.

3.3 Sampling and Testing

Sampling and Testing shall be the responsibility of the Contractor. Sampling and Testing shall be performed by an approved commercial testing laboratory, or by the Contractor subject to the approval by the Contracting Officer.

3.3.1 New Aggregates

Samples of aggregates shall be furnished by the Contractor for approval of aggregate sources and stockpiles prior to the start of production and at times during production of the bituminous mixtures when requested by the Contracting Officer. Unless otherwise directed, ASTM D75 shall be used in sampling coarse aggregate and fine aggregate. ASTM C183 shall be used in sampling mineral filler.

Tests necessary to determine compliance with requirements specified herein shall be made by the Contractor.

3.3.2 Bituminous Materials

Samples of bituminous materials shall be obtained by the Contractor. The sampling shall be in accordance with ASTM D140. Tests necessary to determine conformance with requirements specified herein shall be performed by the Contractor.

3.3.3 Reclaimed Asphalt Pavement

Sampling and testing of the reclaimed asphalt pavement will be performed by the Contractor to insure the job mix formula can be met.

3.3.4 Recycled Asphalt Mixture

Sampling and testing of the recycled asphalt mixture shall be accomplished by the Contractor.

3.3.5 Mat and Joint Density

Laboratory samples shall be prepared from recycled asphalt mixture which has not been reheated in the laboratory. Samples shall be compacted and tested for density in accordance with MIL-STD-620, Method 100 within 2 hours of time mixture was loaded into trucks at asphalt plant. The field density shall be determined from core samples. The average mat density and the average joint density shall be expressed as a percentage of the laboratory density.

3.3.6 Tests performed by the Contracting Officer will be used to verify that the work is in conformance with this section's requirements. Such tests are not intended to provide the Contractor with the information required by him for the proper execution of the work and their performance shall not relieve the Contractor of the necessity to perform tests for that purpose.

SECTION 02720

STORM DRAINAGE SYSTEM

Part 1 - GENERAL

1.1 SUMMARY

1.1.1 This section describes the requirements for the materials, furnishing, fabrication, installation and testing of the storm drainage system.

1.1.2 The Contractor shall provide detailed design and supply all material, equipment and services to install the storm drainage system outlined on Drawings WB-17 and WB-18.

1.1.3 The Contractor may propose use of alternate materials which are accepted industry practice, consistent with Contractor's design and are acceptable to the Contracting Officer.

1.2 RELATED SECTIONS

Section 01065 - Health and Safety Requirements
Section 01400 - Site-Specific Quality Management Plan
Section 01560 - Temporary Controls/Environmental Protection
Section 01562 - Dust Control
Section 01563 - Erosion and Sediment Control
Section 02220 - Excavation
Section 02221 - Backfill and Grading
Section 03200 - Concrete Reinforcement
Section 03310 - Structural Concrete

1.3 APPLICABLE CODES

The applicable codes shall include, but not be limited to, the following:

1.3.1 American Society for Testing and Materials (ASTM)

ASTM C76-85a	Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
ASTM C443-85a	Joints for Circular Concrete Sewer and Culvert Pipe Using Ruber Gaskets
ASTM A48-83	Gray Iron Castings
ASTM D1557-78 (Method D)	Moisture-Density Relations of Soils Using 10 lb Rammer and 18 in. Drop
ASTM D1556-82	Density of Soil in Place by Sand Cone Method

1.3.2 New York State Department of Transportation (NYSDOT)

NYSDOT Standard Specifications, Construction and Materials, 1985

1.4 QUALITY ASSURANCE

1.4.1 The Contractor shall ensure that the material and workmanship provided will properly reflect the requirements specified herein.

1.4.2 The Contractor shall assist the inspection and test personnel performing the tests requested by the Contracting Officer.

1.5 SUBMITTALS

The Contractor shall submit the following before work is started.

1.5.1 Storm drainage calculations and design drawings sufficient in detail for construction.

1.5.2 Materials list of items proposed to be provided under this section and riprap sample.

1.5.3 Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.5.4 Manufacturer's recommended installation procedures which, when approved by Contracting Officer shall become the basis for accepting or rejecting actual installation procedures.

1.5.5 Certified copies of all test reports or certificates of compliance certifying compliance with the governing standards.

1.6 DELIVERY, STORAGE AND HANDLING:

1.6.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Gasket and plastic materials shall be protected from exposure to the direct sunlight over extended periods.

1.6.2 Handling

Materials shall be handled in such a manner as to insure delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

Part 2 - PRODUCTS

2.1 REINFORCED CONCRETE PIPE

Reinforced concrete pipe shall conform to the requirements of ASTM C-76 "Reinforced Concrete Culvert, Storm Drain and Sewer Pipe" and shall be of the class and sizes designated on the drawings for the respective locations.

The ends of reinforced concrete pipe sections shall be so formed that when the pipe sections are laid together they will make a continuous and uniform line of pipe. Reinforced concrete pipe

shall be joined with rubber gaskets. Joints and gasket material shall meet the requirements of ASTM C443 "Joints for Circular Concrete Sewer and Culvert Pipe using Rubber Gaskets."

2.2 CATCH BASINS

Catch basins shall be of reinforced concrete pipe conforming to the requirements of Paragraph 2.1 above or precast concrete drainage units conforming to the requirements of NYSDOT Subsection 706-04.

2.3 BEDDING MATERIAL

Bedding material shall be selected sand. It shall be free of muddy material, organic matter, debris, or other unsuitable materials. It shall consist of a well graded material having a maximum size of 3/4 in. and containing a maximum of 15 percent passing the number 200 sieve.

2.4 BACKFILL MATERIAL

Backfill material above the bedding shall be the sub-base material specified in Section 02221 - Backfill and Grading up to the lower limit of the base course for pipe within the roadway and up to the lower limit of the topsoil for pipe located within yards.

2.5 CAST-IN PLACE CONCRETE

Cast in place concrete and reinforcing steel shall be in accordance with Sections 03310 and 03200 respectively.

2.6 OTHER MATERIALS

Contractor shall provide other materials, not specifically described but required for a complete and proper installation subject to the approval of the Contracting Officer.

2.7 METAL CASTINGS

Castings for metal frames and grates for catch basins shall be gray iron castings conforming to the requirements of ASTM A48 "Gray Iron Castings".

Catch basin grates shall be capable to withstand H20 loading and seated properly to prevent rocking.

2.8 RIPRAP

Riprap shall consist of hard, durable, blocky, well graded broken stone of quality that will not disintegrate on exposure to water or weathering. Seventy (70) percent of the rock shall range in size from 6 in. to 9 in. Contractor shall submit suitable samples to the Contracting Offices for approval prior to delivery to the site. Rock for riprap shall be placed on the final slope in such a manner to produce a reasonably well graded mass of rock with the minimum practicable percentage of voids and without pockets of small rock and clusters of large rock.

Part 3 - EXECUTION

3.1 INSTALLATION OF PIPE

Installation of reinforced concrete drainage pipe shall conform to the applicable requirements of Section 603 of the NYSDOT Standard Specifications and the Contract drawings except as specified herein.

3.1.1 Excavating and Trenching

3.1.1.1 The provisions of Section 02220 - Excavation shall apply to all soil excavation for installation of drainage pipes.

3.1.1.2 Proper preparation of foundation, placement of foundation material where required, and placement of bedding material shall precede the installation of all pipe.

3.1.2 Installation of Pipe

Proper equipment for lowering the sections of pipe into the trenches shall be provided. Care shall be exercised in hauling and handling the pipe in order to avoid damage. Each pipe shall be laid to the established line and grade and shall have a firm bearing throughout its entire length.

Reinforced concrete pipe shall be laid with the groove or bell end of section upgrade and with the tongue or spigot firmly inserted into the groove or bell. Pipe handling after the gasket has been affixed shall be carefully controlled to avoid gasket damage or contamination of the gasket with dirt. Pipe sections shall be carefully aligned before the joints are forced home. During insertion of the tongue or spigot, the pipe sections shall be supported so as to minimize unequal lateral pressure on the gasket. Sufficient pressure shall be applied in making the joint as described in the pipe manufacturer's installation instructions.

Pipe installation shall be in strict accordance with the manufacturer's instructions.

3.1.3 Bedding

Bedding material shall be spread and levelled in layers not to exceed 6 inches thick after compaction. Compaction shall be by tamping or rolling equipment. Selected sand shall be compacted to 95 percent of the maximum density obtained from Modified Proctor Test ASTM D-1557 (Method D).

3.1.4 Backfilling

After placement all pipe shall be inspected before backfilling. Pipe sections damaged during placement shall be removed and replaced. Backfilling shall be performed in accordance with Section 02221 - Backfill and Grading Paragraph 3.2.

3.2 INSTALLATION OF CATCH BASINS

Catch basins shall be constructed and located in accordance with the drawings.

3.2.1 Catch basins shall be constructed on a compacted or undisturbed level foundation. In place density of the foundation material shall not be less than 95 percent Modified Proctor Density. (ASTM D1557 Method D).

3.2.2 The Contractor shall make the necessary cuts in the catch basin wall for entering pipes. The reinforcing steel shall be cut flush with the face of the concrete and shall be cut in such a manner that it will not loosen the reinforcement in the catch basin wall. All openings cut through the walls shall be grouted to the satisfaction of the Contracting Officer.

3.2.3 Rubber gaskets shall be used in joints of precast pipe for manholes and catch basins. Care shall be exercised to avoid gasket damage for contamination with foreign material. Catch basins shall be thoroughly watertight.

3.2.4 The grating of catch basins shall be bicycle safe and removable to permit cleaning of the pipes.

3.2.5 Temporary catch basin covers shall be set and maintained by the Contractor until permanent grade elevation has been attained.

3.3 RIPRAP PROTECTION

The Contractor shall provide riprap protection as required to insure that the flow will not scour or erode the downstream reach at culvert outlets.

3.4 TESTING

3.4.1 The Contractor shall perform all the tests and test reports in accordance with the appropriate specification or standard for each particular material item supplied. Three (3) copies of all test reports certifying compliance with the governing standard shall be submitted to the Contracting Officer on delivery. The basis of acceptance for reinforced concrete pipe shall be on plant load-bearing tests, material tests and by visual inspection of the finished pipe.

3.4.2 In-place density tests shall be performed in accordance with ASTM D-1556 or any other method suitable to insure proper determination of in place density. One test shall be performed in each lift for every 100 ft, or fraction thereof, of pipe installed as a minimum.

SECTION 02900
LANDSCAPING

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This specification provides the technical requirements for replacing trees, shrubs; and for seeding and mulching to protect the finished grades on-site from erosion and to mimimize any dust hazard to the surrounding communities.

1.1.2 The work shall include, but not be limited to, the supply and provision of all labor, equipment and material required to satisfactorily achieve the intended results of this section.

1.1.3 The Contractor shall also restore all areas affected by the construction outside the limits of clearing and grubbing specified and/or shown on the Contract Drawings to their previously existing conditions or as approved by the Contracting Officer.

1.2 RELATED SECTIONS:

Section 01560 - Temporary Controls/Environmental Protection
Section 01563 - Erosion and Sediment Control
Section 01700 - Project Closeout
Section 02100 - Site Preparation
Section 02221 - Backfill and Grading

1.3 APPLICABLE PUBLICATIONS

1.3.1 Federal Specifications:
O-F-241D Fertilizer, Mixed, Commercial

1.3.2 U.S. Department of Agriculture
Federal Seed Act of 9 August 1939 (53 Stat 1275)

1.3.3 New York Guidelines for Erban Erosion and Sediment Control

1.4 SUBMITTALS

The Contractor shall submit to the Contracting Officer prior to delivery, for his approval, sample and technical specifications of the grass seed, fiber, mulch and tackifier to be used for the landscaping of the site.

PART 2 - PRODUCTS

2.1 TOPSOIL

2.1.1 General - All ground areas disturbed by construction under this Contract, except areas to be repaved, shall be topsoiled. Topsoiling shall consist of ground preparation, furnishing and placing acceptable topsoil to the lines and grades indicated on the drawings or as specified herein.

2.1.2 Acceptable Topsoil - Acceptable topsoil includes on-site treated soil adjusted for pH and nutrient, and soils obtained from other approved sources to supplement treated soil that is representative of soils in the vicinity that produce growths of crops, grass or other vegetation typical of the Wide Beach area and is reasonably free from underlying subsoil, clay lumps, objectionable weeds, litter, brush, matted roots, toxic substances or any material that might be harmful to plant growth or be a hindrance to grading, planting or maintenance operations. Topsoil shall not contain more than five percent by volume of stones, stumps or other objects larger than 3/4 inch in any dimension. Topsoil shall exhibit a pH within the range of 5.5 to 7.0.

2.2 SEED

Seed shall be state-certified seed of the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages or mixtures; purity, germination, weed-seed content and inert material. Seed shall be labeled in conformance with U.S. Department of Agriculture rules and regulations under the Federal Seed Act and applicable state seed laws. Seed that has become wet, moldy, or otherwise damaged shall not be acceptable. The seed mixture for residential yards shall reflect grasses grown before soil excavation. The following alternate seed mixture may be used when approved by the Contracting Officer:

Name of Grass	Proportion by Weight
Perennial Rye	20%
Creeping Red Fescus	15%
Blue Grass	65%

2.3 FERTILIZER

Fertilizer shall be commercial grade, free flowing, uniform in composition, delivered in fully labeled sealed containers, and shall conform to applicable State and Federal regulations. Granular fertilizer shall conform to Fed. Spec. O-F-241, Type I, Level B, and shall bear the manufacturer's guaranteed statement of analysis. Granular fertilizer shall contain a minimum percentage by weight of 15 nitrogen, 15 phosphorous, and 0 potash.

2.4 WOOD CELLULOSE FIBER MULCH AND TACKIFIER

Wood cellulose fiber mulch shall be processed from wood chips specifically for use in hydraulic mulching equipment. The mulch fiber shall form a uniform slurry mix with water. The mulch shall be non-toxic to plant and animal life. The air dry weight of the fiber content shall not exceed 12 percent $\pm$ 3 percent, with a pH range between 4.5 and 6.5. Tackifier shall be a natural vegetable gum, blended with gelling and hardening agents. This material, when mixed with wood cellulose and water becomes a tackifier/binder to act as an agent for erosion control and provides a stable bed for seed germination.

2.5 TREES AND SHRUBS (PLANTS)

2.5.1 Plants removed and/or destroyed during the construction activities shall be replaced with same species and variety or equivalent as approved by the Contracting Officer.

Replacement plants shall be nursery grown or plantation grown stock conforming to ANSI Z60.1 and shall be of the genus, species and variety listed in the publication for standardized plant names.

2.5.2 Planting stock shall be well-branched and well-formed, sound, vigorous, healthy, and free from disease, sun-scald, windburn, abrasion, and harmful insects or insect eggs and shall have healthy, normal and unbroken root systems. Deciduous trees shall be symmetrically developed, of uniform habit of growth, with straight boles or stems, and free from objectionable disfigurements. Evergreen trees shall have well-developed symmetrical tops with typical spread of branches for each particular species or variety. Plants shall have been grown under climatic conditions similar to those in the locality of the project. All evergreens as well as plants budding into leaf or having soft growth shall be sprayed with an antidesiccant at the nursery before digging. Antidesiccant spraying shall occur on evergreens regardless of the season.

2.5.3 The minimum acceptable sizes of all plants, measured before pruning and with branches in normal position, shall conform to the measurements as specified in Part 3; Subparagraph 3.3.1 of this specification. Plants larger in size than specified may be used as approved. If larger plants are used, the ball of earth shall be increased in accordance with ANSI Z60.1.

2.5.4 Plants shall be dug and prepared for shipment in a manner that will not cause damage to branches, shape, and future development after planting.

2.5.5 Balled and burlapped plants shall have ball sizes and ratios conforming to ANSI Z60.1. Plants shall be balled with firm, natural balls of soil and wrapped firmly with cloth burlap and tied. Plastic burlap is not acceptable. If nylon ropes are used to bind the burlapped root balls, rope shall be cut and removed from around the tree trunk before backfilling is completed.

2.5.6 Container grown plants are not acceptable.

2.6 PLANT PIT BACKFILL

2.6.1 Plant Pit Backfill Soil Mixture - The backfill soil mixture shall be composed of 50% topsoil, 25% sand and 25% peat.

2.6.2 Sand shall be clean and free of toxic materials and at least 95 percent by weight shall pass a 60-mesh sieve, and 10 percent by weight shall pass a 16-mesh sieve.

2.6.3 Peat shall be a natural product of hypnum moss peat derived from a freshwater site conforming to ASTM D 2607 except as otherwise specified. Peat shall be shredded and granulated to pass a 1/2-inch mesh screen and conditioned in storage piles for at least 6 months after excavation.

2.6.4 Backfill soil mixture shall be amended by addition of a pH adjuster at a rate capable of bringing the pH within the range of 5.5 to 7.0.

2.7 pH ADJUSTER

2.7.1 Agricultural limestone shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60-mesh sieve. Coarser materials will be acceptable provided they pass the 10-mesh sieve and the specified rates of application are increased in linear proportion to the quantities passing the 60-mesh sieve where zero passage indicates doubling the application rate.

2.7.2 Other liming material shall have a minimum calcium carbonate equivalent of 80 percent and shall be crushed to such a fineness that at least 90 percent will pass an 8-mesh sieve and at least 80 percent ill pass a 10-mesh sieve.

2.7.3 Aluminum sulfate shall be commercial grade.

2.8 WATER

Water shall be clean, and shall not contain elements detrimental to plant life, and shall be obtained from an approved source prior to use.

PART 3 - EXECUTION

3.1 TOPSOILING

3.1.1 Clearing

Prior to placing topsoil, the ground surface shall be cleared of all brush, snags, and rubbish.

3.1.2 Grading

Previously constructed grades shall be repaired if necessary so that the areas to be topsoiled conform to the final grades upon completion of topsoil placement.

3.1.3 Placing Topsoil

The topsoil shall be uniformly distributed on the designated areas and evenly spread to a minimum thickness of 6 inches. The spreading shall be performed in such a manner that planting can proceed with little additional soil preparation or tillage. The surface resulting from topsoiling shall meet the finish surface requirements specified in Paragraph 3.1.4 below. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to proper grading or the proposed planting.

3.1.4 Finished Surface

All topsoiled areas covered by the project shall be uniformly smooth graded. The finished surface shall be reasonably smooth and free from irregular surface changes. The degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations. The finished surface shall be free of depressed areas where water would pond.

3.2 SEEDING

3.2.1 Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rains, traffic, or other causes, shall be reworked to restore the ground condition previously specified. Seed shall be planted at the rate specified herein.

3.2.2 Hydro Seeding

The Contractor shall accomplish seeding, and mulching by hydroseed application. Seed at the rate of 150 lbs per acre, wood cellulose fiber mulch and tackifier/ binding agents at the rates recommended by the manufacturer for the specific fiber mulch used, shall be combined with water to provide a slurry.

Hydraulic application shall be performed in such a manner that the liquid carrier will uniformly distribute the material over the entire area to be seeded at rates not less than indicated herein. No following compaction shall be performed. The seeded area shall be watered after seeding and the soil moistened to a depth of 2 to 4 inches.

3.2.3 Planting Season

Seeding shall proceed as quickly as possible following the establishment of finished contour elevations.

Lawns shall be seeded with permanent grass seed from March 15th to May 15th and From August 15th to October 1st.

The actual planting of lawns, however, shall be performed during periods within these seasons as determined by weather conditions and by acceptable practice in the locality of the project.

3.3 TREES AND SHRUBS (PLANTS)

3.3.1 Existing Condition

All plants to be removed during the work specified in this Contract shall be jointly inspected by the Contractor and the Contracting Officer prior to start of the work. An agreement shall be signed briefly setting forth the number, type and size of the plants thereof. The agreement shall be supported with photograph of these plants.

3.3.2 Layout

Plant material locations shall be staked on the project site before any plant pits are dug. Staking plan must be approved by the Contracting Officer.

3.3.3 Underground Obstructions to Planting

If underground utilities, construction, or solid rock ledges are encountered, other locations for planting may be selected by the Contracting Officer.

3.3.4 Plant Pits

Plant pits shall be dug to produce vertical sides and flat, uncompacted bottoms. When pits are dug with an auger and the sides of the pits become glazed, the glazed surface shall be scarified. The minimum allowable dimensions of plant pits shall be 12 inches deeper than the depth of ball or the depth of base roots; for ball or root spreads up to 2 feet, pit diameter shall

be twice the root spread; for ball or root spreads from 2 to 4 feet, pit diameter shall be 2 feet greater; for ball or root spreads over 4 feet, pit diameters shall be 1-1/2 times the ball root spread.

3.3.5 Planting Seasons and Conditions

Planting shall be performed when the ground is not frozen, snow covered, or in an otherwise unsuitable condition for planting. Evergreen and deciduous material shall be planted from as early as is practicable to June 1 for Spring planting and from September 1 to as late as is practicable for Fall planting.

3.3.6 Setting Plants

Balled and burlapped plants shall be handled and moved only by the ball. Plants shall be set plumb and held in position until sufficient soil has been firmly placed around the ball. Plants shall be set in relation to surrounding grade. Fertilizer in packet or tablet form shall be placed prior to backfilling and in accordance with the manufacturer's recommendations.

3.3.7 Balled and burlapped stock shall be backfilled with amended topsoil to approximately half the depth of the ball and then tamped and watered. Burlap shall be carefully removed or opened and folded back 1/4 of its coverage. The remainder of backfill of amended topsoil shall be tamped and watered. Earth saucers or water basins shall then be formed around all plants. Water holding basins shall be ample enough in size and height to hold at least 5 gallons for trees.

3.3.8 Fertilization

If fertilization is of a slow release tablet type, trees shall receive fertilizer in their plant pits prior to placement of soil backfill. Application rate shall be as per manufacturer's recommendations for caliper and rootball size. Granular fertilizer shall be incorporated in the top 3" of the soil.

3.3.9 Pruning

New plant material shall be pruned in the following manner: dead and broken branches shall be removed; typical growth habit of individual plants shall be retained with as much height and spread as is practicable; cuts shall be made with sharp instruments, and shall be flush with trunk or adjacent branch to ensure elimination of stubs; "headback" cuts at right angles to line of growth shall not be permitted; trees shall not be poled or the leader removed; nor shall the leader be pruned or "topped off"; trimmings shall be removed from the site; and tree wound dressing is not necessary.

3.4 WATERING

All watering shall be done in a manner which will provide uniform coverage but which will not cause erosion or damage to the finished surface. Sufficient water shall be applied to fill the earth saucers.

3.5 MAINTENANCE

The Contractor shall provide all necessary watering and maintenance of the seeded areas until a viable cover is established. Bare spots shall be properly reseeded. Required reseeding and maintenance shall continue until acceptance by the Contracting Officer.

3.6 CLEAN-UP

The Contractor shall remove all debris from the site including, but not necessarily limited to, branches, rocks, paper, and rubbish in all landscaped areas as the work proceeds. All areas shall be kept in a neat and orderly condition at all times.

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INDEX

DIVISION 3 - CONCRETE

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1. SUMMARY

1.1.1 This section describes the requirements for the materials, fabrication, handling, placement, and testing of concrete reinforcement.

1.1.2 It is not the intent of this section to specify all details of design, fabrication, and construction. The Contractor shall provide materials and high quality work in accordance with the requirements of this section and stated industry standards.

1.2. RELATED SECTIONS

Section 01510 - Temporary Site Facilities and Utilities
Section 02720 - Storm Drainage System
Section 03310 - Structural Concrete

1.3 APPLICABLE CODES AND STANDARDS

The Contractor's work shall comply with the codes and standards listed below in addition to any state and local ordinances requirements.

1.3.1 ACI -American Concrete Institute

- o ACI 318-83 Building Code Requirements for Reinforced Concrete

1.3.2 ASTM - American Society for Testing and Materials

- o A 82-85 Standard Specification for Cold-Drawn Steel Wire for Concrete Reinforcement
- o A 184-86 Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
- o A 185-85 Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement
- o A 497-86 Standard Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement
- o A 615-86 Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

1.3.3 CRSI - Concrete Reinforcing Steel Institute

o Manual of Standard Practice

1.4 SUBMITTALS

1.4.1 Shop Drawings

Shop drawings shall be submitted in accordance with the SPECIAL CLAUSES and shall show reinforcing steel schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes and spacing. Also see Section 01300 - Submittals

1.4.2 Certificates

The Contractor shall submit, before or upon delivery of concrete reinforcement, certificates of compliance attesting that the concrete reinforcement furnished meets the requirements of this section.

1.5 QUALITY ASSURANCE

1.5.1 The Contractor shall have a quality assurance program which will ensure that the materials and services provided will properly reflect the requirements of this contract. See Section 01400-site specific Quality Management Plan.

1.5.2 The Contractor shall document, with written approvals from the Contracting Officer, all deviations from the specification requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60 (60,000 psi minimum yield strength).

2.1.2 Cold drawn wire used for spiral reinforcement shall conform to ASTM A 82.

2.1.3 Fabricated bar mats shall conform to ASTM A 184.

2.1.4 Welded wire fabric shall conform to ASTM A 185 or A 497.

PART 3 - EXECUTION

3.1 FABRICATION

3.1.1 Reinforcement shall be fabricated to shapes and dimensions shown and shall conform to the requirements of ACI 318. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall no be bent after embedment in concrete.

3.1.2 Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI Manual of Standard Practice and shall be steel or precast concrete blocks.

3.2 INSTALLATION

3.2.1 Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bound with the concrete. Reinforcement shall be placed in accordance with ACI 318 at locations shown plus or minus one bar diameter. Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage shall be as indicated or as required by ACI 318. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed.

3.2.2 Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical connection; except that lap splices shall not be used for bars larger than No. 11 unless otherwise indicated. Welding shall not be performed. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6-inches. Mechanical butt splices shall be in accordance with the recommendation of the manufacturer of the mechanical splicing device.

3.2.3 Welded wire fabric placed in slabs on grade shall be continuous through all joints. Lap splices shall be made in such a way that the overlapped area equals the distance between the outermost crosswires plus 2 inches. Laps shall be staggered to avoid continuous laps in either direction. Fabric shall be wired or clipped together at laps at intervals not to exceed 4 feet. Fabric shall be positioned by the use of supports.

3.2.4 Dowels shall be installed in slabs on grade at locations indicated and at right angles to joint being doweled. Dowels shall be accurately aligned parallel to the finished concrete surface and rigidly supported during concrete placement. One end of dowels shall be coated with a bond breaker.

SECTION 03310
STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

This section covers the requirements for the materials, performance, placement, testing, quality and handling of the concrete describe herein.

It is not the intent of this section and associated drawings to specify all details of design, fabrication and construction. It shall be the responsibility of the Contractor to provide equipment and structures that have been designed, fabricated and equipped in accordance with stated standards and high standards of engineering and workmanship that is suitable for the specified service.

1.2 RELATED SECTIONS

Related work that is specified in other sections of the Contract documents includes but is not limited to the following:

Section 01510 Temporary Site Facilities and Utilities
Section 02720 Storm Drainage System
Section 03200 Concrete Reinforcement

1.3 APPLICABLE CODES AND STANDARDS

The Contractor's Work shall comply with the codes and standards listed below in addition to any State and local ordinances requirements.

1.3.1 ACI - American Concrete Institute:

- o 301-84; Specifications for Structural Concrete for Buildings
- o 318-83; Building Code Requirements for Reinforced Concrete

1.3.2 ASTM - American Society for Testing and Materials

- o A82-85; Standard Specification for Cold-Drawn Steel Wire for Concrete Reinforcement
- o A615-87; Standard Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement

- o C33-86; Standard Specification for Concrete Aggregates
- o C94-86b; Standard Specification for Ready-Mixed Concrete
- o C150-86; Standard Specification for Portland Cement
- o C260-86; Standard Specification for Air-Entraining Admixtures for Concrete
- o C494-86; Standard Specification for Chemical Admixtures for Concrete

1.4 SUBMITTAL/SAMPLES

The Contractor shall submit a design mix from his concrete supplier to the Contracting Officer two weeks prior to the start of the concrete work. Also see Section 01300 - Submittals.

1.5 QUALITY ASSURANCE

The Contractor shall have a quality assurance program which will ensure that the equipment and services provided, will properly reflect the requirements of this Contract.

The Contracting Officer or his representative shall have sufficient access to the batch plant facility prior to production of the concrete for in-process and final plant inspections.

The Contractor shall certify to the Contracting Officer, in writing, that the concrete is in complete compliance with codes, standards and specifications. Any exceptions to original codes and specifications must be documented with written approvals from the Contracting Officer.

PART 2 - PRODUCTS

2.1 MATERIAL

2.1.1 Concrete

Concrete shall be proportioned for workability, maximum density, strength, and durability requirements in accordance with Chapter 3 of ACI 301. The 28-day design compressive strength of concrete shall be 4000 psi. The Contractor shall submit for review by the Contracting Officer a design mix and test data for the concrete to be furnished.

Production of concrete shall conform to Chapter 7 of ACI 301. Concrete furnished may be a commercial ready-mix, provided that delivery to the placing location is satisfactorily established as occurring not later than 30 minutes after addition of water to the mix. Slump of delivered concrete shall not exceed four inches.

Concrete materials shall conform to the requirements of Chapter 2 of ACI 301 and the following:

- Cement shall be an established commercial brand of Type I or II Portland Cement conforming to ASTM C150.
- Coarse Aggregate shall be normal weight concrete aggregates conforming to ASTM C33. The size of aggregate shall be No. 57.
- Fine Aggregate shall be as defined in ASTM C33.

Admixtures shall be used in concrete as indicated below:

- An appropriate air-entraining agent conforming to ASTM C260 to produce entrained air within the percentages listed in ASTM C94.
- A water-reducing or water-reducing and retarding chemical admixture meeting ASTM C494, Type A and D requirements respectively. Type D shall be used whenever the dry bulb temperature equals or exceeds 85 deg F or when the temperature of the fresh concrete equals or exceeds 75 deg F. Type A shall be used for all other concrete.

Water shall be free from any injurious amounts of acid, alkali, salts, oil, sediment, or organic matter.

2.1.2 Steel Reinforcement

Reinforcing steel shall be deformed bars produced from new billet steel and conforming to ASTM A615, Grade 60 (60,000 psi minimum yield), unless noted otherwise on Contract drawings. Refer to Section 03200 - Concrete Reinforcement for requirements.

2.1.3 Formwork

Formwork shall be the responsibility of the Contractor and shall be designed and constructed in accordance with Chapter 4 of ACI 301. Formwork material shall be consistent with the finishing requirements specified in Paragraph 4.1.4 of that specification, or as otherwise shown on contract drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

Concrete shall be placed for the storm drainage system as shown on the Contract drawings, the equipment decontamination pad, and other site facilities as required and approved by the Contracting Officer. All Work shall be performed by competent, trained workmen, skilled in the field in which they are executing the work.

Concrete shall be placed and cured in accordance with Chapters 8 through 12 of ACI 301 and formwork placing tolerances shall be in accordance with Chapter 4 of ACI 301.

When hot weather conditions prevail (dry bulb temperature equals or exceeds 85 degF), the interval between mixing and placing shall not exceed 60 minutes.

Bonding at construction joints shall be developed by roughening the surface of the existing concrete in an acceptable manner and keeping the surface wet for at least two (2) hours prior to concrete placement.

The exposed exterior formed surfaces of concrete shall be "smooth form finished" and placed to the specified elevations shown on the Contract drawings. All form ties shall be broken back and the holes shall be filled with patching mortar.

The finish on the catch basin interiors shall be screeded and floated to a smooth finish.

3.2 MATERIAL TESTS

Testing of concrete materials and operations shall be in accordance with Chapter 16 of ACI 301, with the exception that strength tests shall not be waived even if the total concrete quantity is less than 50 cubic yards. The Contractor shall submit to the Contracting Officer for his review and approval all test data and material certification prior to or during installation, as applicable.

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INDEX

DIVISION 4 - MASONRY

(Not Used)

DIVISION 5 - METALS: STRUCTURAL AND MISCELLANEOUS

(Not Used)

DIVISION 6 - CARPENTRY

(Not Used)

DIVISION 7 - MOISTURE PROTECTION

(Not Used)

DIVISION 8 - DOORS, WINDOWS AND GLASS

(Not Used)

DIVISION 9 - FINISHES

(Not Used)