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ARCO

**Remedial Action Report
Genesee River Partial Channelization
Sinclair Refinery Site
Wellsville, New York**

December 1991

Prepared by

EBASCO

An ENSERCH Engineering and Construction Company*

VOLUME 1 OF 7

SINCLAIR REFINERY SITE
GENESEE RIVER PARTIAL CHANNELIZATION PROJECT
WELLSVILLE, NEW YORK
REMEDIAL ACTION REPORT
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SINCLAIR REFINERY SITE PARTIAL CHANNELIZATION PROJECT
GENESEE RIVER
WELLSVILLE, NEW YORK
REMEDIAL ACTION REPORT

1.0 INTRODUCTION

1.1 Location

The Sinclair Refinery Site, located in Allegany County, New York, in the Town of Wellsville, southeast of the Village of Wellsville, covers approximately 103 acres. The location map, attached as Figure 1, shows the boundaries of the Sinclair Refinery Site and the project site, which includes the area of partial channelization along the Genesee River. The Genesee River drainage area for this site is approximately 216 square miles.

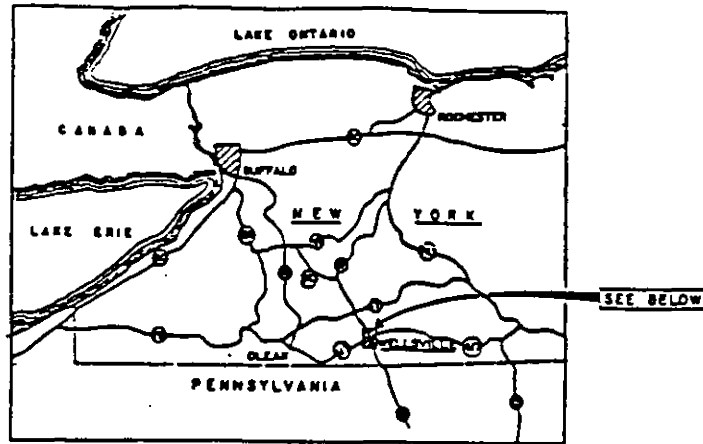
2.0 PURPOSE

The Remedial Action Report for the Partial Channelization project was prepared in compliance with the requirements of the Consent Decree between ARCO and the USEPA, effective May 19, 1989. The report also discusses the remediation of the South Landfill Area (SLA) since the SLA became an integral part of the river partial channelization work. The Remedial Action Report for the landfill will eventually be expanded to fully discuss the remediation of the SLA.

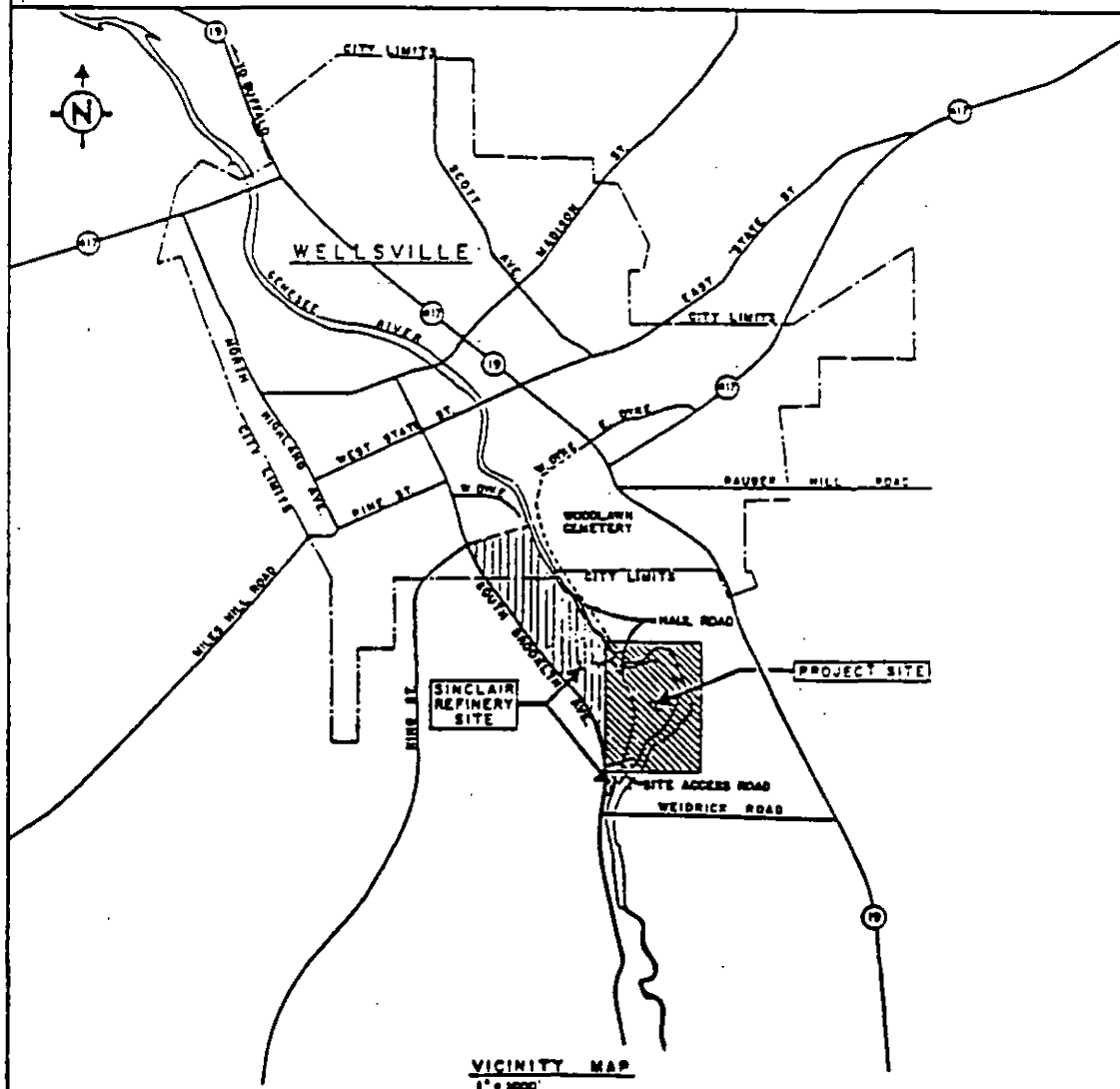
3.0 CONSENT DECREE STATEMENT OF WORK

3.1 Introduction

The Statement of Work (SOW) serves as a basis of understanding and agreement between the USEPA and ARCO for the remedial work at the Sinclair Landfill in Wellsville, Allegany County, New York.



LOCATION MAP
NOT TO SCALE



NOTE : THIS FIGURE WAS REPRODUCED
FROM BECHTEL DWG C-01

GRAPHIC SCALE
1000' 0 1000' 2000'

ARCO SINCLAIR REFINERY
LOCATION MAP VICINITY MAP
FIGURE 1
EBASCO SERVICES INCORPORATED

3.2 Statement of Work

The SOW encompasses the work to be performed pursuant to the ROD and the EPA Consent Decree. The work includes the following:

1. Remove and dispose off-site approximately 300 drums from the surface of the CELA.
2. Excavate and consolidate the wastes from the 2.3 acre SLA onto the 9.2 acre CELA.
3. Fill the excavated SLA with clean fill from off-site sources.
4. Place a temporary cover over the portion of the CELA which received waste from the SLA (Phase I).
5. Partially channelize the Genesee River to provide flood and erosion protection to the landfill. The work will consist of a west bank dike protecting the CELA, an east bank dike to guide river flow to the existing weir, and riprap along the east bank upstream from the east dike to protect the natural bank from erosion.
6. Construct a fence around the CELA; during construction, construct a temporary fence around both the SLA and CELA.
7. Perform operation and maintenance of the completed remedial action, including groundwater monitoring.

4.0 REMEDIAL DESIGN

4.1 Objectives

The objectives of the river partial channelization project include the following:

- Protection of the combined landfill from bank erosion and flood inundation during floods up to a 100-year event on the Genesee River.
- Protection of the east bank from the end of the existing sheet pile weir for approximately 2000 feet from the existing riprap upstream of the weir.
- Improve the river flow conditions approaching the weir located downstream of the landfill.

4.2 Remedial Design

The objectives stated above were accomplished by constructing a dike on the west bank from the United States Corps. of Engineers (USCOE) weir downstream for a length of approximately 2750 feet, and constructing a dike and placing riprap along the east bank as shown on the as-built drawings included in the report. Remedial design of the partial river channelization project was performed by Bechtel Environmental, Inc.(Bechtel), and Ebasco Services, Inc.(Ebasco).

4.2.1 Genesee River Partial Channelization (Bechtel Environmental, Inc.)

Remedial Design of the west bank dike from Station 0+00 to Station 22+31.59, east bank dike and east bank slope protection was performed by Bechtel Environmental, Inc. The design was submitted to USEPA in various stages and was finalized in September, 1989. The USEPA reviewed the final design submittal, and approval was issued on January 31, 1990.

4.2.2 South Landfill Area Remediation and West Bank Dike Extension (Ebasco Services, Inc.)

Remedial design of the west bank dike extension from Station 22+31.59 to Station 27+16.59 was performed by Ebasco Services, Inc. As the west bank dike extension alignment was located on the South Landfill Area (SLA) of the site, the design of the west bank dike extension was combined with the design of the SLA Remediation. The Design for the SLA Remediation and

West Bank Dike Extension was submitted to the USEPA in three stages (i.e., Preliminary, Pre-final and Final). The design was approved by the USEPA on September 26, 1990.

4.3 PROJECT PLANS

4.3.1 Project Plans for Genesee River Partial Channelization

The following project plans were prepared by Ebasco Services for implementation of the dike designed by Bechtel Environmental, Inc. The Sampling and Analysis Plan (SAP) and Health and Safety Plan (HASP) were submitted to the USEPA in March, 1989. The Quality Assurance Project Plan and Project Construction Schedule were submitted to the USEPA in June, 1989. These project plans were reviewed by the USEPA and approved on February 21, 1990. These project plans were made part of the Contract Bid Documents which were issued to the interested potential contractors.

4.3.2 Project Plans for West Bank Dike Extension

Previously approved (February, 1990) project plans for the Genesee River Partial Channelization design were used to implement the West Bank Dike Extension.

4.3.3 Project Plans for SLA Remediation

The project plans (Health and Safety Plan, Quality Assurance Project Plan, Sampling and Analysis Plan and Project Construction Schedule) were prepared by Ebasco Services, Inc. and were submitted to the USEPA on September 14, 1990. The Plans were approved by the USEPA on September 26, 1990. These Project Plans were incorporated into the Contract Bid Documents which were issued to the interested potential Contractors.

4.3.4 Project Plans for North End Dike Extension

The Previously approved (February 21, 1990) Project HASP for Genesee River Partial Channelization design was amended to address the contaminants in the area of the dike construction. A project construction schedule was prepared for construction of the North End Dike extension and completion of the SLA Remediation. The new Construction Schedule, amended HASP and previously approved (February 21, 1990) Quality Assurance Project Plan

were made part of the Contract Bid documents which were issued to the interested potential contractors.

4.4 Design Changes

The most recent survey performed by Ludgate Engineering revealed that the east bank of the Genesee River had eroded. As a result of this erosion of the east river bank, the alignment of the east dike was reevaluated. Based on the revised layout of the east bank dike and east bank riprap alignment, and revised river channel topography, new HECS-2 calculations were performed. The revised analysis indicated the need to raise the west bank dike by about 6" to 9". As the west bank dike clay placement was nearly complete, a modification to the design was issued. A new drawing (C-11) detailing the east bank dike and east bank riprap protection was issued to replace the previous design of the east bank. Both modifications were submitted to the USEPA for its review and approval.

4.5 Field Change Request Review and Approval

Field Change Request (FCR) forms were prepared by the Construction Contractor to document the proposed changes to the design, and were submitted to the Construction Manager for review. The proposed changes were reviewed by the Construction Manager and either approved or disapproved. The approved changes were then transmitted to the Engineering staff, as required, for review and approval or disapproval.

5.0 REMEDIAL ACTION

5.1 Pre-Mobilization Activities

5.1.1 Bid Packages

A. Genesee River Partial Channelization (Sta 0+00 to 22+31.59.)

The Request for Proposal package for Genesee River Partial Channelization was developed by Ebasco and submitted to Remediation Technology, Inc. (RETEC) on February 10, 1990 for their use in soliciting bids from interested potential contractors. A site visit was conducted by RETEC on February 23, 1990.

B. South Landfill Area Remediation.

The Request for Proposal package for the SLA Remediation was developed by Ebasco and issued for bids on September 19, 1990, during the site visit. As the backfilling of the SLA could not be completed in 1990, a new RFP was prepared in July, 1991.

C. West Bank Dike Extension and North End Dike Extension

The RFP for the West Bank Dike Extensions was prepared by Ebasco and was issued with the SLA package on September 19, 1990. The north end extension RFP was issued with the SLA backfill RFP on July 13, 1991.

5.1.2 Contract Activities

A. Genesee River Partial Channelization (Sta. 0+00 to Sta 22+31.59.)

Canonie Environmental (Canonie) was awarded the contract which was signed on May 21, 1990.

B. South Landfill Area Remediation.

Ebasco Services, Inc. was awarded the Contract. OHM Corp., as a subcontractor to Ebasco, signed the contract on October 8, 1990. The contract was amended on September 12, 1991 to include backfilling of the SLA.

C. West Bank Dike Extensions and North End Dike Extension

The West Bank Dike Extension (south) contract was awarded to Ebasco Services, Inc. on November 14, 1990. The North End Dike Extension contract was awarded to Ebasco Services, Inc. in September 1991. The existing contract with OHM was amended to include this work.

5.2 MOBILIZATION

5.2.1 Personnel Mobilization

A. Genesee River Partial Channelization.

Mobilization of personnel for the Genesee River Partial Channelization project commenced on June 12, 1990. See attached organization chart (Fig. 2) for project staff.

B. South Landfill Area Remediation.

Mobilization of personnel for the SLA area excavation commenced on October 15, 1990. The excavation of the SLA area was completed in November, 1990. The backfilling of the SLA could not be completed due to the onset of winter. Remobilization of the personnel for the backfilling of the SLA commenced on September 15, 1991. See attached organization chart. (Fig. 3) for project staff.

Figure 2

GENESEE RIVER PARTIAL CHANNELIZATION
ORGANIZATION CHART

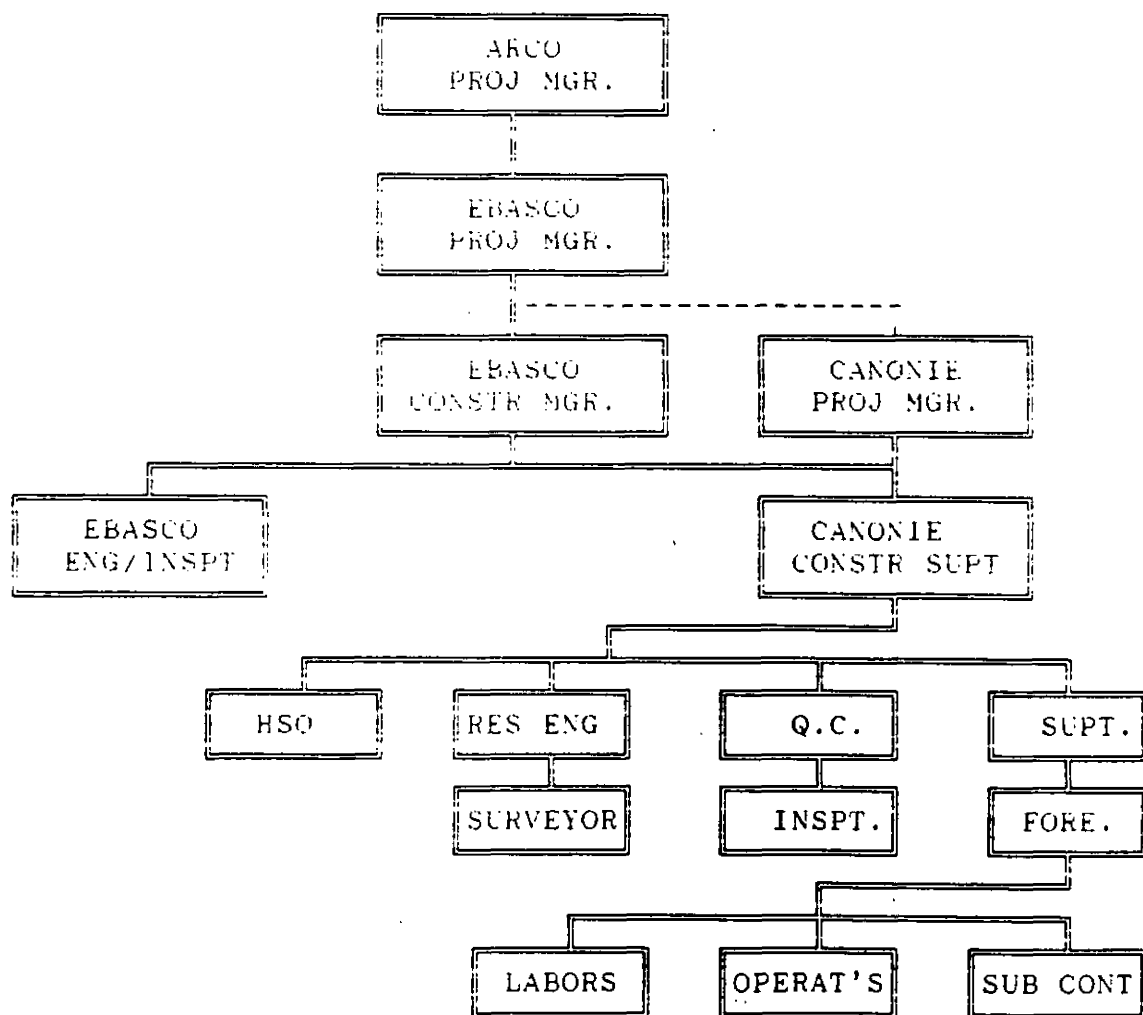
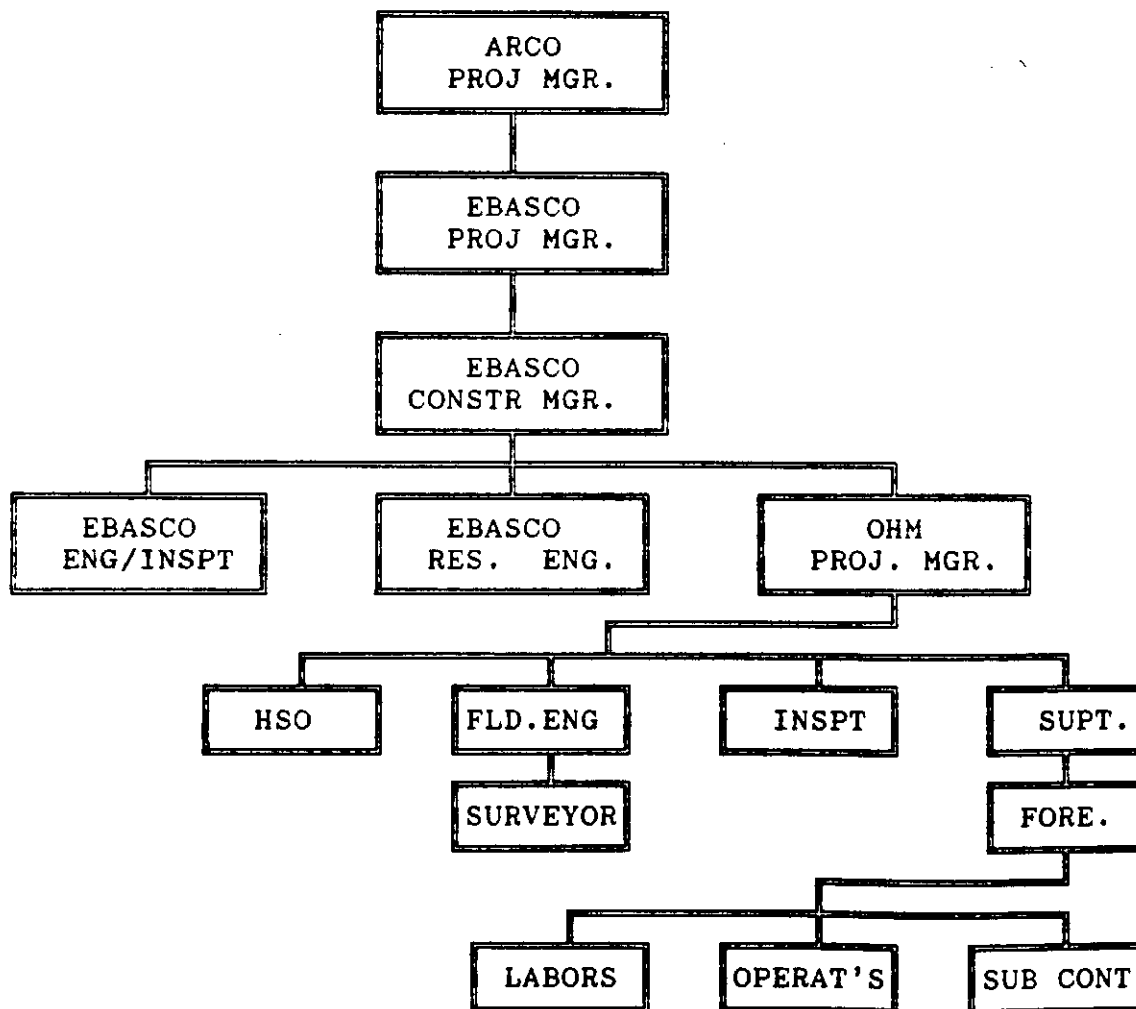


FIGURE 3

SLA REMEDIATION
AND
NORTH END AND WEST BANK DIKE EXTENSION



C. West Dike Extension.

Mobilization of personnel for the west bank dike extension commenced on November 15, 1990. Mobilization of personnel for the north end dike extension began on September 23, 1991. See attached organization chart (Fig. 3) for project staff.

5.2.2 Equipments Mobilization

A. Genesee River Partial Channelization.

Canonie started mobilization of equipment on June 13, 1990 and completed it by July 15, 1990. (See attached equipment list.)

B. South Landfill Area Remediation.

OHM Corp. started mobilization of equipment for the SLA excavation on October 12, 1990 and completed it on October 16, 1990. (See attached equipment list.) Mobilization of equipment for completion of the SLA Remediation started on September 15, 1991 and was completed September 18, 1991. (See attached equipment list.)

C. West Bank Dike Extension and North End Dike Extension.

Mobilization of equipment for the construction of the west bank dike extension was performed concurrently with mobilization for the SLA. Mobilization of equipment for the north end dike extension started on September 20, 1991 and was completed on September 23, 1991.

5.2.3 Submittals

A. Genesee River Partial Channelization (Sta. 0+00 to Sta. 22+31.59.)

The work plans and material certifications submittal schedule prepared by Canonie Environmental is attached on the following pages.

SUBMITTAL REGISTER
PARTIAL RIVER CHANNELIZATION PROJECT - SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

<u>Submittal</u>	<u>Section Number</u>	<u>Paragraph Number</u>	<u>Proposed Submittal Date</u>
Certificate of Insurance	N/A	N/A	Submitted May 25, 1990
Submittal Register - Revision 0	1300	3.1	Submitted May 30, 1990
Schedule of Values for Lump Sum Pay Items	01023	1.2.1	Submitted May 30, 1990
Draft Work Plan	01010 01201	1.2.2.2 1.2	Submitted May 31, 1990
Draft Sampling and Analysis Plan	01201 01400	1.2 1.3	Submitted May 31, 1990
Draft Site Specific Health and Safety Plan	01065	All applicable paragraphs	Submitted May 31, 1990
Draft Contractor Quality Control Management Plan	01201 01400	1.2 1.2	Submitted May 31, 1990
Draft Erosion and Sediment Control Plan	01201 01560	1.2 1.4.2	Submitted May 31, 1990
Draft Dust and Vapor Control Plan	N/A	N/A	Submitted May 31, 1990
Draft Environmental Protection Plan	01201 01560	1.2 1.4.3	Submitted May 31, 1990
Draft Seeding Plan	N/A	N/A	Submitted May 31, 1990
Draft Corrective and Emergency Contingency Plan	01201 01560	1.2 1.4	Submitted May 31, 1990
Minutes of Premobilization Meeting	01201	1.3	Submitted June 6, 1990
Revised Draft Erosion and Sediment Control Plan	01201 01560	1.2 1.4.2	Resubmitted June 8, 1990

SUBMITTAL REGISTER
PARTIAL RIVER CHANNELIZATION PROJECT - SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK
(Continued)

<u>Submittal</u>	<u>Section Number</u>	<u>Paragraph Number</u>	<u>Proposed Submittal Date</u>
Silt Fence Manufacturer's Label or Certificate of Compliance	02485	4.4	Submitted June 8, 1990
Performance Bond Equal to 100% of Contract Price	Article 19.0	19.2	Submitted June 8, 1990
Final Site-Specific Health and Safety Plan	01065	All applicable paragraphs	Submitted June 14, 1990
Trailer Plans	01510	1.2.1	Submitted June 14, 1990
Temporary Site Facilities General Layout Plan	01201 01510	1.1 1.2	Submitted June 14, 1990
Site Utilities Source Points, Permits and Layout Drawing(s)	01201 01510	1.1 1.2	Submitted June 14, 1990
Minutes of Preconstruction Meeting	01201	1.3	Submitted June 15, 1990
Fencing Subcontractor Information	01510	1.2.5	Submitted June 15, 1990
Revised Erosion and Sediment Control Plan	01201 01560	1.2 1.4.2	Submitted June 19, 1990
Geotextile Affidavit and Manufacturer's Literature	02400	2.3.3	Submitted June 21, 1990
Draft Field Change Request Procedure	01050	1.4.4	Submitted June 21, 1990
Draft Security Plan	01201 01540	1.2 1.3	Submitted June 21, 1990

SUBMITTAL REGISTER
PARTIAL RIVER CHANNELIZATION PROJECT - SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK
(Continued)

<u>Submittal</u>	<u>Section Number</u>	<u>Paragraph Number</u>	<u>Proposed Submittal Date</u>
Final Work Plan	01010 10201	1.2.2.2 1.2	Submitted June 25, 1990
Final Sampling and Analysis Plan (by EBASCO)	N/A	N/A	Submitted June 25, 1990
Final Dust and Vapor Control Plan	N/A	N/A	Submitted June 25, 1990
Final Corrective and Emergency Contingency Plan	01201 01560	1.2 1.4.3	Submitted June 25, 1990
Final Erosion and Sediment Control Plan	01201 01560	1.2 1.4.2	Submitted June 25, 1990
Final Environmental Protection Plan	01201 01560	1.2 1.4	Submitted June 25, 1990
Final Seeding Plan	N/A	N/A	Submitted June 25, 1990
Surveying Subcontractor Information	01050	1.4.1	Submitted June 27, 1990
Final Erosion and Sediment Control Plan Revisions	01201 01560	1.2 1.4.2	Submitted June 28, 1990
Final Security Plan	01201 01540	1.2 1.3	Submitted July 3, 1990
Monthly Invoice	01025	1.2.2	Submitted July 5, 1990
Update or Revision of Submittal Register	01300	3.1.2	Submitted July 5, 1990
Listing of Subcontractors	N/A	N/A	Submitted July 6, 1990

SUBMITTAL REGISTER
PARTIAL RIVER CHANNELIZATION PROJECT - SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK
(Continued)

<u>Submittal</u>	<u>Section Number</u>	<u>Paragraph Number</u>	<u>Proposed Submittal Date</u>
Preliminary Riprap Material Compliance Test Reports - Blades Quarry	02400	2.1	Submitted July 14, 1990
Final Work Plan	01010 01201	1.2.2.2 1.2	Resubmitted July 24, 1990
Final Contractor Quality Control Management Plan	01201 01406	1.2 1.2	Submitted July 24, 1990
Wetting Agent Certification of EPA Compliance	02040	2.5	Submitted July 25, 1990
Geotextile Affidavit and Manufacturer's Literature	02400	1.2.5	Resubmitted July 25, 1990
Proposed Gradation Testing Method for Riprap	QAPP	4.5.4	Submitted August 1, 1990
Pit Run Gravel Compliance Test Reports	QAPP	4.4.3	Submitted August 3, 1990
Monthly Invoices	01025	1.2.2	August 3, 1990*
Deionized Water Blank Compliance Test Reports	SAP	3.3.2	Submitted August 7, 1990
Dike Fill Compliance Test Results - Ungerman Pit	02200	4.1 6.2.1	Submitted August 7, 1990
Aggregate Surface Material Compliance Chemical Test Reports	QAPP	4.5.4	Submitted August 7, 1990
Bedding Material Compliance Test Reports	02400 QAPP	2.2 4.4	Submitted August 14, 1990
Dike Fill Compliance Test Results - Babbit Pit	02200	4.1 6.2.1	Submitted August 23, 1990
Total Petroleum Hydrocarbon Results for Key Trench Fill	02260 SAP	1.1 3.1	Submitted August 23, 1990
VOA, SVOA, and Metal Results for Key Trench Fill SAP	SAP	3.1.2	Submitted October 9, 1990

SUBMITTAL REGISTER
PARTIAL RIVER CHANNELIZATION PROJECT - SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK
(Continued)

<u>Submittal</u>	<u>Section Number</u>	<u>Paragraph Number</u>	<u>Proposed Submittal Date</u>
Riprap Material Compliance Test Reports - General Crushed Stone Quarry	02400	2.1	Submitted August 27, 1990
Monthly Invoices	01025	1.2.2	Sept. 6, 1990 *
Update or Revision of Submittal Register	01300	3.1.2	Submitted Sept. 10, 1990 *
Riprap Gradation Results	QAPP	4.5.4	Submitted Sept. 13, 1990
Seed, Fertilizer, and Hydro Mulch Information	02485	3.1, 3.2	Submitted Sept. 19, 1990
Aggregate Surface Material Compliance Geotechnical Test Reports	02546	3.2	Sept. 28, 1990
Monthly Invoices	01025	1.2.2	Oct. 3, 1990 *
Update or Revision of Submittal Register	01300	3.1.2	Oct. 9, 1990
Results of Cornell Univ. Topsoil Analysis and Fertilizer Information	02485	3.1.2	Oct. 10, 1990
Lime Information	02485	3.1.2	Oct. 10, 1990
Monthly Invoices	01025	1.2.2	Nov. 3, 1990 *
Update or Revision of Submittal Register	01300	3.1.2	Nov. 3, 1990
Surveyor's and Engineer's Certification of Compliance or Non-compliance	01050	1.4.2	Dec. 3, 1990
Record Documents	01055 01720	3.4	Dec. 3, 1990 *

SUBMITTAL REGISTER
PARTIAL RIVER CHANNELIZATION PROJECT - SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK
(Continued)

<u>Submittal</u>	<u>Section Number</u>	<u>Paragraph Number</u>	<u>Proposed Submittal Date</u>
Closeout Safety Report	01065	1.3.6, 1.20.6	Dec. 3, 1990 *
Monthly Invoices	01025	1.2.2	Dec. 3, 1990 *
Evidence of Final Payment for Utility Services	01510	3.16	Dec. 3, 1990 *
Minutes of Progress Meetings	01202	1.3	3 days after meeting
Weekly Safety Reports	01065	1.3.5, 1.20.5	Each Wednesday
* Environmental Test Results of Soil and Water Samples	02260	1.3	Upon receipt of final labora- tory data
Evidence of Ability to Wear Respirator	01065	1.3.7	Prior to employee working on-site

NOTE: * Denotes submittals which will be reviewed and approved by the
Resident Engineer.

EQUIPMENT LIST
GENESEE RIVER PARTIAL CHANNELIZATION

<u>Type</u>	<u>Make/Size</u>	<u>Number</u>
Dozer	Cat. D-6H LGP	1
Dozer	Int. TD-5	1
Compactor	Cat. 815B (sheep foot)	1
Compactor	BOS 770 (smoothdrum)	1
Track Loader	Cat 963 2.5 c.y.	1
Wheel Loader	Fiat 60 2.0 c.y.	1
Motor Grader	Cat. 12G	1
Excavators	Cat. 235c 3.0 c.y.	2
Water Truck	Ford F-8 5000 gal	1
Water Truck	OSH KOSH 8000 gal	1
Wood Chipper	Beaver 440	1
Mulcher	FMC 880	1
Pick-up	Chev. 3/4 Ton	3
Car	Pontiac 4 door	3
Storage Van	8'x40'	1
Storage Van	8'x20'	1
Office Trailer	12'x60'	3
Office Trailer	12'x48'	2
Office Trailer	10'x30'	1
Office Trailer	8'x24'	1
Misc. Small tools		1 lot.

EQUIPMENT LIST
SLA REMEDIATION

EXCAVATION

<u>Type</u>	<u>Make/Size</u>	<u>Number</u>
Dozer	Komatsu 600 DH	1
Dozer	Komatsu 300 DP	1
Trucks	Komatsu 20 cy off-road	2
Excavator	Komatsu 400E 2.5 cy	1
Excavator	Cat. 215LC 1.5 cy	1
Water Truck	Ford F-8 5000 gal	1
Decon Trailer	8'x40'	1
Pick-up	3/4 Ton	2
Car	4 door	3
Compactor	Cat 815B (sheepfoot)	1
Misc. Construction tools		1 lot
Utilized Office & Support facilities already on site.		

BACKFILL

<u>Type</u>	<u>Make/Size</u>	<u>Number</u>
Dozer	Int. TD-5	1
Dozer	Cat. D-4H LGP	1
Compactor	Rayco 460 (sheepfoot)	1
Water Truck	Chev. 3500 gal.	1
Mulcher	HayChopper	1
Pick-up	1 Ton	1
Car	4 door	1
Van	9 passenger	1
Misc. Construction tools		1 lot
Utilized Office & Support facilities already on site.		

EQUIPMENT LIST
WEST BANK DIKE EXTENSION
AND
NORTH END DIKE EXTENSION

WEST BANK DIKE EXTENSION

<u>Type</u>	<u>Make/Size</u>	<u>Number</u>
Track Loader	Dresser 2.0 c.y	1
Wheel Loader	Cat. 988 3.5 c.y.	1
Dozer	Komatsu 600 DH	1
Compactor	Cat. 815 (sheepfoot)	1
Compactor	Rayco (Smoothdrum)	1
Water Truck	Ford F-8 5000 GAL	1
Excavator	Komatsu 400E gal. 2.5 cy	1
Excavator	Cat. 215 LC 1.5 cy	1
Misc. Construction tools		1 lot
Used Office & Support facilities already on site.		

NORTH END DIKE EXTENSION

<u>Type</u>	<u>Make/Size</u>	<u>Number</u>
Excavator	Cat. 225 B LC 2.0 c.y.	1
Backhoe Loader	Case 580 3/4 c.y.	1
Dozer	Cat. D-4H LGP	1
Compactor	BOS 780 (sheepfoot)	1
Misc. Construction tools		1 lot
Used Office & Supply facilities already on-site.		

B. South Landfill Area Remediation.

All work on the SLA was performed by implementation of duplicate work plans and approved material certifications submittals previously prepared by Canonie Environmental and approved by Ebasco Services, Inc.

C. West Bank Dike Extension and North End Dike Extension.

All work on the south and north dike extensions was performed by implementation of appropriate work plans and approved material certification submittals previously prepared by Canonie Environmental and approved by Ebasco Services, Inc.

5.3 Construction Activities

5.3.1 Genesee River Partial Channelization

5.3.1.1 Clearing and Grubbing

Clearing for the west bank dike started on July 24, 1990 and was completed on July 31, 1990. Grubbing of the west bank dike foundation began on July 30, 1990 and was completed August 6, 1990. Clearing for the east bank dike started on August 28, 1990 and was completed on September 25, 1990. (See Figure 4). Grubbing of the east bank dike foundation was commenced on September 18, 1990, and completed on September 28, 1990.

Trees and underbrush were cut with chain saws to near ground level. Limbs and trunks were then chipped with a Beaver 440 wood chipper. The chips were then blended with top soil and stockpiled. Grubbing of stumps and roots was accomplished by using a Caterpillar (Cat.) 235c excavator and a Caterpillar D6H LGP Dozer. Items removed were stockpiled at the north end of the CELA.



DIKE FOUNDATION CLEARING
WEST DIKE STATION 3+50



DIKE FOUNDATION CLEARING
WEST DIKE STATION 6+00



DIKE FOUNDATION CLEARING
WEST DIKE 9+00

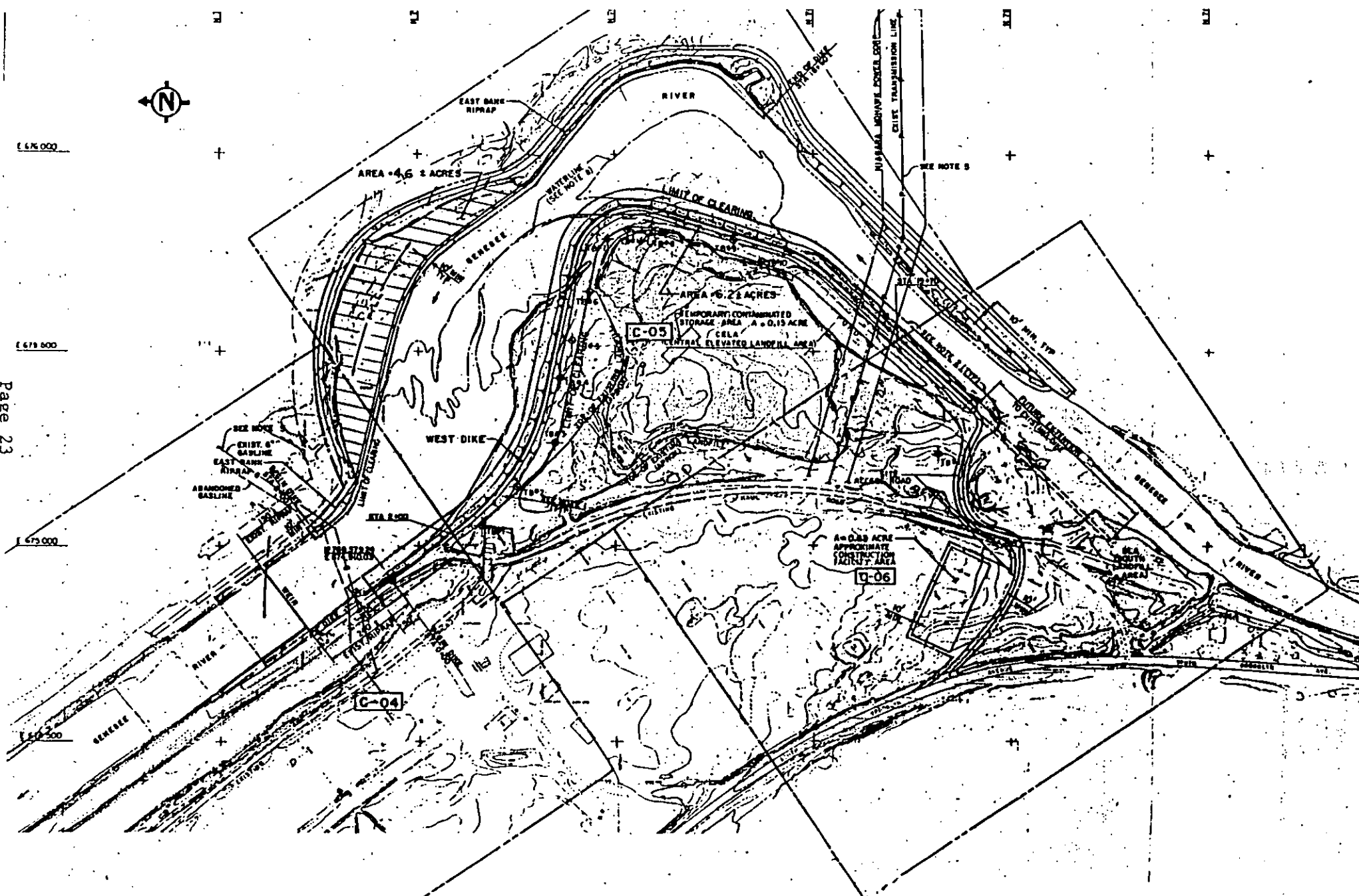


E 676 000

E 678 000

E 679 000

E 680 000



CLEARING LIMITS
FIGURE-4

5.3.1.2 Excavation

A key trench was excavated from Sta. 1+30 to Sta. 16+50 at the center line of the west bank dike. The trench was excavated with a Cat. 235c excavator. Excavated material was monitored in accordance with the requirements of Section 02260 of the Specification. Suitable excavated material was allowed to dry and backfilled into the trench. Non-suitable material was placed in the contaminated material storage area on the CELA. The dike fill material, pit run gravel or clay, was obtained from an approved source and was delivered to the point of placement by over-the-road dump trucks. The material was pushed into the excavated trench with a Cat. D-6H LGP dozer, and compacted with a BOS 770 compactor. Excavation of the key trench started on August 7, 1990 and was completed on August 22, 1990.

5.3.1.3 Toe Trench Excavation

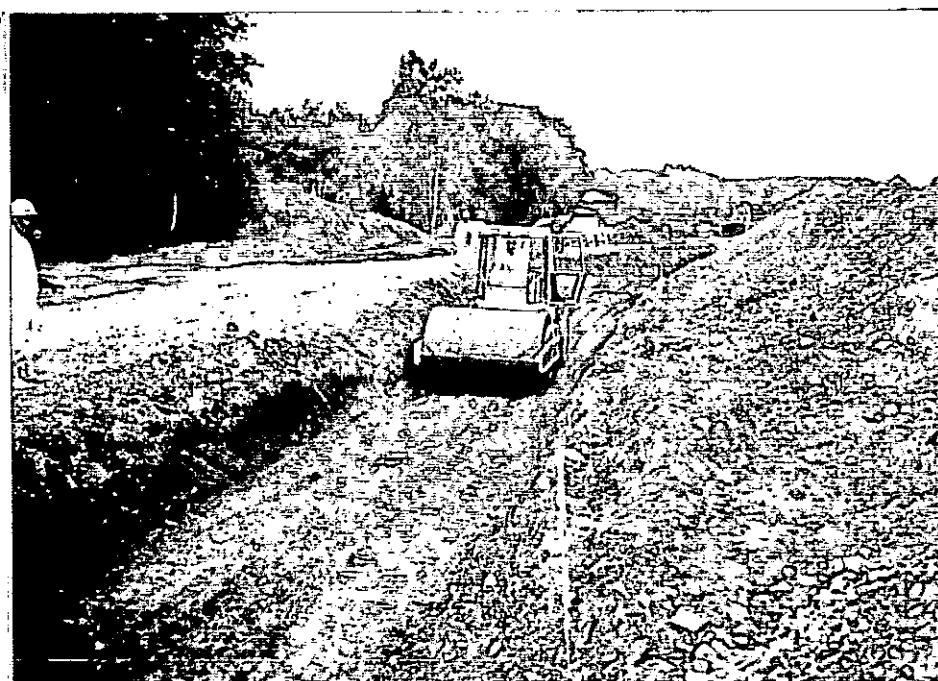
A toe trench was excavated along the river side toe of the west and east bank dikes, and was backfilled with the bedding and riprap material. Of a total 3,350 linear feet (LF) of toe trench, 2,400 LF was located in the free standing river water. The trench was excavated by a Cat. 235c excavator, and the excavated material was handled in the same manner as the key trench material. The west bank toe trench excavation started August 10, 1990 and was completed September 14, 1990. The east bank toe trench excavation started September 18, 1990 and was completed November 8, 1990.



KEY TRENCH EXCAVATION
WEST DIKE STATION 16+00



KEY TRENCH EXCAVATION
WEST DIKE STATION 4+50
TO STATION 7+50



BACKFILLING KEY TRENCH
WEST DIKE



TOE TRENCH
WEST DIKE STATION 9+75



TOE TRENCH
WEST DIKE STATION 16+50

5.3.1.4 Placement of Compacted Material

During construction of the core of the dike two types of materials were utilized.

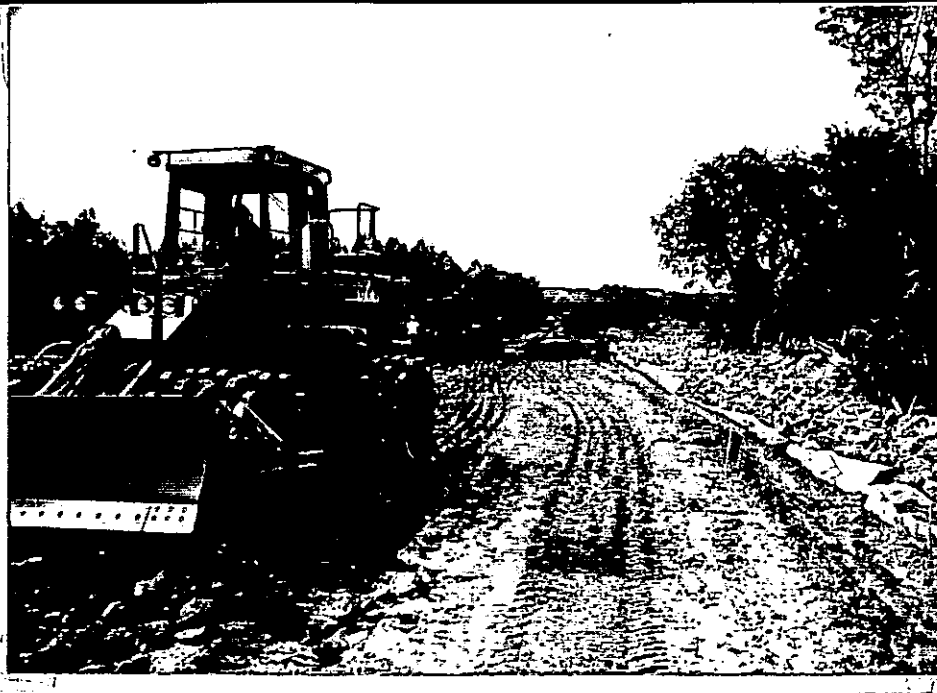
1. Pit Run Gravels

Pit run gravels were used as backfill material in the areas where standing water was encountered during excavation and backfill. This material was pushed into the fill area with a Cat. D-6H LGP dozer to at least 6" above the free standing water level. A smooth drum BOS 770 compactor was used to compact the material once the backfill was at least 6" above the water level.

2. Clay

Clay from an approved off-site source was used to construct the dike core above free standing water. Clay was transported to the point of placement by over-the-road dump trucks. The clay was spread into uniform lifts with a Cat. D-6H LGP dozer. The loose lifts were then compacted by Cat. 815b to achieve the compaction requirements. The completed layer was sealed each night with a smooth drum BOS 770 compactor. Once the clay was placed to the design elevations, the slopes were shaped with a 235c excavator to the dimensions shown on the drawings.

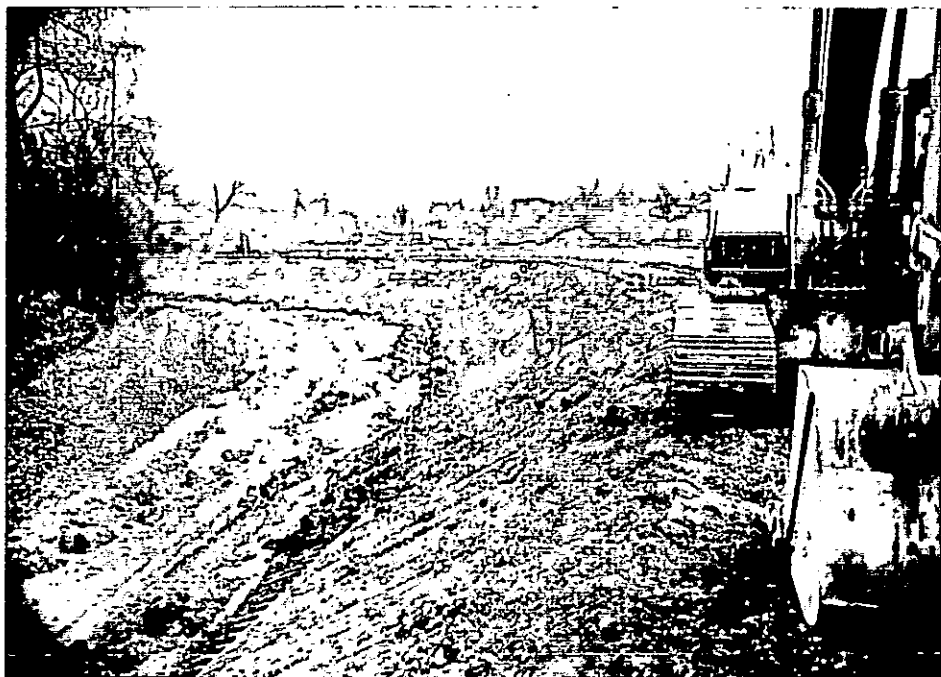
Placement of clay started on August 6, 1990 on the west bank dike and was completed on October 12, 1990. The east bank dike was constructed during high water levels in the river hence no clay was utilized in it's construction.



CLAY PLACEMENT
WEST DIKE STATION 9+50



CLAY PLACEMENT
WEST DIKE STATION 14+00



CLAY PLACEMENT
WEST DIKE STATION 15+00

3. Common Fill

Common fill was used behind the east bank dike, from the east dike Sta. 2+00 to Sta. 10+25. This material came from 3 sources: 1) channel widening at the south end of the east bank dike, 2) toe trench excavation along the east bank dike, and 3) imported from an approved source. All of this material was transported to the fill area by over-the-road dump trucks and dumped at the point of placement. The Cat. D-6H LGP or Int. TD-5 dozers pushed the material into place and the Cat. 815b (sheepfoot) was utilized to compact the material. Placement of common fill started on October 12, 1990, and was completed on November 7, 1990.

5.3.1.5 Placement of Slope Protection Materials

The river side slope of the dikes (east and west) required placement of geotextile fabric, bedding stone and riprap.

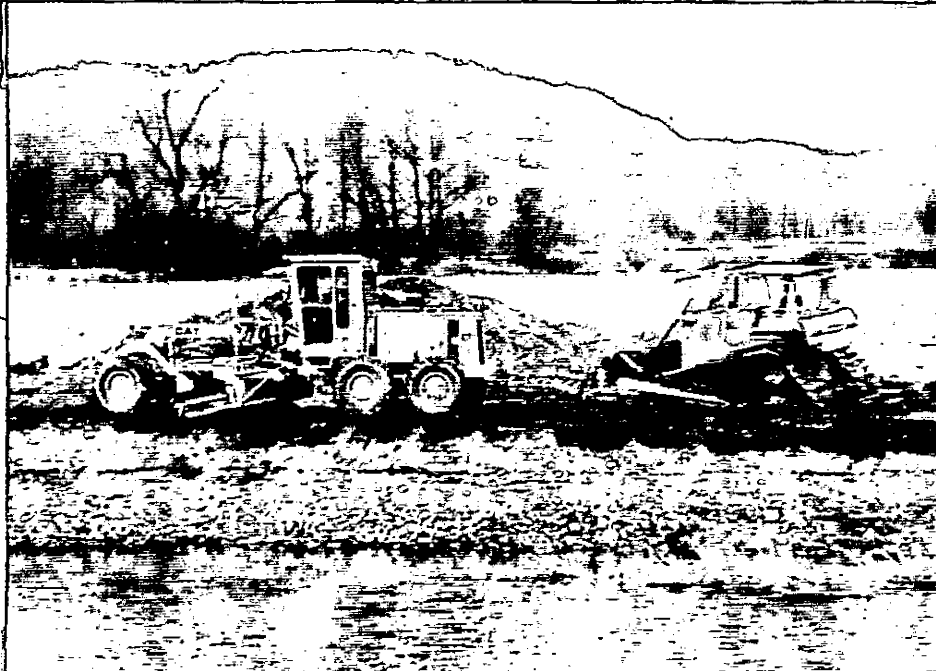
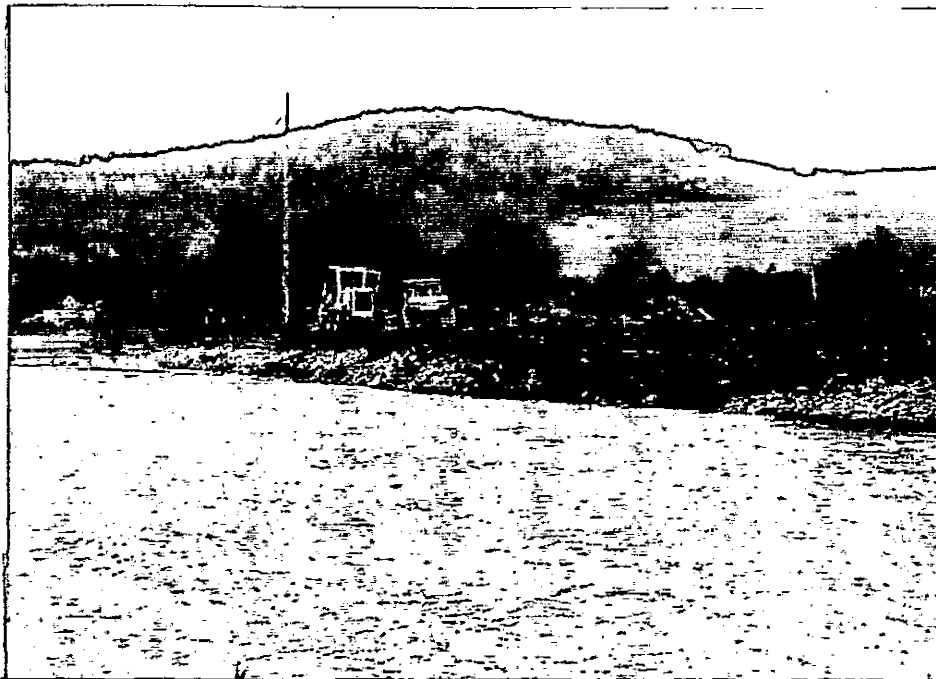
1. Geotextile Fabric

Geotextile fabric was placed on the river side slope of both dike^s as the first component of the slope protection. The placement of the fabric in the toe trench for about 2400 linear feet was done under free standing water. The lap seams were prepared by hog rings. The fabric was then stretched over the water surface and bedding stone was placed on the fabric using a CAT 235LC. The excess fabric was then rolled out to cover the slope.

2. Bedding Stone

After completion of placement of the geotextile fabric, bedding stone placement started. A Cat 235 LC excavator was used to place and shape the bedding stone to the design thickness.

The bedding stone was imported from an approved source.



3. Riprap

Riprap was the third element of slope protection and was placed with a Cat 235LC excavator to the design thickness. Rip rap was imported from an approved source. The riprap was transported to the site with over-the-road trucks where it was unloaded in the general area. It was then delivered to the backhoes with the track loader Cat. 963 and wheel loader Cat. 988.

Placement of slope protection on the west bank started August 12, 1990 and was completed September 20, 1990. Placement of the slope protection on the east bank started September 21, 1990 and was completed November 10, 1990.

5.3.1.6 Placement of Road Aggregates

The stone aggregates material was placed on the completed dike core to provide roadway surface. The aggregates material was imported from an approved source and was transported to the point of placement by over-the-road dump trucks, spread by Cat 12G motor grader and compacted by BOS 770 smooth drum compactor.

5.3.1.7 Seeding and Mulching

The landfill side slope of the west bank and portion of the east bank dike area were seeded in 1990. The remaining portion of the east bank dike construction area was seeded in June, 1991. The landfill side slope of the west bank dike extension and north end dike extension were seeded in October, 1991. All the materials utilized were from the same sources as previously approved in 1990.



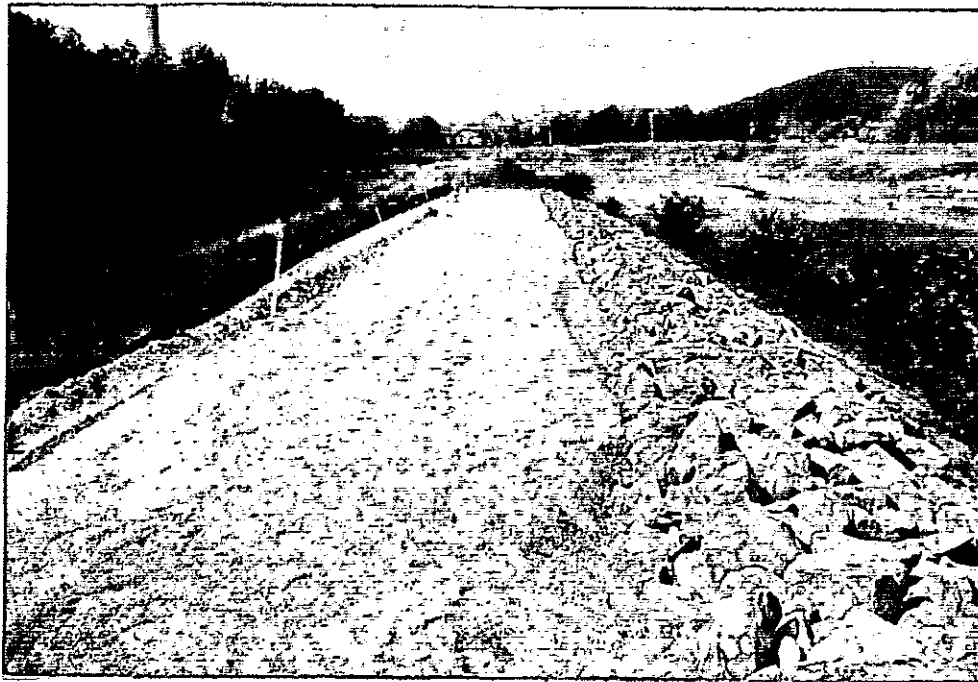
WEST DIKE STATION 14+00
PLACEMENT OF RIPRAP,
BEDDING AND GEOTEXTILE
FABRIC



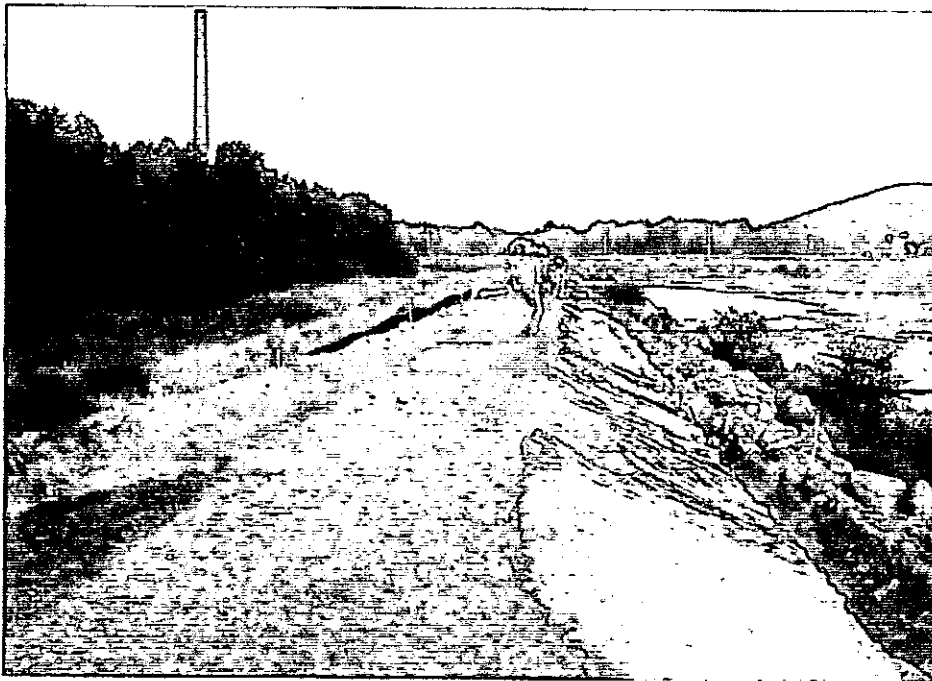
WEST DIKE STATION 13+50
PLACEMENT OF RIPRAP



WEST DIKE STATION 1+50
PLACEMENT OF RIPRAP



NORTH END DIKE EXTENSION
PLACEMENT OF
SLOPE PROTECTION



NORTH END DIKE
PLACEMENT OF
SLOPE PROTECTION



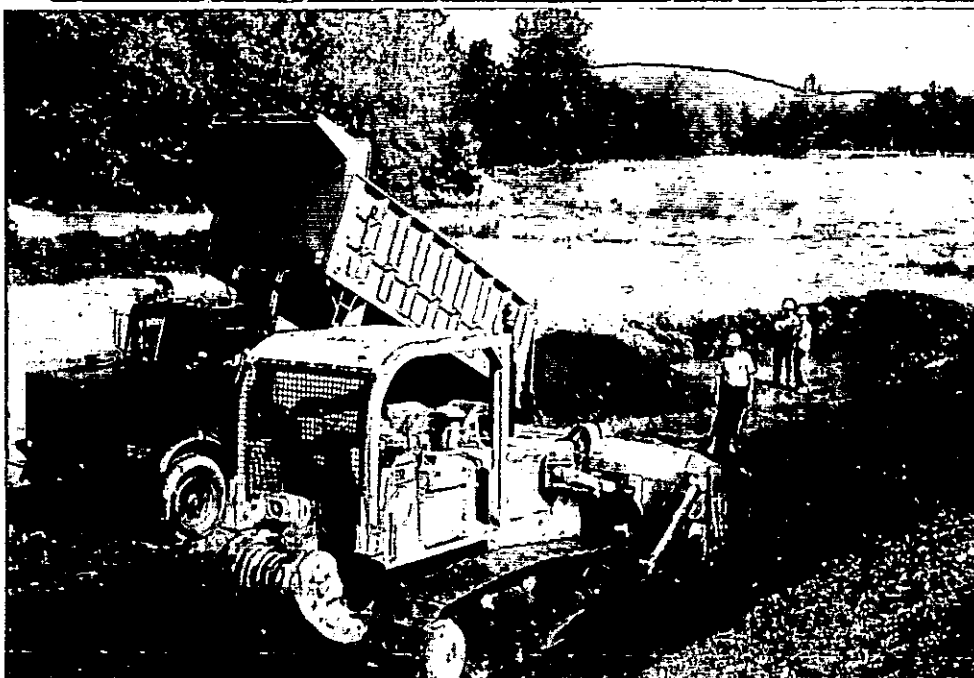
WEST BANK DIKE EXTENSION
(SOUTH END)
CLAY PLACEMENT



SOUTH LANDFILL
AREA EXCAVATION



SLA EXCAVATION
SOIL SAMPLING



SLA BACKFILL
CLAY PLACEMENT

5.3.2

West Bank Dike Extension and North End Dike Extension

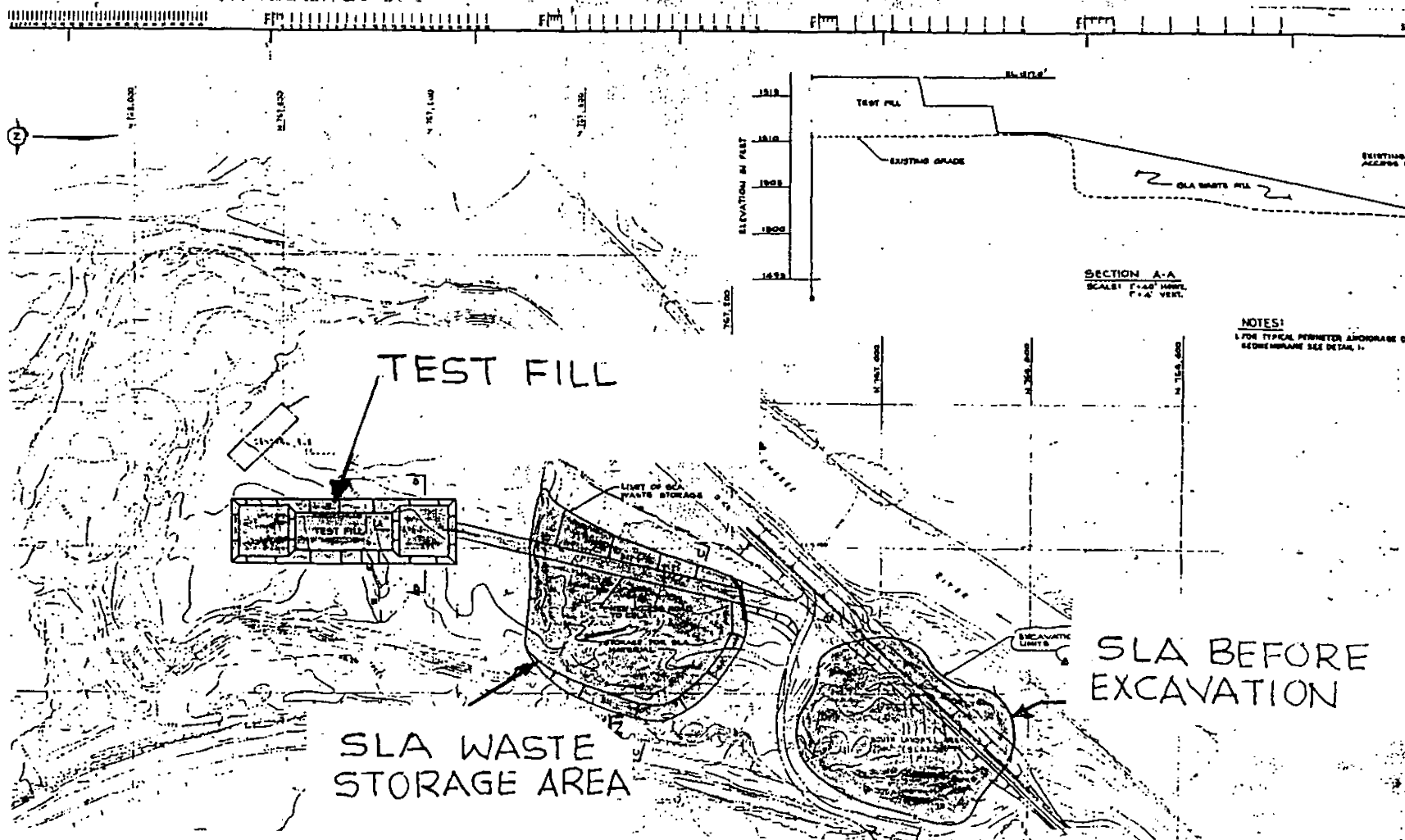
The materials and construction methods utilized during the construction of the west bank dike and north end dike were the same as those used by Canonic Environmental during the construction of the partial river channelization project. OHM Corp. started the construction of the west bank dike extension on November 14, 1990 and completed it on December 10, 1990. The north end dike extension construction was started on September 23, 1991 and was completed on October 2, 1991) (See attached Fig. 4).

5.3.3

South Landfill Area Remediation (SLA)

The SLA remediation consisted of excavation of the waste, sampling and testing of the bottom of the SLA, and backfilling and seeding the area. OHM Corp., as a subcontractor to Ebasco Services, Inc., started to remediate the SLA on October 15, 1990 and completed the excavation on November 12, 1990. Most of the excavated material was placed adjacent to the southern edge of the CELA. A test fill on top of the CELA was constructed utilizing the remaining waste material from the SLA excavation (Figure 5). Excavation and relocation of the SLA was performed under Level C work environment (i.e. protection level). Excavation was performed with a Komatsu excavator and compacted by Komatsu 600 DH dozer and Komatsu 300D dozer after spreading the material in uniform layers. Backfilling the SLA could not be completed in 1990 due to the onset of winter.

The SLA backfilling was performed by OHM Corp. as a subcontractor to Ebasco Services, Inc. OHM Corp. started the backfilling of the SLA on September 16, 1991 and completed it on October 2, 1991. The fill material was transported by over-the-road dump trucks from an approved off-site source to the point of placement. A CAT-D-4H and Int. TD-5 spread the material in even lifts and a Rayco (Sheepfoot) compactor was used to compact the lifts. The specifications, drawings and project plans approved September 26, 1990 were used during the South Landfill Area Remediation.



SLA EXCAVATION
WASTE STORAGE
AREA AND TEST FILL
FIGURE-6

5.3.4 Material Handling

5.3.4.1 Contaminated Material

During grubbing of the west bank dike foundation, key trench excavation and the trench excavation, the material was monitored in accordance with the requirements Section 02260 of the specification . As contaminated material was encountered during the key trench excavation a "local" exclusion zone (EZ) was set-up. The material was excavated and transported to the temporary contaminated material storage area on the CELA and covered with clean soil. Upon completion of the removal of contaminated material, the equipment was decontaminated and the EZ limits were lifted.

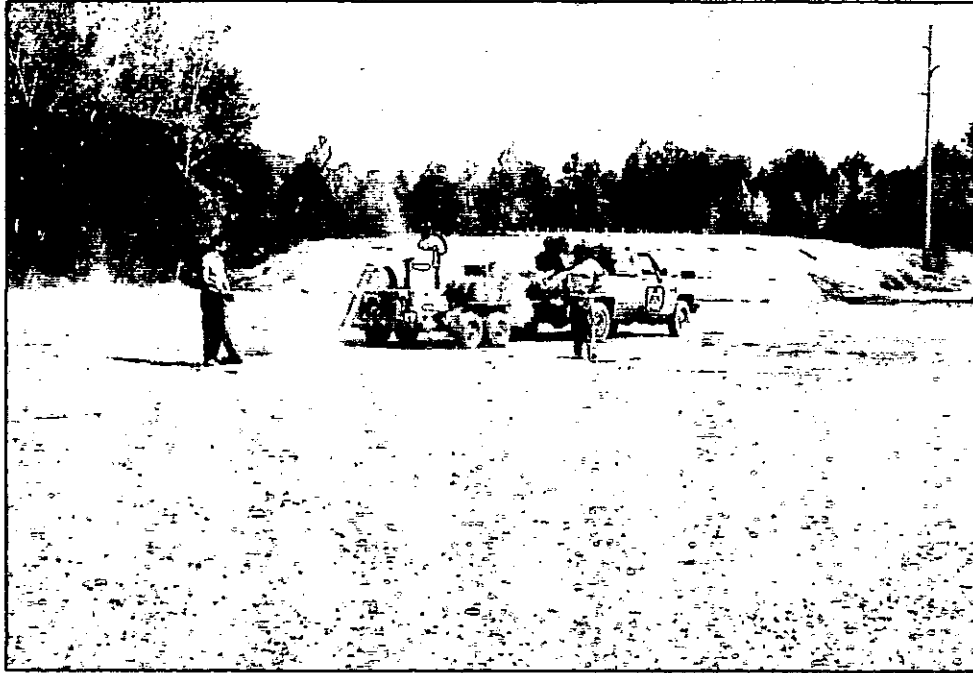
5.3.4.2 Non-contaminated Material

Material encountered during excavation which was non-contaminated but not suitable for backfill in the trench was removed and stockpiled on site for later use. This material is organic in nature and may be used for final closure of the landfill.

5.4 Demobilization

Canonie Environmental demobilized their equipment and personnel starting on November 12, 1990 and completed it on December 5, 1990. OHM Corp. started to demobilize on December 7, 1990, and completed it on December 20, 1990. During the 1991 construction season OHM Corp. started to demobilize on October 1, 1991 and completed demobilization on October 4, 1991.

SOUTH LANDFILL AREA
SEEDING AND MULCHING



6.0 QUALITY ASSURANCE/QUALITY CONTROL

6.1 Material Certifications

The Contractor was required to get approval of the source for off-site materials used in the construction of the dike and SLA remediation. During the construction of the west bank dike from station 0+00 to station 22+31.59 and east bank dike, Canonie Environmental selected the sources for clay, riprap, bedding stone, roadway aggregate, pit run gravel and geotextile fabrics. The samples were collected and tested in accordance with the requirements of the Contract Documents dated February, 1990. The results were reviewed by Canonie Environmental, before submitting to the Construction Manager, to ensure that the results meet or exceed the requirements of the specifications. The same sources of materials were used in the construction of the north end dike and west bank dike extension (south). The test results are attached to the report as Appendix A.

6.2 Daily and Inspection Reports

During the construction of the dike the Contractor prepared Inspection Reports documenting the construction quality of each and every component of the dike. The Inspection Reports are attached to the report as Appendix B.

6.3 Chemical Sampling and Analysis

6.3.1 SLA Remediation

The Contractor excavated the SLA area to the limits indicated on the drawings and/or determined by the requirements of the specifications (Nov. 1990). Upon reaching the bottom of the waste, the Contractor collected soil samples for Indicator Compounds analysis. Upon meeting the Indicator Compounds criteria, soil samples were collected for analysis for chemical compounds identified in ROD. The full data packages were submitted to the USEPA on March 14, 1991 for review and approval. The results of the analyses are attached as Appendix C.

6.3.2 Dike Construction

During key trench excavation for the dike some contaminated material was encountered. The excavated material was monitored, sampled and analyzed for Total Petroleum Hydrocarbons. The analytical results showed that the material was contaminated and not waste. The results of analysis are attached as Appendix D. Also, the Contractor (Canonie) collected three samples from the alignment of the dike from station 0+00 to station 22+31.59 for chemical analysis. The analytical results are attached to the report as Appendix D.

6.4 Final Inspection

Upon 95% completion of the construction of the west bank dike from station 0+00 to station 22+31.59 and the east bank, the USEPA was notified to schedule the Pre-Final Inspection. A check list was prepared and used during the Pre-Final Inspection. The 95% completion notification and check-list are attached as Appendix E.

Upon 95% completion of the SLA excavation and the construction of the dike from station 22+31.59 to 27+16.59, the USEPA was notified to schedule the Pre-Final Inspection. A check-list was prepared and used to identify corrective actions required as a result of the inspection. The letter and inspection checklist are attached as Appendix E.

Upon 95% completion of the construction of the north end dike and SLA area backfilling, the USEPA was notified to schedule the Pre-Final Inspection. A check-list used during the Inspection and letter to USEPA are attached as part of Appendix E.

A final inspection of the dike and SLA remediation was performed on October 3, 1991 and all parties found the Project acceptable.

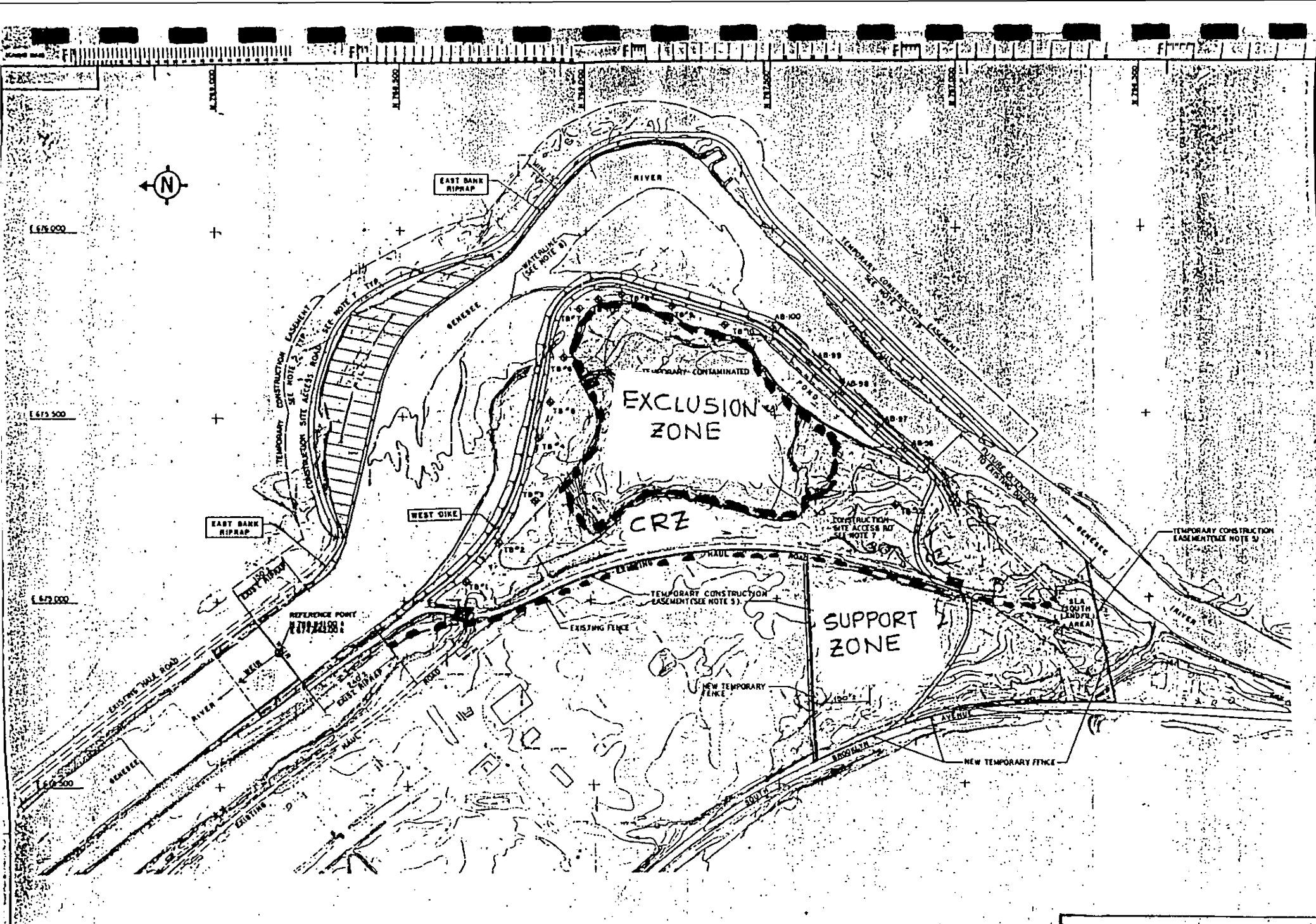
7.0 HEALTH AND SAFETY PROGRAM

7.1 Personnel Health & Safety Qualifications

Operations at the Sinclair Refinery Site were conducted under provisions of both the Ebasco Health and Safety Plan and the Canonie Environmental Health and Safety Plan. In the case of Canonie and OHM personnel, both organizations certified that the site assigned personnel had been found qualified by way of having completed the required training and medical surveillance programs defined in 29 CFR 1910.120. Likewise, all Ebasco personnel assigned to the Sinclair Refinery Site participated in the Ebasco Health and Safety training program as well as the Medical Surveillance program.

7.2 Site Work Zones

The work conducted on this project involved operations on both the east and west banks of the Genesee River. Operations on the east bank did not involve hazardous materials and thus were not included in the contamination control zonation used for the west bank. The west bank was divided into three basic zones. These zones included the Exclusion Zone (EZ) consisting primarily of the CELA, the Contamination Reduction Zone (CRZ) consisting of the area surrounding the CELA and east of the existing haul road, and the Support Zone located at the southern end of the site between the existing haul road and South Brooklyn Avenue. The purpose of these zones was to control the spread of contamination and to assure the safety of site personnel.



WORK ZONES

FIGURE-7

7.3 Work Level Requirements

The project health and safety plans established the initial levels of personal protection for the following site tasks in Table 2.

<u>Task</u>	<u>Initial Level of Protection</u>
Fence Installation	D
Surveying Operations	D
Clearing & Grubbing	D
Sampling of Contaminated Materials	C
Excavation of Contaminated Materials	C
Waste Transfer & Disposal	C
West Bank Dike Construction	D

As noted, the table established the INITIAL level of protection but deferred to the monitoring of site conditions and the action levels presented in the Health and Safety Plan to establish the appropriate protective ensembles. As a result, most operations required little in the way of hazardous waste site protective gear.

7.4 Decontamination Activities

The decontamination activities employed fall into two broad categories; personnel decon, and equipment decon.

In terms of personnel decon, impervious boots and gloves were washed and rinsed and any protective clothing and respirators (when worn) were logged prior to entering into the support zone.

Equipment decon is further subdivided into two sub-sets. These sub-sets include: heavy equipment (excavators and trucks) which were subject to steam/pressure wash cleaning at a decon pad; and small tools or hand held equipment which were also subject to surface cleaning prior to entry into the support zone.

As part of "decontamination", site personnel also practiced contamination avoidance to the extent feasible. These actions included: restricting access to contaminated areas to only that necessary

to accomplish the task; avoidance of direct contact with contaminated materials where possible; and minimizing exposure pathways.

7.5 Air Monitoring

Project health and safety plans established real-time air monitoring protocols designed to protect both site personnel and the local population from excessive exposure as a result of site operation.

In terms of the site personnel, the action to preclude exposure involved the utilization of personal protective equipment while mechanisms for the protection of the local population involved vapor/dust suppression and suspension of site operation if necessary.

Site records indicate that the air monitoring resulted in only limited use of personal protective equipment (mostly protective clothing to preclude direct contact) was employed. Real-time data indicates that there was no migration of airborne contamination resulting from site operations.

7.6 Summary of Report

This project involved 36,026 manhours of field work which resulted in no lost time accidents and only a single non-reportable case involving a twisted ankle in a clean work area (east bank).

Better than 85 percent of the work (30,874 hours) was done as "Clean" requiring no extensive protective equipment. Approximately 13 percent of the hours (4,788 hours) involved level "D" protective gear and approximately 1 percent (364 hours) required Level "C" gear.

Total Manhours Worked	36,026 hours
Lost Time Injuries	0
Reportable Injuries (first aid)	1

Level of Protection

"Clean"	30,874 hours
Level D	4,788 hours
Level C	364 hours

APPENDIX A

- o ALTERNATE RIPRAP MATERIAL TESTING RESULTS
- o UNGERMAN BORROW DIKE FILL MATERIAL TESTING RESULTS
- o SECOND DIKE FILL BORROW MATERIAL TESTING RESULTS
- o BEDDING STONE MATERIAL TESTING RESULTS
- o PIT RUN MATERIAL TESTING RESULTS
- o ROADWAY AGGREGATE MATERIAL TESTING RESULTS
- o GEOTEXTILE FABRIC CERTIFICATION
- o FERTILIZER, LIME AND SEED CERTIFICATION
- o TOP SOIL ANALYSIS RESULTS

Canonie Environmental

August 27, 1990

RECEIVED

AUG 28 1990

THOMAS GRANGER
EBASCO SERVICES INC.

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406

Phone: 215-337-2331
Fax: 215-337-0560
88-093

K. Fitzgerald
V. Patel
D-6
CHRON File

Transmittal
Geotechnical and Chemical Results for Alternate Riprap Material
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Canonie Environmental Services Corp. (Canonie) herein submits the following geotechnical and chemical data for an alternate riprap material. The alternate riprap source is the General Crushed Stone Company Quarry located in Honeoye, New York. Canonie has proceeded in good faith to locate this alternate riprap source and to conduct the testing while we are waiting for a response to our August 7, 1990 letter to you.

All testing was performed in accordance with Section 4.4 of the Quality Assurance Project Plan. The attached data includes:

Geotechnical Testing

General Crushed Stone Quarry:

Gradation Test
Specific Gravity
Magnesium Sulfate Soundness
Freeze Thaw

Page

A-01
A-02
A-02
In Progress (see attached
letter)

Chemical Testing

General Crushed Stone Quarry:

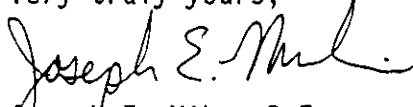
	<u>Page</u>
Chain-of-Custody	A-03 and A-04
Volatile Organic Analysis	A-05 and A-06
Semi-Volatile Organic Analysis	A-07 and A-08
Priority Pollutant Metals	A-09 and A-10
Total Cyanide	A-11 and A-12
pH	A-13 and A-14
Polychlorinated Biphenyls and Pesticides	A-15 and A-16
Dioxin (2,3,7,8-TCDD)	A-17
Total Phenol	A-18

Also attached is a letter from General Crushed Stone Company summarizing their material testing results from 1966 to 1989. This information is provided for your reference and also as interim data for the freeze-thaw test results which are in progress and will be completed about September 10, 1990. This historical data, along with the attached testing results, shows that the alternate riprap source meets the material specifications outlined in Part 2.2 of Section 02400. Canonie requests EBASCO Environmental's (EBASCO's) acceptance of this material.

The General Crushed Stone Quarry riprap will be provided to Atlantic Richfield Company (ARCO) at an additional cost. A Field Change Request is submitted herewith for supplying this alternative material, because the original source met the ASTM C88/C33 requirement yet was not accepted. EBASCO has also requested a magnesium soundness loss of less than 10 percent for 10 cycles which is in excess of the contract documents.

We request your prompt attention on this issue.

Very truly yours,



Joseph E. Mihm, P.E.
Project Manager

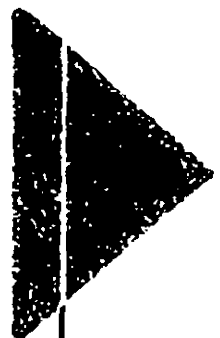
JEM/pg

Attachment

cc: Chris Ramachandra, EBASCO
Gary Stiles, EBASCO

THE GENERAL CRUSHED STONE COMPANY

A Subsidiary of KOPPERS COMPANY, INC.



EASTON, PENNSYLVANIA 18042-0231

P.O. Box 151

Honeoye Falls, New York 14472

Telephone: 716-624-3800

August 20, 1990

Revised:

Weights for test Rip-Rap pile, for Canonic Environmental's Wellsville job.

1) 180	31) 80	61) 160	91) 80	
2) 140	32) 180	62) 300	92) 60	
3) 400	33) 320	63) 300	93) 80	
4) 400	34) 100	64) 80	94) 60	
5) 300	35) 100	65) 100	95) 100	
6) 100	36) 200	66) 40	96) 60	
7) 80	37) 100	67) 120	97) 100	
8) 220	38) 80	68) 220	98) 80	
9) 80	39) 180	69) 400	99) 80	
10) 160	40) 120	70) 280	100) 80	
11) 280	41) 260	71) 400	101) 80	
12) 340	42) 200	72) 240	102) 80	
13) 60	43) 80	73) 320	103) 380	
14) 200	44) 180	74) 220	104) 280	
15) 60	45) 120	75) 120	105) 220	
16) 180	46) 120	76) 120	106) 160	
17) 240	47) 100	77) 40	107) 260	
18) 60	48) 140	78) 100	108) 300	
19) 220	49) 80	79) 400		
20) 140	50) 160	80) 80		
21) 340	51) 100	81) 180		
22) 40	52) 320	82) 120		
23) 240	53) 100	83) 140		
24) 180	54) 260	84) 120		
25) 100	55) 160	85) 100		
26) 180	56) 100	86) 300		
27) 60	57) 180	87) 320		
28) 300	58) 120	88) 240		
29) 160	59) 160	89) 100		
30) 100	60) 60	90) 80		

Weight Zone	Weight in Zone	% in Zone	Weight of Stone	% finer by weight	Spec.
200-400	11,240 lbs	61.2%	400	100.0 %	100
100-200	5,260 lbs	28.6%	200	38.8 %	15-50
25-100	1,880 lbs	10.2%	100	10.2 %	0-15
0-25	0 lbs	0 %	25	0	0
	18,380 lbs				
	or ...				
	9.2 tons				

REPORT OF MATERIAL TESTING

MATERIAL: Project Sample #GE-1 of Rip-Rap Crushed Stone delivered to our Laboratory in Hamburg, New York on July 30, 1990. Sample source identified as General Crushed Stone - Honeoye Falls.

MECHANICAL ANALYSIS: ASTM C-136-84a

<u>Sieve Size</u>	<u>Percent Finer</u>
6"	100
5"	95
4"	76
3"	11
2-1/2"	2
2"	0

SOUNDNESS OF AGGREGATE BY USE OF MAGNESIUM SULFATE: ASTM C-89-81

	<u>Run 1</u>	<u>Run 2</u>
Percent loss after 10 cycles -	0.7%	0.24

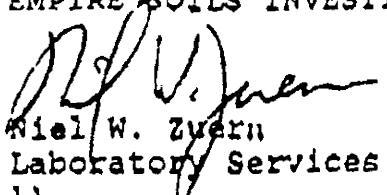
For details concerning these tests, please see the attached laboratory data forms.

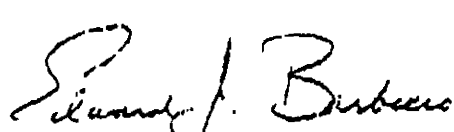
SPECIFIC GRAVITY AND ABSORPTION OF COARSE AGGREGATE: ASTM C-127-74

	<u>Run 1</u>	<u>Run 2</u>
Bulk Specific Gravity (ssd)	2.68	2.67
Absorption (%)	0.2	0.3

If you have any further questions, please feel free to contact our office at any time.

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.


Niel W. Zuern
Laboratory Services Manager
11


Edward J. Barbiero
Technical Services Director



ORCHARD PARK • ROCHESTER • BROTON • ALBANY • SYRACUSE • NEW YORK CITY
WASHINGTON, D.C. • WOODBRIDGE, N.J. • HARTFORD, CT

ORCHARD PARK DISTRICT OFFICE: 1055 SHELTON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716 642 8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: General Crushed Stone - Material Testing Report No. 1-11
 Client: General Crushed Stone Date: 8/22/90
 Material Type: Rip-Rap - Crushed Stone Source: (Honeyo Falls) General Crushed Stone
 Type of Solution: ☒ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 10
 Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
5 1/2"	4 1/2"	5.4		-		0.2		0.0
4 1/2"	3 1/2"	84.0		7492		0.2		0.2
3 1/2"	2 1/2"	8.3		7564		0.3		0.0
								0.2

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: Run 2



ORCHARD PARK - ROCHESTER - CROTON - ALBANY - SYRACUSE - NEW YORK CITY
WASHINGTON, D.C. - WOODBRIDGE, N.J. - STAMFORD, CT

ORCHARD PARK DISTRICT OFFICE: 6-3834 SHELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE: 716-442-8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: General Crushed Stone - Material Testing Report No. 1-1A
Client: General Crushed Stone Date: 8/22/90
Material Type: Rip-Rap - Crushed Stone Source: General Crushed Stone
Type of Solution: ☒ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 10
Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
5 1/2"	4 1/2"	5.4		-		0.8		0.0
4 1/2"	3 1/2"	84.0		6769		0.8		0.7
3 1/2"	2 1/2"	8.3		7683		0.4		0.0
								0.7

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: Run 1

CANONIE ENVIRONMENTAL LABORATORY

PROJECT NAME: Wellsville, NY SAMPLERS: Rob Porter (See Reverse Instructions) 952833A → 952853A N 2266

PROJECT NUMBER: 88-073

RECORDER: Rob Porter (SIGN)

SAMPLE CONTAINER DESCRIPTION CODES

A. 100-ml VOA Vial
B. 100-ml Litter
C. Plastic 600-ml
D. Plastic Litter

SAMPLE DESCRIPTION CODES

F. Oil
G. Waste
H. Storm/Sewer
I. Other

DATE	TIME	SAMPLE ID	ANALYSIS REQUESTED										NOTES	ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT
			1	2	3	4	5	6	7	8	9	10			
7/27/00	17:39	GCS-L0C1-01												952833A	Good
	17:41	GCS-L0C1-02												952839A	
	17:43	GCS-L0C1-03												952840A	
	17:44	GCS-L0C1-04												952841A	
	17:45	GCS-L0C1-05												952842A	
	17:46	GCS-L0C1-06												952843A	
	17:50	GCS-L0C1-07												952844A	
	17:57	GCS-L0C1-08												952845A	

NOTES / MISCELLANEOUS

9010: Total Cyanide custody receipt temp 60C

9066: phenols

24 hr. hold for pH

Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time

Method of Shipment <u>Fed ex</u>	Description of Transport Container <u>plastic cooler</u>	Other Chain-Of-Custody Transported with this Chain (by Serial No.) <u>90100</u>	Dispatched By: (Signature) <u>Rob Porter</u>	Date <u>7/27/00</u>	Time <u>18:40</u>	Received for lab By: (Signature) <u>James Ray</u>	Date <u>7/27/00</u>	Time <u>10:30</u>
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Send Lab Results to (Name): Rob Porter (Check Office Below) Verbal Requested: Yes ☒ No ☐

☐ PORTER TEL (219) 926-8851 FAX (219) 926-7189	☐ SAN MATEO TEL (415) 573-8012 FAX (415) 573-5854	☐ IRVINE TEL (714) 757-1755 FAX (714) 757-0860	☐ ORLANDO TEL (407) 856-7428 FAX (407) 856-2596
☒ DENVER TEL (303) 790-1747 FAX (303) 799-0188	☐ KING OF PRUSSIA TEL (215) 337-2551 FAX (215) 337-0560	☐ HOUSTON TEL (713) 556-1666 FAX (713) 556-0666	☐ MT. VIEW TEL (415) 960-1640 FAX (415) 960-0739

CANONIE ENVIRONMENTAL LABORATORY • 212 FRANK WEST CIRCLE, SUITE A • STOCKTON, CA 95206 • TEL (209) 983-1340 • FAX (209) 983-0304

SERIAL NO 00095 WHITE: Field Copy YELLOW: Promol Copy PINK: Laboratory Copy

ANALYTICAL UNIT CONTAINER COLLECTION / RECORD

(See Reverse for Instructions)

852838A → 852853A

NO. 9262

NAME Sinclair Refinery

SAMPLERS Rick Parker

NUMBER 88-093

RECORDED [Signature]

(SIGN)

SAMPLE CONTAINER DESCRIPTION CODES
 A. 40-ml VOA Vial
 B. Glass Liter
 C. Plastic 500-ml
 D. Plastic Liter
 E. Brass Tube
 F. Other 24 hr

SAMPLE DESCRIPTION CODES
 A. Ground Water
 B. Surface Water
 C. Leachate
 D. Residue
 E. Sediment
 F. Oil
 G. Waste
 H. Blank/Spike
 I. Other

TAT CODES

1. Standard
 2. 48 Hour
 3. 96 Hour
 4. Other

TIME	SAMPLE ID	NUMBER OF CONTAINERS AND PRESERVATION		ANALYSIS REQUESTED										NOTES	LABORATORY USE ONLY		
				GC	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS		ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
18:05	GC5-4062-01	1	1												852846A	Good	
18:06	GC5-4062-02	1	1												852847A		
18:08	GC5-4062-03	1	1												852848A		
18:09	GC5-4062-04	1	1												852849A		
18:10	GC5-4062-05	1	1												852850A		
18:12	GC5-4062-06	1	1												852851A		
18:13	GC5-4062-07	1	1												852852A		
18:14	GC5-4062-08	1	1												852853A		

NOTES / MISCELLANEOUS

* 9010: Total Cyanide out of body seal intact
 2661 phenols
 1.12 R. PH

Relinquished by: (Signature)

Received By: (Signature)

Date Time

Relinquished By: (Signature)

Received By: (Signature)

Date Time

Relinquished By: (Signature)

Received By: (Signature)

Date Time

Dispatched By: (Signature)

Date

Time

Received for lab By: (Signature)

Date

Time

10:30

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: GCS-LOC1-01
 Matrix: SOLID
 Lab ID: 852838-SA-A
 Project #: 88-093 LP #: 9266
 Starting Depth: 0.00
 Percent Solids: 99.3 %

Date Sampled: 7/27/1990
 Date Received: 7/28/1990
 DQ.C. Batch Nbr M080990SI
 Date Analyzed: 8/09/1990
 Date Reported: 8/10/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	10.	ug/kg	EPA 8240
Bromomethane	ND	10.	ug/kg	
Vinyl Chloride	ND	10.	ug/kg	
Chloroethane	ND	10.	ug/kg	
Methylene Chloride	11.	5.	ug/kg	
Acetone	13.	10.	ug/kg	
Carbon Disulfide	ND	5.	ug/kg	
1,1-Dichloroethene	ND	5.	ug/kg	
1,1-Dichloroethane	ND	5.	ug/kg	
1,2-Dichloroethene (total)	ND	5.	ug/kg	
Chloroform	ND	5.	ug/kg	
1,2-Dichloroethane	ND	5.	ug/kg	
2-Butanone	ND	10.	ug/kg	
1,1,1-Trichloroethane	ND	5.	ug/kg	
Carbon Tetrachloride	ND	5.	ug/kg	
Vinyl Acetate	ND	10.	ug/kg	
Bromodichloromethane	ND	5.	ug/kg	
1,2-Dichloropropane	ND	5.	ug/kg	
cis-1,3-Dichloropropene	ND	5.	ug/kg	
Trichloroethene	ND	5.	ug/kg	
Dibromochloromethane	ND	5.	ug/kg	
1,1,2-Trichloroethane	ND	5.	ug/kg	
Benzene	ND	5.	ug/kg	
trans-1,3-Dichloropropene	ND	5.	ug/kg	
Bromoform	ND	5.	ug/kg	
4-Methyl-2-pentanone	ND	10.	ug/kg	
2-Hexanone	ND	10.	ug/kg	
Tetrachloroethene	ND	5.	ug/kg	
1,1,2,2-Tetrachloroethane	ND	5.	ug/kg	
Toluene	44.	5.	ug/kg	
Chlorobenzene	ND	5.	ug/kg	
Ethyl Benzene	ND	5.	ug/kg	
Styrene	ND	5.	ug/kg	
Xylene (total)	ND	5.	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: GCS-LOC2-01
 Matrix: SOLID
 Lab ID: 852846-SA-A
 Project #: 88-093 LP #: 9266
 Starting Depth: 0.00
 Percent Solids: 99.7 %

Date Sampled: 7/27/1990
 Date Received: 7/28/1990
 DQ.C. Batch Nbr M080990SD1
 Date Analyzed: 8/09/1990
 Date Reported: 8/10/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	10.	ug/kg	EPA 8240
Bromomethane	ND	10.	ug/kg	
Vinyl Chloride	ND	10.	ug/kg	
Chloroethane	ND	10.	ug/kg	
Methylene Chloride	11.	5.	ug/kg	
Acetone	ND	10.	ug/kg	
Carbon Disulfide	ND	5.	ug/kg	
1,1-Dichloroethene	ND	5.	ug/kg	
1,1-Dichloroethane	ND	5.	ug/kg	
1,2-Dichloroethene (total)	ND	5.	ug/kg	
Chloroform	ND	5.	ug/kg	
1,2-Dichloroethane	ND	5.	ug/kg	
2-Butanone	ND	10.	ug/kg	
1,1,1-Trichloroethane	ND	5.	ug/kg	
Carbon Tetrachloride	ND	5.	ug/kg	
Vinyl Acetate	ND	10.	ug/kg	
Bromodichloromethane	ND	5.	ug/kg	
1,2-Dichloropropane	ND	5.	ug/kg	
cis-1,3-Dichloropropene	ND	5.	ug/kg	
Trichloroethene	ND	5.	ug/kg	
Dibromochloromethane	ND	5.	ug/kg	
1,1,2-Trichloroethane	ND	5.	ug/kg	
Benzene	ND	5.	ug/kg	
trans-1,3-Dichloropropene	ND	5.	ug/kg	
Bromoform	ND	5.	ug/kg	
4-Methyl-2-pentanone	ND	10.	ug/kg	
2-Hexanone	ND	10.	ug/kg	
Tetrachloroethene	ND	5.	ug/kg	
1,1,2,2-Tetrachloroethane	ND	5.	ug/kg	
Toluene	38.	5.	ug/kg	
Chlorobenzene	ND	5.	ug/kg	
Ethyl Benzene	ND	5.	ug/kg	
Styrene	ND	5.	ug/kg	
Xylene (total)	ND	5.	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CHEMWEST ANALYTICAL LABORATORIES
SEMIVOLATILE ORGANICS
WORKSHEET

Matrix: (Soil)
Sample Wt/Vol: 30.1 g / 1 ml
D.F. 322.675 Units ug / kg
Analyst: AS
Reviewer: _____

Sample ID: GSC-1001-05
File ID: 644407A3
Date Extracted: _____
Date Received: _____
Date Analyzed: 8-6-90

	Compound	Area	Quan	Final Conc.	DL (X____) REC
1	1,4-Dichlorobenzene-D4 (IS)	32490		40	---
2	Phenol				200
3	2-Chlorophenol				200
4	bis(2-Chloroethyl) ether				200
5	1,3-Dichlorobenzene				200
6	1,4-Dichlorobenzene				200
7	1,2-Dichlorobenzene				200
8	Benzyl alcohol				200
9	2-Methylphenol				200
10	bis(2-Chloroisopropyl) ether				200
11	Hexachloroethane				200
12	N-Nitroso-di-n-propylamine				200
13	4-Methylphenol				200
14	2-Fluorophenol (SURR)	121800	107	10754	1
15	Phenol-D5 (SURR)	158925	118	11859	1
16	Naphthalene-D8 (IS)	143542		40	---
17	Nitrobenzene				200
18	Isophorone				200
19	2-Nitrophenol				200
20	2,4-Dimethylphenol				200
21	bis(2-Chloroethoxy) methane				200
22	2,4-Dichlorophenol				200
23	1,2,4-Trichlorobenzene				200
24	Benzoic acid				400
25	Naphthalene				200
26	4-Chloroaniline				200
27	Hexachlorobutadiene				200
28	4-Chloro-3-methylphenol				200
29	2-Methylnaphthalene				200
30	Nitrobenzene-D5 (SURR)	80653	43.0	80643	1
31	Acenaphthene-d10 (IS)	76774		40	---
32	Hexachlorocyclopentadiene				200
33	2,4,6-Trichlorophenol				200
34	2,4,5-Trichlorophenol				400
35	2-Chloronaphthalene				200
36	2-Nitroaniline				400
37	Acenaphthylene				200
38	Dimethylphthalate				200
39	2,6-Dinitrotoluene				200
40	3-Nitroaniline				400
41	Acenaphthene				200
42	2,4-Dinitrophenol				400

CHEMWEST ANALYTICAL LABORATORIES
SEMIVOLATILE ORGANICS
WORKSHEET

Matrix: (Soil) _____
 Sample Wt/Vol: 30.1 / 1ml
 D.F. 33.2 Units ug / kg
 Analyst: 28
 Reviewer: _____

Sample ID: GSC-1002-05
 File ID: 6444010AB
 Date Extracted: _____
 Date Received: _____
 Date Analyzed: 7-16-90

	Compound	Area	Quan	Final Conc.	DL (X) REC
1	1,4-Dichlorobenzene-D4 (IS)	41142		40	---
2	Phenol				200
3	2-Chlorophenol				200
4	bis(2-Chloroethyl) ether				200
5	1,3-Dichlorobenzene				200
6	1,4-Dichlorobenzene				200
7	1,2-Dichlorobenzene				200
8	Benzyl alcohol				200
9	2-Methylphenol				200
10	bis(2-Chloroisopropyl) ether				200
11	Hexachloroethane				200
12	N-Nitroso-di-n-propylamine				200
13	4-Methylphenol				200
14	2-Fluorophenol (SURR)	173614	121	61	8
15	Phenol-D5 (SURR)	203787	119	60	8
16	Naphthalene-D8 (IS)	164438		40	---
17	Nitrobenzene				200
18	Isophorone				200
19	2-Nitrophenol				200
20	2,4-Dimethylphenol				200
21	bis(2-Chloroethoxy) methane				200
22	2,4-Dichlorophenol				200
23	1,2,4-Trichlorobenzene				200
24	Benzoic acid				400
25	Naphthalene				200
26	4-Chloroaniline				200
27	Hexachlorobutadiene				200
28	4-Chloro-3-methylphenol				200
29	2-Methylnaphthalene				200
30	Nitrobenzene-D5 (SURR)	98191	45.7	46	8
31	Acenaphthene-d10 (IS)	93842		40	---
32	Hexachlorocyclopentadiene				200
33	2,4,6-Trichlorophenol				200
34	2,4,5-Trichlorophenol				400
35	2-Chloronaphthalene				200
36	2-Nitroaniline				400
37	Acenaphthylene				200
38	Dimethylphthalate				200
39	2,6-Dinitrotoluene				200
40	3-Nitroaniline				400
1	Acenaphthene				200
42	2,4-Dinitrophenol				400

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: GCS-LOC1-07
 Matrix: SOLID
 Lab ID: 852844-SA-A
 Project #: 88-093 LP #: 9266
 Starting Depth: 0.00
 Percent Solids: 86.9 %

Date Sampled: 7/27/1990
 Date Received: 7/28/1990
 Q.C. Batch #: I080690PS2
 Date Analyzed: 8/06/1990
 Date Reported: 8/08/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Flag	Result*	Reporting Limit	Units	Method
Arsenic	S	13.	5.8	mg/kg	EPA 7060
Mercury		ND	.23	mg/kg	EPA 7471
Antimony	N	ND	6.9	mg/kg	EPA 6010
Beryllium		ND	1.2	mg/kg	
Cadmium		ND	1.2	mg/kg	
Chromium		ND	5.8	mg/kg	
Copper		ND	5.8	mg/kg	
Lead	N	ND	5.8	mg/kg	
Nickel		6.1	5.8	mg/kg	
Silver	N	ND	5.8	mg/kg	
Zinc		42.	5.8	mg/kg	
Selenium	NW	ND	5.8	mg/kg	EPA 7740
Thallium	NW	ND	5.8	mg/kg	EPA 7841

Tested By : MMS
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: GCS-LOC2-07
 Matrix: SOLID
 Lab ID: 852852-SA-A
 Project #: 88-093 LP #: 9266
 Starting Depth: 0.00
 Percent Solids: 91.6 %

Date Sampled: 7/27/1990
 Date Received: 7/28/1990
 Q.C. Batch # : I080690PS2
 Date Analyzed: 8/06/1990
 Date Reported: 8/08/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Flag	Result*	Reporting Limit	Units	Method
Arsenic		ND	5.5	mg/kg	EPA 7060
Mercury		ND	.22	mg/kg	EPA 7471
Antimony	N	ND	6.6	mg/kg	EPA 6010
Beryllium		ND	1.1	mg/kg	
Cadmium		ND	1.1	mg/kg	
Chromium		ND	5.5	mg/kg	
Copper		5.8	5.5	mg/kg	
Lead	N	ND	5.5	mg/kg	
Nickel		8.7	5.5	mg/kg	
Silver	N	ND	5.5	mg/kg	
Zinc		14.	5.5	mg/kg	
Selenium	NW	ND	5.5	mg/kg	EPA 7740
Thallium	NW	ND	5.5	mg/kg	EPA 7841

Tested By : MMS
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: GCS-LOC1-07
Matrix: SOLID
Lab ID: 852844-SA-A
Project #: 88-093 LP #: 9266
Starting Depth: 0.00
Percent Solids: 86.9 %

Date Sampled: 7/27/1990
Date Received: 7/28/1990
Q.C. Batch # : I080390CS2
Date Analyzed: 8/03/1990
Date Reported: 8/08/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.2	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: GCS-LOC2-07
Matrix: SOLID
Lab ID: 852852-SA-A
Project #: 88-093 LP #: 9266
Starting Depth: 0.00
Percent Solids: 91.6 %

Date Sampled: 7/27/1990
Date Received: 7/28/1990
Q.C. Batch # : I080390CS2
Date Analyzed: 8/03/1990
Date Reported: 8/08/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.1	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: GCS-LOC1-07
Matrix: SOLID
Lab ID: 852844-SA-A
Project #: 88-093 LP #: 9266
Starting Depth: 0.00
Percent Solids: 86.9 %

Date Sampled: 7/27/1990
Date Received: 7/28/1990
Q.C. Batch # : I073090GK1
Date Analyzed: 7/30/1990
Date Reported: 8/08/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	8.8	.000	pH	EPA 9045

Tested By : GLK
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: GCS-LOC2-07
Matrix: SOLID
Lab ID: 852852-SA-A
Project #: 88-093 LP #: 9266
Starting Depth: 0.00
Percent Solids: 91.6 %

Date Sampled: 7/27/1990
Date Received: 7/28/1990
Q.C. Batch # : I073090GK1
Date Analyzed: 7/30/1990
Date Reported: 8/08/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	8.7	.000	pH	EPA 9045

Tested By : GLK
Validated By: TLH

ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CanonieEnvironmental

CHEMWEST ANALYTICAL LABORATORIES
ORGANOCHLORINE PESTICIDES & PCBs

Client I.D.: GSC-LOC1-03
Date Extracted : 8/3/90
Date(s) Analyzed: 7/17/90

CHEMWEST I.D.: CW6444-5
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Aldrin	BRL	1
alpha-BHC	BRL	1
beta-BHC	BRL	1
gamma-BHC	BRL 2.4	1
delta-BHC	BRL	1
4,4'-DDE	BRL	2
4,4'-DDD	BRL	2
4,4'-DDT	BRL	2
Dieldrin	BRL	2
Endosulfan I	BRL	1
Endosulfan II	BRL	2
Endosulfan sulfate	BRL	2
Endrin	BRL	2
Endrin ketone	BRL	2
Heptachlor	BRL	1
Heptachlor epoxide	BRL	1
Methoxychlor	BRL	10
Chlordane (technical)	BRL	10
alpha-Chlordane (1)	BRL	1
gamma-Chlordane (1)	BRL	1
Toxaphene	BRL	20
Arochlor 1016	BRL	10
Arochlor 1221	BRL	10
Arochlor 1232	BRL	10
Arochlor 1242	BRL	10
Arochlor 1248	BRL	10
Arochlor 1254	BRL	20
Arochlor 1260	BRL	20

Surrogate

Recovery

Acceptance

Window

Dibutylchloroendate

117 %

20-150%

BRL: Below Reporting Limit.

RL: Reporting Limit.

(1): Major Constituents of Technical Chlordane.

Approved by: IV

REV5:1.98

CHEMWEST ANALYTICAL LABORATORIES
ORGANOCHLORINE PESTICIDES & PCBs

A-16

Client I.D.: GSC-LOC 2-03
Date Extracted : 8/3/90
Date(s) Analyzed: 8/17/90

CHEMWEST I.D.: CW6444-8
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Aldrin	BRL	1
alpha-BHC	BRL	1
beta-BHC	BRL	1
gamma-BHC	BRL	1
delta-BHC	BRL	1
4,4'-DDE	BRL	2
4,4'-DDD	BRL	2
4,4'-DDT	BRL	2
Dieldrin	BRL	2
Endosulfan I	BRL	1
Endosulfan II	BRL	2
Endosulfan sulfate	BRL	2
Endrin	BRL	2
Endrin ketone	BRL	2
Heptachlor	BRL	1
Heptachlor epoxide	BRL	1
Methoxychlor	BRL	10
Chlordane (technical)	BRL	10
alpha-Chlordane (1)	BRL	1
gamma-Chlordane (1)	BRL	1
Toxaphene	BRL	20
Arochlor 1016	BRL	10
Arochlor 1221	BRL	10
Arochlor 1232	BRL	10
Arochlor 1242	BRL	10
Arochlor 1248	BRL	10
Arochlor 1254	BRL	20
Arochlor 1260	BRL	20

Surrogate	Recovery	Acceptance Window
Dibutylchloroendate	126%	20-150%

BRL: Below Reporting Limit.

RL: Reporting Limit.

(1): Major Constituents of Technical Chlordane.

Approved by: VP

REV5:1.90

FORM B-1S, TCDD SOIL DATA REPORT FORM

Page 1 of 2

Lab: ChemWest
Case No.: 6444
Instrument ID: CW-6

Report Date: 08/24/90
Column: SP-2331

Client Sample No.	ChemWest Sample No.	Extr. Date	Wet Wt. Meas.	ug/kg TCDD MPC	GC/MS Date	Analysis Time	Surr. S/N Ratio	% REC (IS)
Method Blank	6425-MB	08/02/90	10.00 g	ND	0.045	08/17/90	15:08	78.2
MBS	6425-MBS	08/02/90	10.00 g	0.73	---	08/17/90	15:27	85.0
MBSD	6425-MBSD	08/02/90	10.00 g	0.75	---	08/17/90	15:46	82.5
GSC-LOC1-06	6644-1	08/02/90	10.02 g	ND	0.081	08/21/90	11:47	80.4
GSC-LOC2-06	6444-3	08/02/90	10.02 g	ND	0.077	08/21/90	12:07	78.1

MB = Method Blank
N = Native TCDD Spike
D = Duplicate/Fortified Field Blank
PE = EMSL-LV Performance Evaluation Sample
MPC = Maximum Possible Concentration
Note: Relative to 13C12-1,2,3,4-TCDD

FB = Field Blank
IS = Internal Standard
NR = Not Recovered
ND = Not Detected
RS = Recovery Standard

Approved By:

CHEMWEST ANALYTICAL LABORATORIES, INC.

A-17

CHEMWEST ANALYTICAL LABORATORIES

PhenolsDate(s) Analyzed: 8/14/90
thru: Case : 6444
Matrix: Water (Soil)

Client ID	CHEMWEST ID	(mg/L)	Amount Detected (mg/Kg)
<u>GSC-LOC 1-08</u>	<u>6444-2</u>		<u>1.3</u>
<u>GSC-LOC 2-08</u>	<u>6444-4</u>		<u>1.6</u>

Client ID	CHEMWEST ID	Spike Conc. (mg/kg)	% Rec.	Amount Detected (mg/L) (mg/Kg)
Method Blank	XXXX-MB	<u>2.0</u>	<u>90</u>	BRL
MBS	XXXX-MBS	<u>2.0</u>	<u>107</u>	
MBSD	XXXX-MBSD	<u>2.0</u>	<u>107</u>	

Relative % Difference =

The reporting limit for 0.5 mg/Kg

BRL: Below Reporting Limit.

METHOD 420.1



THE GENERAL CRUSHED STONE COMPANY

P.O. BOX 231 EASTON, PENNSYLVANIA 18044-0231
Phone (215) 253-4271

A Member of THE BEAZER GROUP

Friday, July 27, 1990

Reply to:

P.O. Box 513
Jamesville, NY 13078

Canonie Environmental Services Corp.
Arco Site
South Brooklyn Avenue
Wellsville, New York 14895

Attention: Mr. Pete Porter

Dear Mr. Porter,

This letter as submitted by The General Crushed Stone Company is in reference to the Magnesium Sulfate Soundness and Freeze Thaw testing requirements for your project.

The General Crushed Stone Company owns and operates a quarry in Honeoye Falls (Lima), New York. The quarry has been active for approximately 40 years. The quarry is approved by The New York State Department of Transportation under section 703-0201 for production of all types of crushed stone aggregates except those used with high alkali cements. We are required to submit a quarry report every four (4) years with interim letters submitted every year. The NYSDOT takes samples of our aggregates every two (2) years to update their test results. The tests performed by the state are specific gravities (bulk, bulk SSD, apparent), absorptions, mag. sulfates (10 cycle), L.A. abrasions, and freeze thaw (25 cycle) tests. I feel that it would be redundant to have a private testing laboratory run these tests. I have talked to the NYSDOT geologists and they would meet representatives from your company and/or EBASCO at our quarry site if necessary. Below are the NYSDOT test results for the aggregates produced at our quarry.

NYSDOT Test No.	Mag. Sulfate Loss (10 cy)	Freeze-Thaw (25 cy)	Bulk SSD
89AR43	1.3	1.3	2.67
87AR19	2.5	2.6	2.68
85AR22	4.9	0.6	2.67
83AR18	1.4	1.7	2.66
81AR46	0.9	0.1	2.65
79AR21	2.6	WAIVED	2.66

Canonie Environmental Services Corp.
Arco Site
South Brooklyn Avenue
Wellsville, New York 14895

Attention: Mr. Pete Porter

Page 2

NYS DOT Test No.	Mag. Sulfate Loss (10 cy)	Freeze-Thaw (25 cy)	Bulk SSD
77AR14	1.8	0.9	2.66
75AR31	1.0	0.4	2.67
73AR48	1.4	2.1	2.66
72AR2	3.7	3.2	2.66
69AR33	#3'S 1.6	2.1	2.67
	#2'S 4.4		
66AR16	#3'S 1.0	0.2	2.67

If you would like to speak with a person from The New York State Department of Transportation contact Mr. Bill Skerritt at 518-457-1038.

It is also my understanding that in 1972 we supplied heavy stone fill for the Wellsville area to be utilized in repairing flood damaged embankments or dikes. I suggest that this insitu material be inspected for verification of the quality of our material.

In talking to you and representatives of your company I understand that you wish to accept delivery of this material within 3 to 4 weeks. If we have to submit samples to a private testing laboratory, as EBASCO is presently in the process of doing for us, and have the tests performed there will be substantial time delays that are out of our control. We will not begin production of the material you require until we have a written approval of the materials by the construction manager, EBASCO. Once we have the approval then we can focus our efforts on producing the riprap material.

I would like to receive a letter of transmittal from EBASCO as to the approval or disapproval of the use of The New York State Department of Transportation test results.

Canonie Environmental Services Corp.
Arco Site
South Brooklyn Avenue
Wellsville, New York 14895

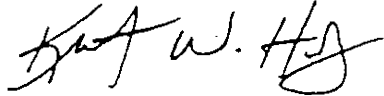
Attention: Mr. Pete Porter

Page 3

Thank you for considering us for this project.

Sincerely,

THE GENERAL CRUSHED STONE COMPANY

A handwritten signature in dark ink, appearing to read "Kurt W. Hanf", written in a cursive style.

Kurt W. Hanf
Quality Control Engineer

Canonie Environmental

cc & MF File -
VP
GLS
D.C.
Chon

November 14, 1990

RECEIVED

NOV 19 1990

THOMAS GRANGER
EBASCO SERVICES INC.

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406
Phone: 215-337-2551
Fax: 215-337-0560
88-093

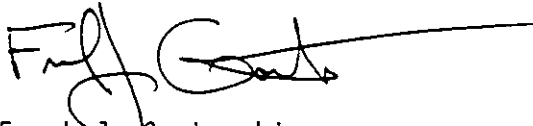
Transmittal
Freeze/Thaw Testing Results for Alternate Riprap Material
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

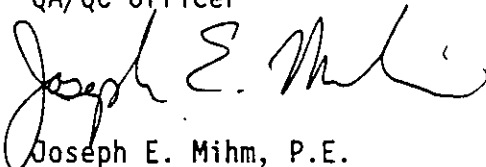
Enclosed please find the freeze/thaw test data for the riprap samples submitted for testing from the General Crushed Stone quarry in Honeoye Falls, New York. Two freeze/thaw tests were performed in accordance with Section 4.5.4 of the Quality Assurance Project Plan (QAPP) prepared by EBASCO. The weighted percent losses from these tests were 0.1 and 0.0 after 25 cycles. These results are well below the limit of 10 percent after 25 cycles set by EBASCO for this project.

We are confident that this information will meet with your approval. If you have any further questions, we can be reached at (215) 337-2551.

Very truly yours,



Frank J. Gontowski
QA/QC Officer



Joseph E. Mihm, P.E.
Project Manager

FJG/bam

Attachments



PROJECT: General Crushed Stone - Material Testing
CLIENT: General Crushed Stone
DATE: September 24, 1990
PROJECT NO: BT-90-255
REPORT NO: L-2

REPORT OF MATERIAL TESTING

MATERIAL: Project Sample #GE-1A of Rip-Rap Crushed Stone delivered to our Laboratory in Hamburg, New York on July 30, 1990. Sample source identified as General Crushed Stone - Honeoye Falls, New York.

MECHANICAL ANALYSIS: ASTM C-136

<u>Sieve Size</u>	<u>Percent Finer</u>
6"	100
5"	96
3"	24
2-1/2"	18
2"	0

SOUNDNESS OF AGGREGATES BY FREEZING AND THAWING:
AASHTO T103-83 (Procedure B)

<u>Sieve Size</u>		<u>RUN 1</u>			
<u>Passing</u>	<u>Retained</u>	<u>Weight of Test Fraction Before Test (gr.)</u>	<u>Percent Loss</u>	<u>Weighted Percent Loss</u>	
3-1/2	2-1/2	3140	0.1	0.1	
2-1/2	1-1/2	3051	0.2	0.0	
				TOTAL	0.1

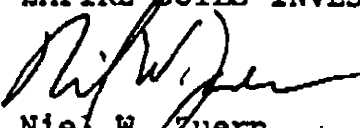


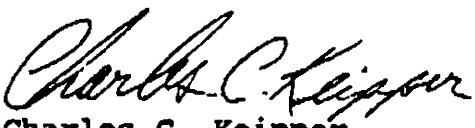
General Crushed Stone
L-2, Page 2
September 24, 1990

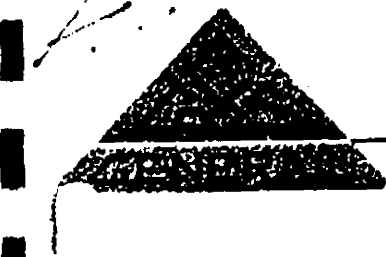
Sieve Size		RUN 2			
Passing	Retained	Weight of Test Fraction Before Test (gr.)	Percent Loss	Weighted Percent Loss	
3-1/2	2-1/2	3316	0.0	0.0	
2-1/2	1-1/2	3109	0.0	0.0	
				TOTAL	0.0

If you should have any questions please do not hesitate to contact our office at any time.

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.


Niel W. Zuern
Laboratory Services Manager


Charles C. Keipper
Testing Services Manager



THE GENERAL CRUSHED STONE COMPANY

P.O. BOX 231 EASTON, PENNSYLVANIA 18044-0231
Phone (215) 253-4271

A Member of THE BEAZER GROUP

Friday, July 27, 1990

Reply to:

P.O. Box 513
Jamesville, NY 13078

Canonie Environmental Services Corp.
Arco Site
South Brooklyn Avenue
Wellsville, New York 14885

Attention: Mr. Pete Porter

Dear Mr. Porter,

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The General Crushed Stone Company owns and operates a quarry in Honeoye Falls (Lima), New York. The quarry has been active for approximately 40 years. The quarry is approved by The New York State Department of Transportation under section 703-0201 for production of all types of crushed stone aggregates except those used with high alkali cements. We are required to submit a quarry report every four (4) years with interim letters submitted every year. The NYSDOT takes samples of our aggregates every two (2) years to update their test results. The tests performed by the state are specific gravities (bulk, bulk SSD, apparent), absorptions, mag. sulfates (10 cycle), L.A. abrasions, and freeze thaw (25 cycle) tests. I feel that it would be redundant to have a private testing laboratory run these tests. I have talked to the NYSDOT geologists and they would meet representatives from your company and/or EBASCO at our quarry site if necessary. Below are the NYSDOT test results for the aggregates produced at our quarry.

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81AR46	0.9	0.1	2.65
79AR21	2.6	WAIVED	2.66

Canonie Environmental Services Corp.
Arco Site
South Brooklyn Avenue
Wellsville, New York 14895

Attention: Mr. Pete Porter

Page 2

NYSDOT Test No.	Mag. Sulfate Loss (10 cy)	Freeze-Thaw (25 cy)	Bulk SSD
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72AR2	3.7	3.2	2.66
69AR33	#3'S 1.6	2.1	2.67
	#2'S 4.4		
66AR16	#3'S 1.0	0.2	2.67

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I would like to receive a letter of transmittal from EBASCO as to the approval or disapproval of the use of The New York State Department of Transportation test results.

Canonie Environmental Services Corp.
Arco Site
South Brooklyn Avenue
Wellsville, New York 14895

Attention: Mr. Pete Porter

Page 3

Thank you for considering us for this project.

Sincerely,

THE GENERAL CRUSHED STONE COMPANY

A handwritten signature in dark ink, appearing to read "Kurt W. Hanf", with a stylized flourish at the end.

Kurt W. Hanf
Quality Control Engineer

Canonie Environmental

August 7, 1990

RECEIVED

AUG 8 - 1990

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07011-3586

THOMAS GRANGER
EBASCO SERVICES INC.

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406
Phone: 215-337-2551
Fax: 215-337-0560
88-093

CC: K. Fitzgerald
V. H. H. C.

Transmittal
Geotechnical and Chemical Laboratory Results
Partial River Channelization Project
Sinclair Refinery, Wellsville, New York

Dear Mr. Granger:

Canonie Environmental Services Corp. (Canonie) herein submits the following geotechnical and chemical data for the dike fill borrow material for the above-referenced project. Also included is the chemical data for the roadway aggregate materials. (Note: Geotechnical sampling and testing is pending EBASCO authorization to start.) The testing of these materials was performed in accordance with Section 4.4 of the Quality Assurance Project Plan. The attached data includes:

Geotechnical Testing

Ungermann Borrow Dike Fill
Test Pit: TP-1

Page

Laboratory maximum density test	A-01
Liquid limit and plasticity index test	A-01
Unconsolidated, undrained compressive strength test	A-02
Natural moisture content test	A-02
Permeability test	A-03
Gradation test	A-04
Material classification test	A-04

Test Pit: TP-5 and 6

Page

Laboratory maximum density test	A-05
Liquid limit and plasticity index test	A-05
Unconsolidated, undrained compressive strength test	A-06
Natural moisture content test	A-06
Permeability test	A-07
Gradation test	A-08
Material classification test	A-08

Test Pit: TP-7

Page

Laboratory maximum density test	A-09
Liquid limit and plasticity index test	A-09
Unconsolidated, undrained compressive strength test	A-10
Natural moisture content test	A-10
Permeability test	A-11
Gradation test	A-12
Material classification test	A-12

Test Pit: TP-10

Page

Laboratory maximum density test	A-13
Liquid limit and plasticity index test	A-13
Unconsolidated, undrained compressive strength test	A-14
Natural moisture content test	A-14
Permeability test	A-15
Gradation test	A-16
Material classification test	A-16

Chemical Testing

Dike Fill Borrow - Ungermann Pit
Test Pit: TP-2

Page

Chain-of-Custody	A-17
Volatile organic analysis	A-18
Semi-volatile organic analysis	A-19 and A-20
Priority pollutant metals	A-21
Total cyanide	A-22
pH	A-23
PCBs and pesticides	A-24
Dioxin (2,3,7,8-TCDD)	A-25
Total phenol	A-26

Test Pit: TP-6

Page

Chain-of-Custody	A-27
Volatile organic analysis	A-28
Semi-volatile organic analysis	A-29 and A-30
Priority pollutant metals	A-31
Total cyanide	A-32
pH	A-33
PCBs and pesticides	A-34
Dioxin (2,3,7,8-TCDD)	A-35
Total phenol	A-36

Test Pit: TP-10	<u>Page</u>
Chain-of-Custody	A-37
Volatile organic analysis	A-38
Semi-volatile organic analysis	A-39 and A-40
Priority pollutant metals	A-41
Total cyanide	A-42
pH	A-43
PCBs and pesticides	A-44
Dioxin (2,3,7,8-TCDD)	A-45
Total phenol	A-46

Roadway Aggregate - Alfred Atlas	
Test Pit: AA-AGG	<u>Page</u>
Chain-of-Custody	A-47
Volatile organic analysis	A-48
Semi-volatile organic analysis	A-49 and A-50
Priority pollutant metals	A-51
Total cyanide	A-52
pH	A-53
PCBs and pesticides	A-54
Dioxin (2,3,7,8-TCDD)	A-55
Total phenol	A-56

Mr. Thomas Granger

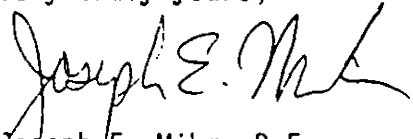
5

August 7, 1990

One of the samples of the dike fill borrow material from Ungermann's Pit (TP-6) had a reported value of 13,000 ug/kg di-n-butyl phthalate. Discussions with the laboratory concerning this value indicate that this value may be attributable to laboratory contamination of the sample extract. Since the other samples do not detect this compound, this result is not believed to be representative of the dike fill borrow materials.

If you have any questions, please call me at (215) 337-2551.

Very truly yours,



Joseph E. Mihm, P.E.
Project Manager

JEM/cs

cc: Chris Ramachandra, EBASCO
Gary Stiles, EBASCO

LABORATORY COMPACTION TEST

Project: Canonie, Arco

Project No.: 90C2137

Boring or Test Pit No.: TP-1

Sample No.: -

Depth: - ft.

Description: Brown gray sandy silty clay

Optimum Moisture Content: 27.3 %

Maximum Dry Density: 95.6 pcf

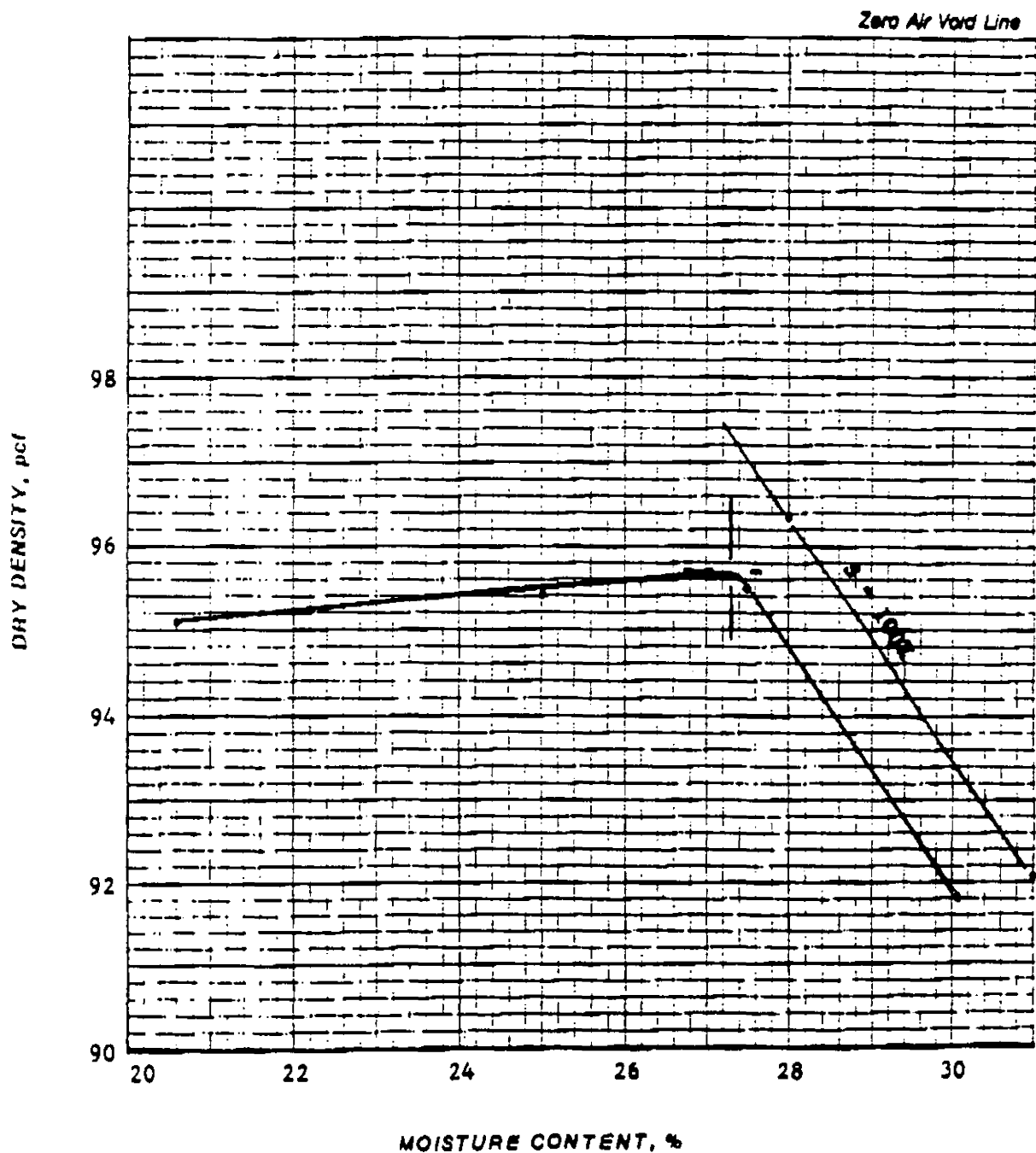
Liquid Limit: 46 %

Plastic Limit: 25 %

Specific Gravity: 2.72

Natural Moisture Content: %

☒ ASTM D 698, Method: A

☐ ASTM D 1557, Method:


WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LAB

UNCONSOLIDATED-UNDRAINED TRIAXIAL TEST

JOB NO. 90C2137

BORING NO. TP-1

SAMPLE NO. S-1

SAMPLE DEPTH

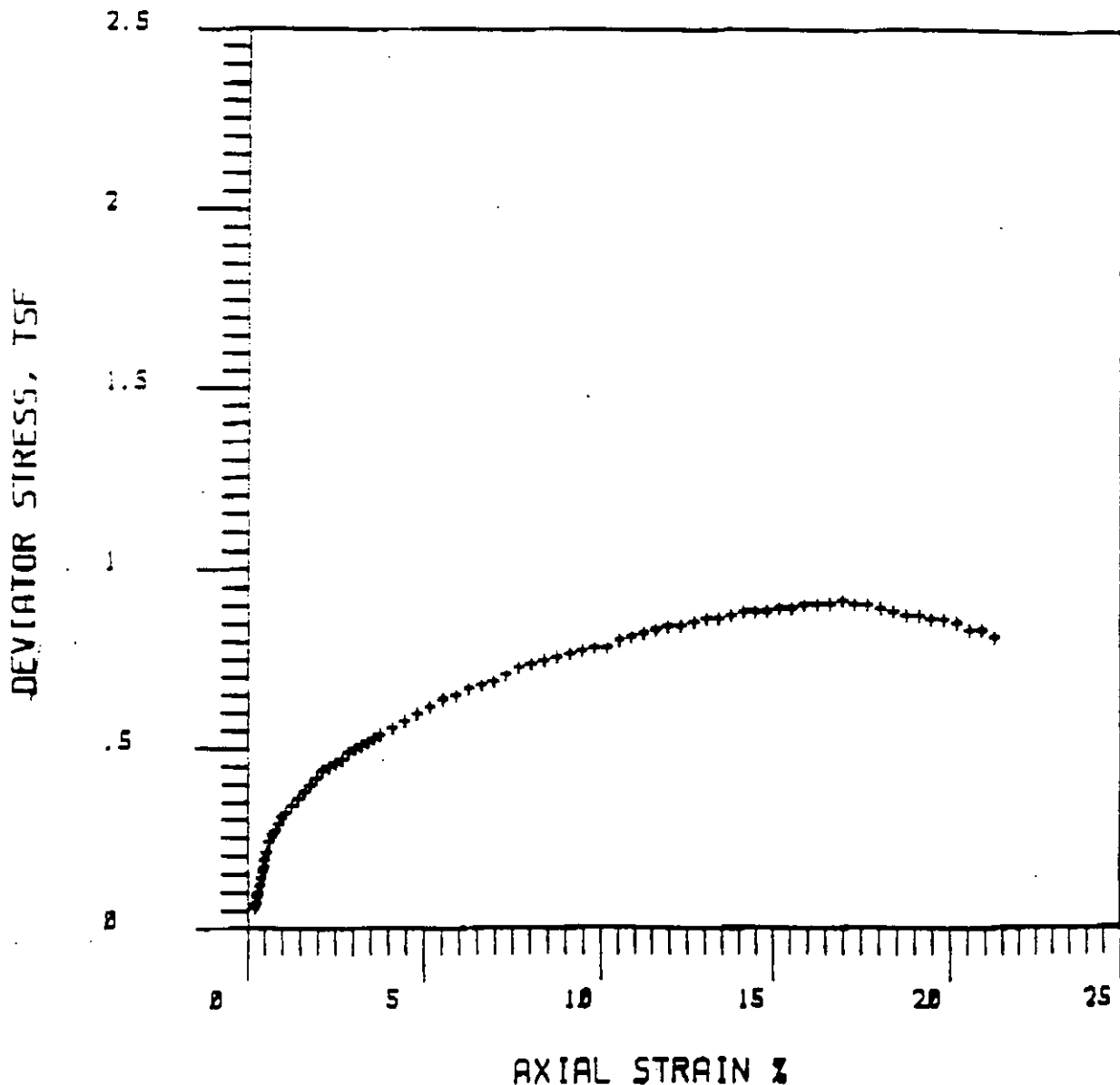
NATURAL WATER CONTENT 27.48 %

DRY DENSITY 90.6 PCF

MAX DEVIATOR STRESS .9 TSF

STRAIN AT FAILURE 16.79 %

EFFECTIVE CONFINING PRESSURE: 0.72 TSF



5120 Butler Pike
Plymouth Meeting
Pennsylvania 19462
215-826-3000
Fax 215-834-0234

Woodward-Clyde Consultants

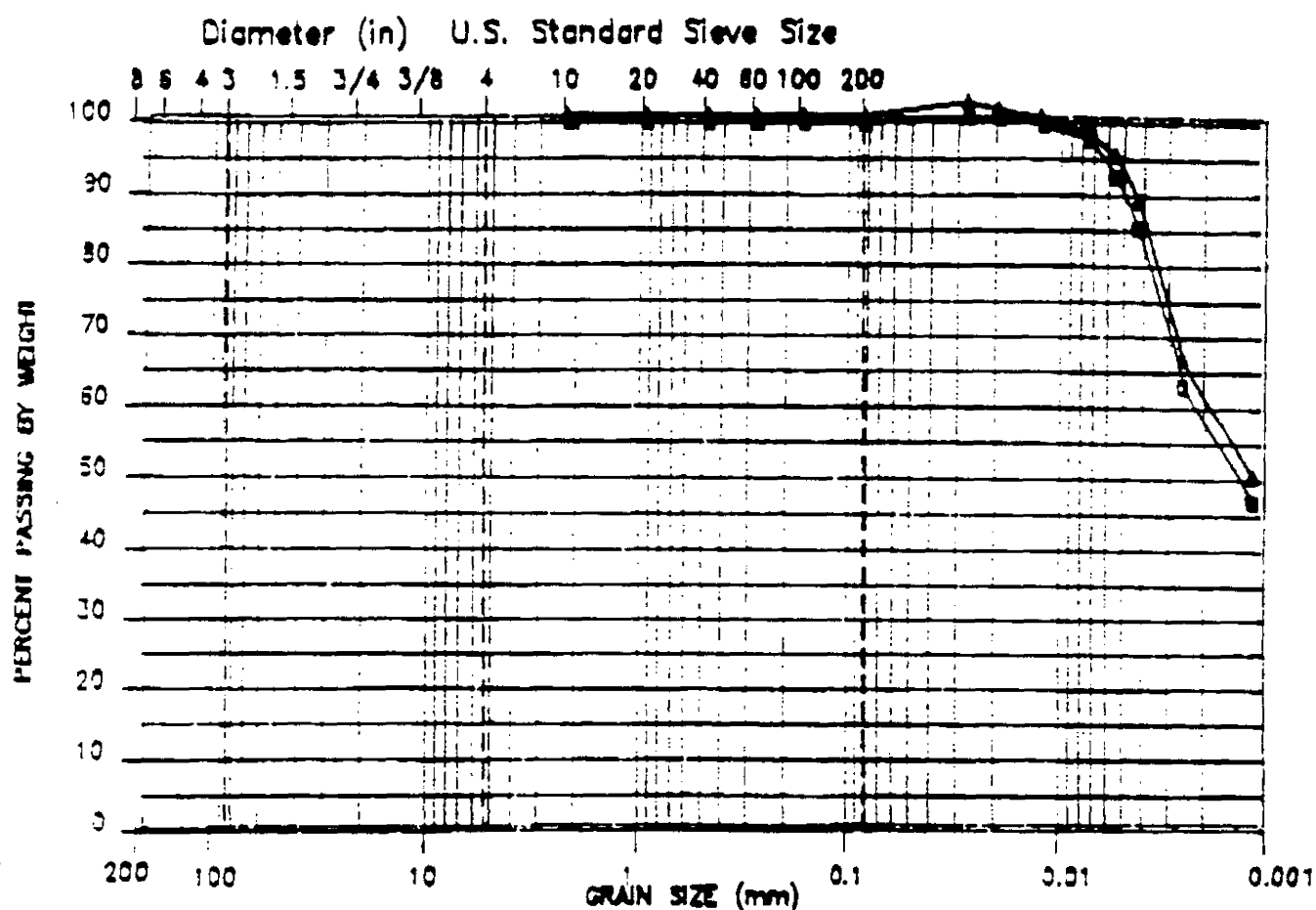
PRELIMINARY TEST RESULTS

Job No.: 90C2137 Date: 8/2/90
Job Name: CANONIE - ARCO
Boring No.: TP-1
Sample No.: _____
Sample Depth, ft.: _____
Water Content, % = 28.4 %
Dry Density, pcf = 90.0 PCF
Liquid/Plastic Limit = _____
Coefficient of Permeability = 5.72×10^{-8}
Reported to: Mark TINKLER Date: 8/2/90
Reported by: RM

ENM/pro

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

JOB NAME : CANONIE: ARCO

SYM	BORING	SAMPLES	DEPTH	DESCRIPTION	W (%)	U _c (%)	U _s (%)
1	TP-1			BROWN-GRAY SILTY CLAY (SL)		48	88
2	TP-3/8			BROWN-GRAY SILTY CLAY (SL)		57	78

LABORATORY COMPACTION TEST

Project: Canonic: Arco

Project No.: 90C2137

Boring or Test Pit No.: TP 5 & 6

Sample No.:

Depth: ft.

Description: Brown gray sandy silty clay

Optimum Moisture Content: 26.9 %

Maximum Dry Density: 95.4 pcf

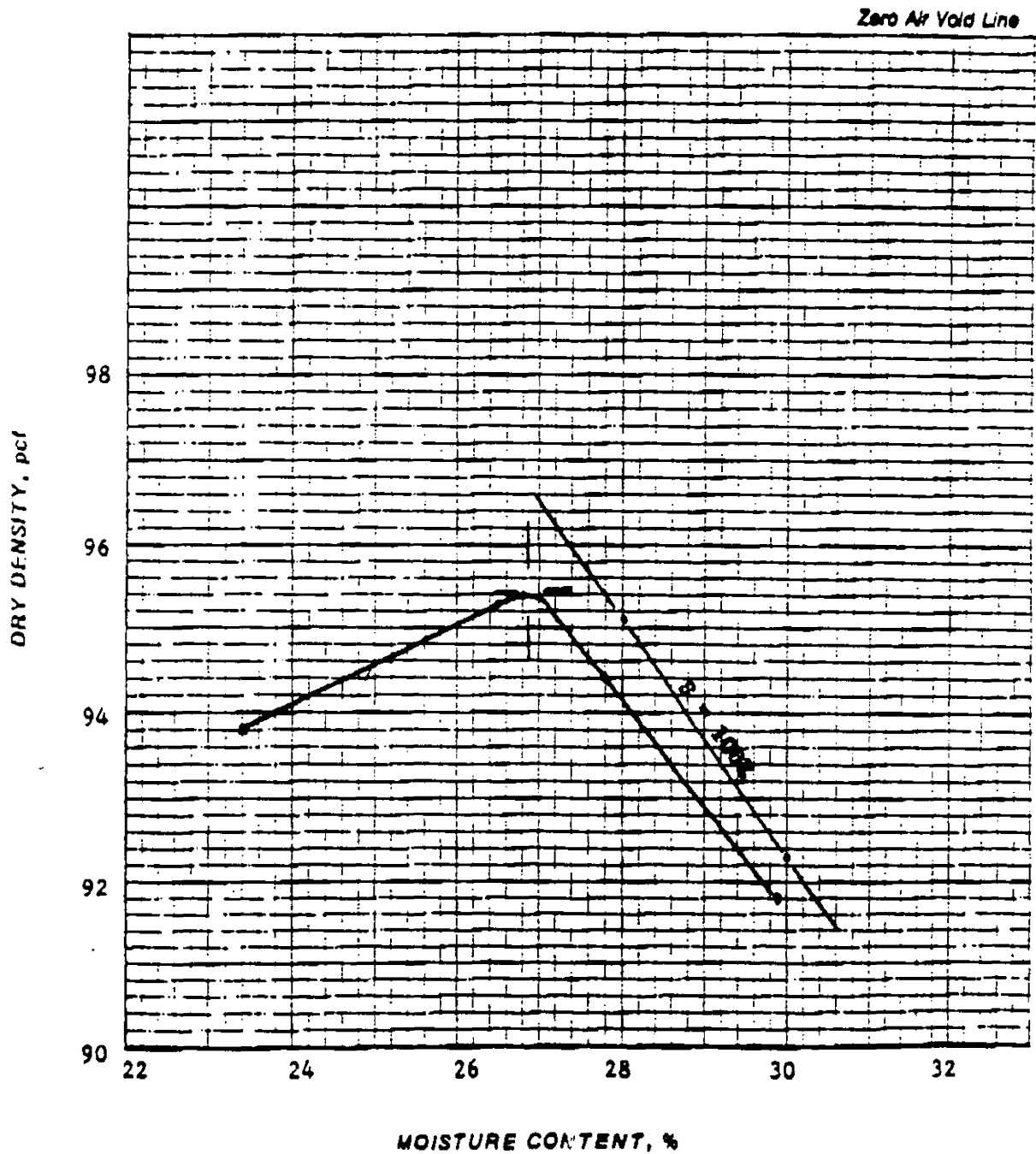
Liquid Limit: 53 %

Plastic Limit: 28 %

Specific Gravity: 2.67

Natural Moisture Content: %

☒ ASTM D 698, Method: A

☒ ASTM D 1557, Method:


WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LAB

UNCONSOLIDATED-UNDRAINED TRIAXIAL TEST

JOB NO. 90C2137

BORING NO. TP-S&6

SAMPLE NO. S-1

SAMPLE DEPTH

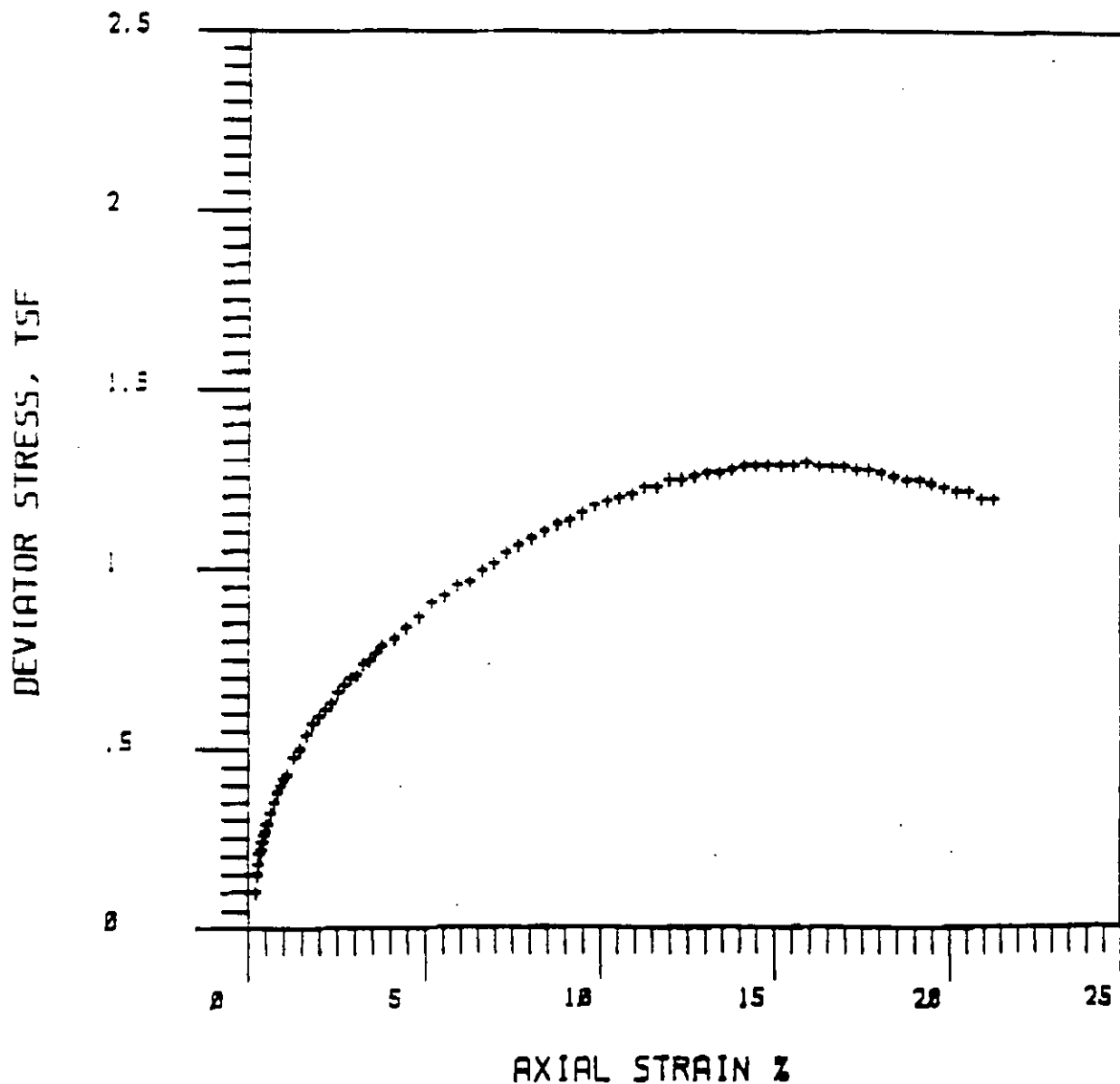
NATURAL WATER CONTENT 27.84 %

DRY DENSITY 90.67 PCF

MAX DEVIATOR STRESS 1.28 TSF

STRAIN AT FAILURE 15.71 %

EFFECTIVE CONFINING PRESSURE: 0.72 TSF



3120 Butler Pike
Plymouth Meeting
Pennsylvania 19462
215-825-3000
Fax 215-834-0234

Woodward-Clyde Consultants

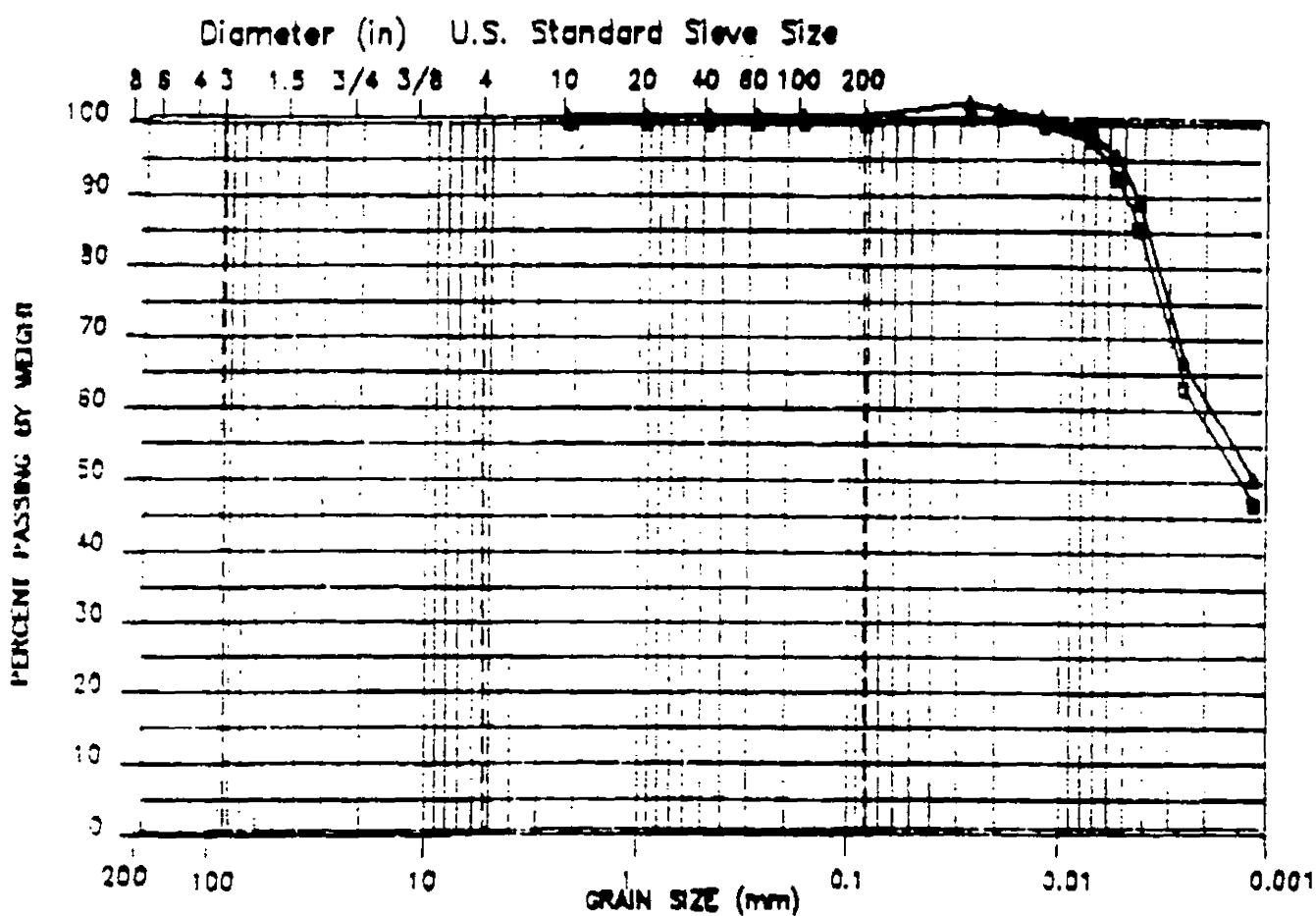
PRELIMINARY TEST RESULTS

Job No.: 90C2137 Date: 8/2/90
Job Name: CANDONIA - ARCO
Boring No.: TP-546
Sample No.: _____
Sample Depth, ft.: _____
Water Content, % = 27.5%
Dry Density, pcf = 91.0 pcf
Liquid/Plastic Limit = _____
Coefficient of Permeability = 3.93×10^{-9}
Reported to: Mark TRAXLER Date: 8/2/90
Reported by: RM

ENM/pro

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH-MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

JOB NAME : CANONIE: ARCO

SYM	BORING	SAMPLE	DEPTH	DESCRIPTION	W (%)	U _c (%)	U _s (%)
1	TP-1			BROWN GRAY SILTY CLAY (CL)	46	66	
2	TP-5/8			BROWN GRAY SILTY CLAY (CL)	52	38	

LABORATORY COMPACTION TEST

Project: Canoe: Arco

Project No.: 90C2137

Boring or Test Pit No.: TP-7

Sample No.:

Depth: ft.

Description: Brown gray sandy silty clay

Optimum Moisture Content: 25.5 %

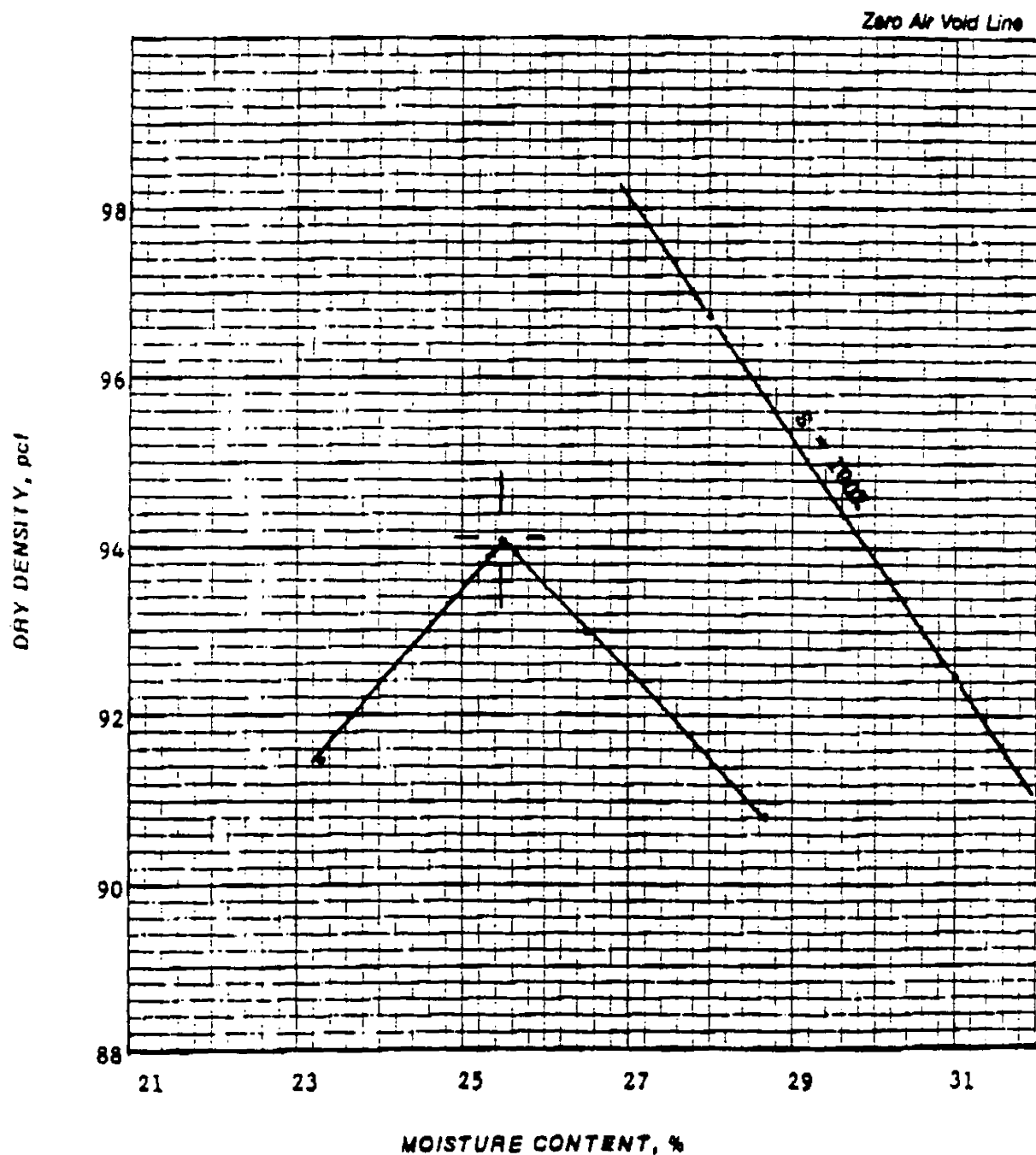
Maximum Dry Density: 94.1 pcf

Liquid Limit: 51 %

Plastic Limit: 26 %

Specific Gravity: 2.73

Natural Moisture Content: %

☒ ASTM D 698, Method: A
☐ ASTM D 1557, Method: A


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PLYMOUTH MEETING LAB

UNCONSOLIDATED-UNDRAINED TRIAXIAL TEST

JOB NO. 90C2137

BORING NO. TP-7

SAMPLE NO. S-1

SAMPLE DEPTH

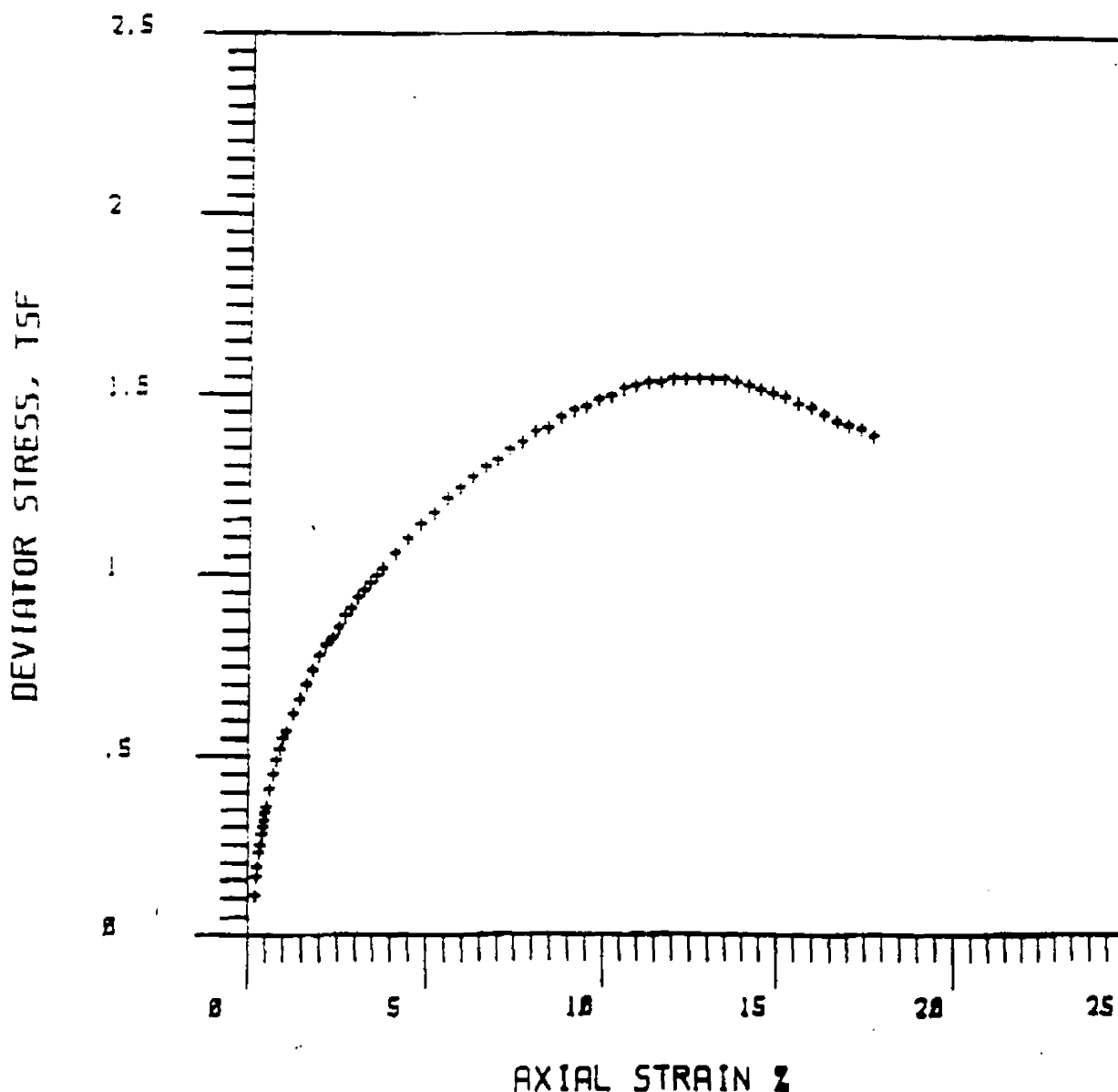
NATURAL WATER CONTENT 26.5 %

DRY DENSITY 89.57 PCF

MAX DEVIATOR STRESS 1.53 TSF

STRAIN AT FAILURE 13.21 %

EFFECTIVE CONFINING PRESSURE: 0.72 TSF



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Pennsylvania 19462
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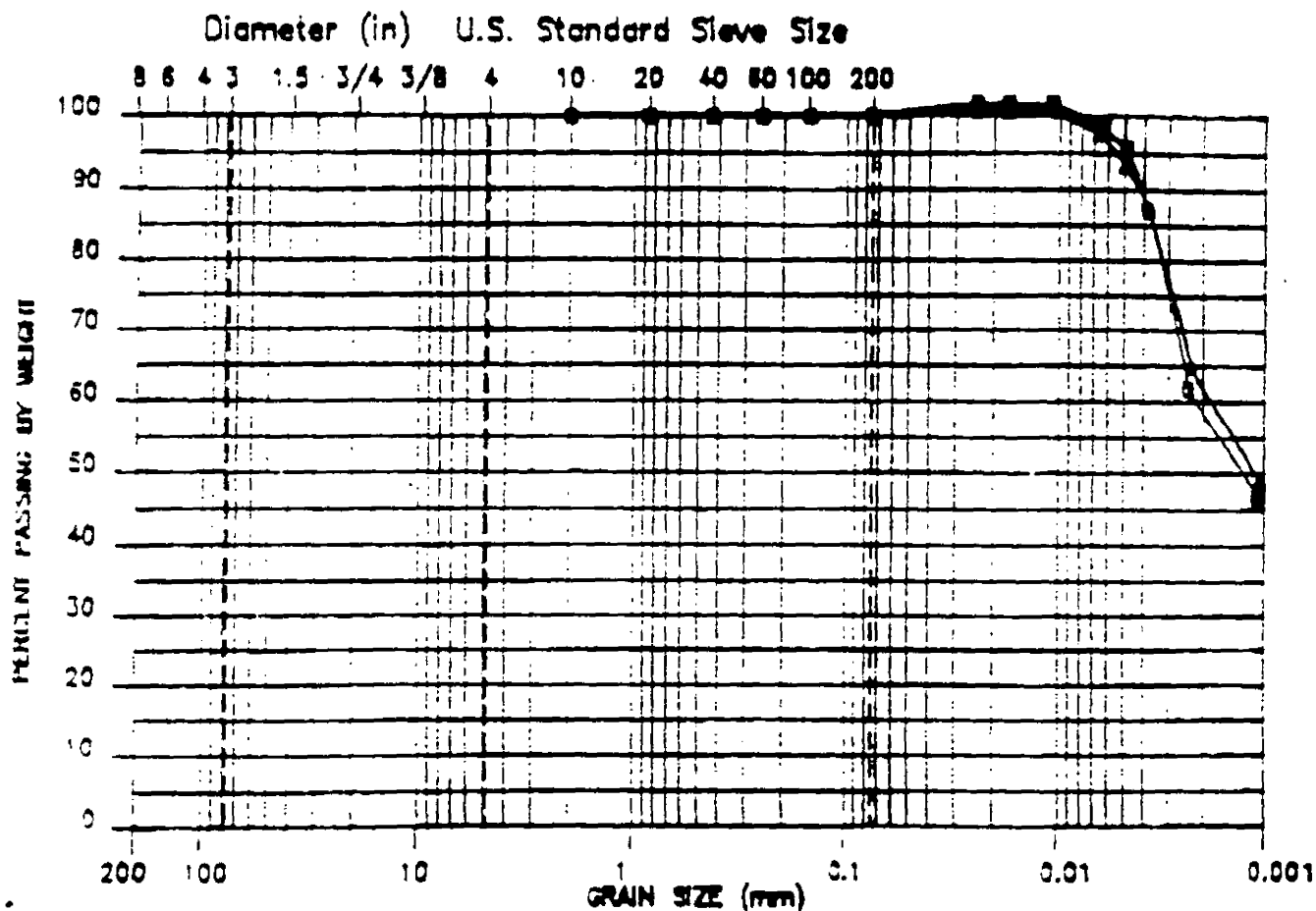
PRELIMINARY TEST RESULTS

Job No.: 90C2437 Date: _____
Job Name: CANONIE - ARCO
Boring No.: TP-7
Sample No.: _____
Sample Depth, ft.: _____
Water Content, % = 26.4%
Dry Density, pcf = _____
Liquid/Plastic Limit = _____
Coefficient of Permeability = 5.01×10^{-8}
Reported to: MARK TRAYLER Date: 8/2/90
Reported by: RAY

ENM/pro

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

JOB NAME : CANONIE; ARCO

SYM	BOHNS	SAMPLE	DEPTH	DESCRIPTION	Wt (g)	Wt (oz)	Wt (lb)
B	TP-7			BROWN-GREY SILTY CLAY (CL)	31	3.0	
B	TP-10			BROWN-GREY SILTY CLAY (CL)	48	3.7	

LABORATORY COMPACTION TEST

Project: Canonic: Arco

Project No.: 90C2137

Boring or Test Pit No.: TP-10

Sample No.:

Depth:

ft.

Description: Brown gray sandy silty clay

Optimum Moisture Content: 26.4 %

Maximum Dry Density: 94.8 pcf

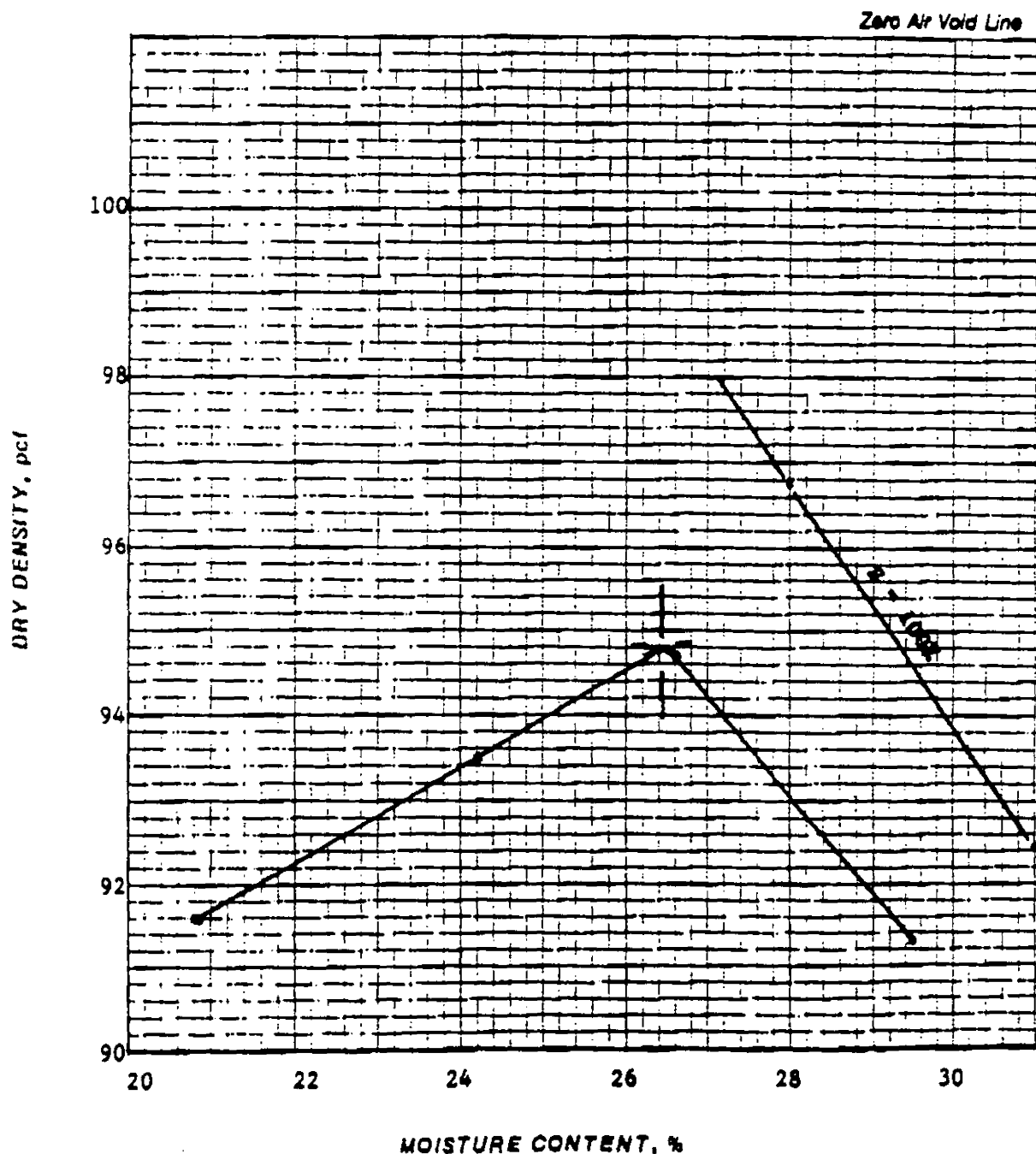
Liquid Limit: 46 %

Plastic Limit: 27 %

Specific Gravity: 2.74

Natural Moisture Content: %

☒ ASTM D 698, Method: A

☐ ASTM D 1557, Method:


WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LAB

UNCONSOLIDATED-UNDRAINED TRIAXIAL TEST

JOB NO. 90C2137

BORING NO. TP-10

SAMPLE NO. S-1

SAMPLE DEPTH

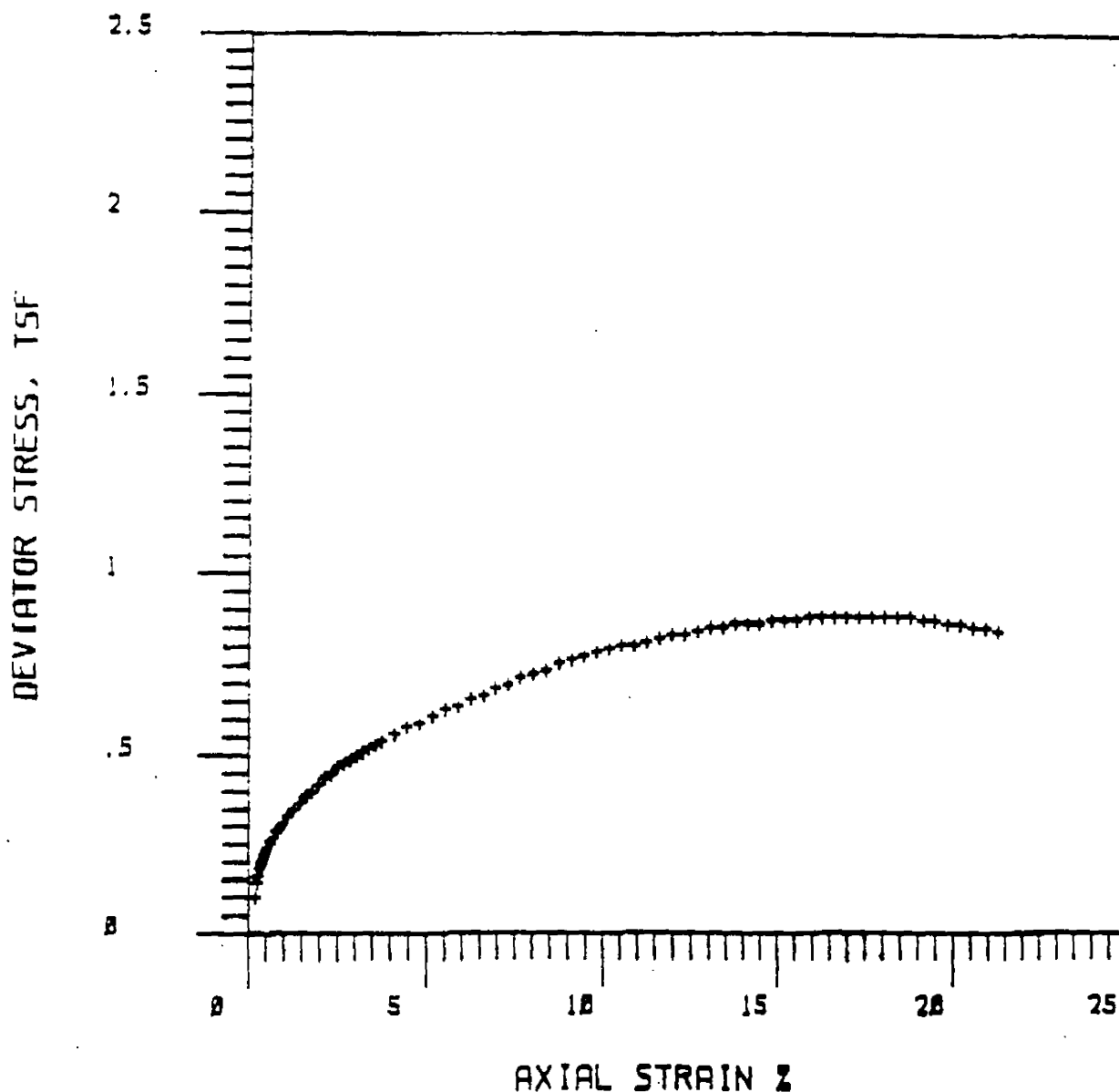
NATURAL WATER CONTENT 28.67 %

DRY DENSITY 89.86 PCF

MAX DEVIATOR STRESS .87 TSF

STRAIN AT FAILURE 18.57 %

EFFECTIVE CONFINING PRESSURE: 0.72 TSF



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PRELIMINARY TEST RESULTS

Job No.: 90C2137 Date: 8/2/90
Job Name: CANONIA - ARCO
Boring No.: TP-10
Sample No.: _____
Sample Depth, ft.: _____
Water Content, % = 27.4 %
Dry Density, pcf = 90.9 pcf
Liquid/Plastic Limit = _____
Coefficient of Permeability = 6.65×10^{-9}
Reported to: MARK TRAYLER Date: 8/2/90
Reported by: PM

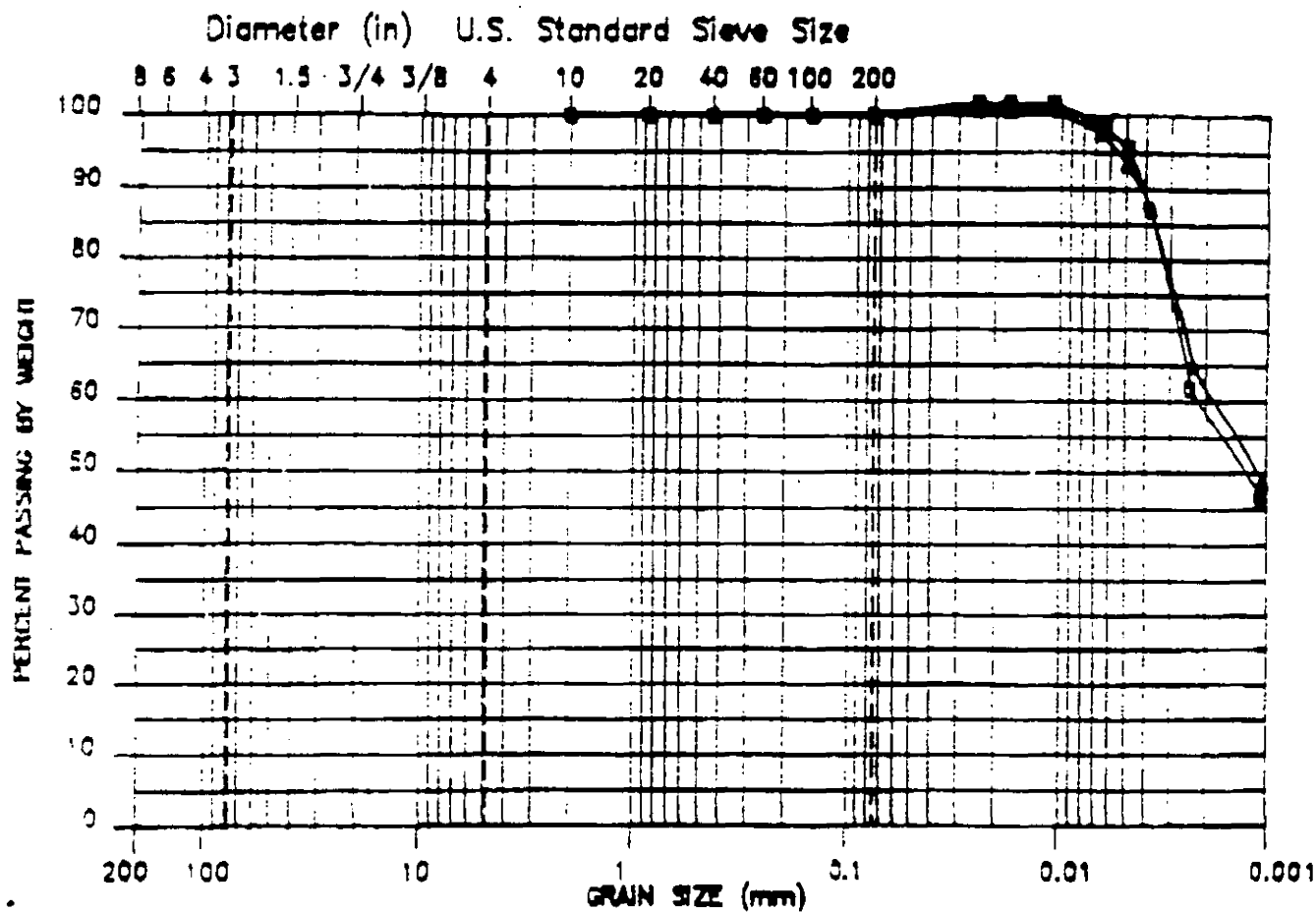
ENM/pro

Consulting Engineers, Geologists
and Environmental Scientists

Offices in Other Principal Cities

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

JOB NAME : CANONIE: ARCO

SYM	BORING	SAMPLE	DEPTH	DESCRIPTION	W (%)	U _c (%)	U _s (%)
B	TP-7			BROWN-GRAY SILTY CLAY (CL)	51	28	
A	TP-10			BROWN-GRAY SILTY CLAY (CL)	48	27	

7172

PROJECT NAME

Wellington, NY

SAMPLERS

Gert Maiche

(PRINT)

(SIGN)

PROJECT NUMBER

BB-093

RECORDER

Peter Porter

(SIGN)

SAMPLE CONTAINER
DESCRIPTION CODES

A 40-ml VOA Vial
B Glass 1 liter
C Plastic 500-ml
D Plastic 1 liter
E Brass Tube
F Other Glass
G Other Plastic

SAMPLE DESCRIPTION CODES

A Ground Water
B Surface Water
C Leachate
D Runoff
E Soil/Sediment
F Oil
G Waste
H Blank/Spike
I Other

TAT CODES

1 Standard
2 48 Hour
3 24 Hour
4 Other

DATE	TIME	SAMPLE ID	NUMBER OF CONTAINERS AND PRESERVATION	ANALYSIS REQUESTED										NOTES	LABORATORY USE ONLY		
				0140	0180	0280	0410	0410	0410	0410	0410	0410	0410		ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
12/18/90		UNG-TP2-1	1	X										24 hr	851902		* Below
12/18/90		UNG-TP2-2	1	X											851903		"
12/18/90		UNG-TP2-3	1		X										851904		SUBCONTRACT
12/18/90		UNG-TP2-4	1			X	X	X					24 hr		851905		* Below
12/18/90		UNG-TP2-5	1						X				24 hr		851906		SUBCONTRACT
12/18/90		UNG-TP2-6	1						X						851907		* Below
12/18/90		UNG-TP2-7	1							X					851908		SUBCONTRACT
12/18/90		UNG-TP2-8	1	X											851909		* Below
12/18/90		UNG-TP2-9	1	X											851910		"

NOTES/MISCELLANEOUS

PROJECT * 9010: Total Cyanide
SPECIFIC 9066 Phenols custody/inlock
24 hr Hold for PH Air bill # 4592996385

Relinquished by: (Signature)

Received By: (Signature)

Date

Time

Relinquished By: (Signature)

Received By: (Signature)

Date

Time

Relinquished By: (Signature)

Received By: (Signature)

Date

Time

Shipment

Description of
Transport ContainerOther Chains-Of-Custody
Transported with this
Chain (by Serial No.)

Dispatched By: (Signature)

Date

Time

Received for lab By: (Signature)

Date

Time

Name: Peter Porter

(Check Office Below)

Verbals Requested: Yes ☒ No ☐

PORTER
TEL (219) 888-6881
FAX (219) 888-7188

☐ SAN MATEO
TEL (415) 573-8012
FAX (415) 573-5054

☐ IRVINE
TEL (714) 767-1755
FAX (714) 767-0960

☐ ORLANDO
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☒ OTHER Site
TEL 714 588-7060
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AL NO. 01481

WHITE: Field Copy

YELLOW: Project Copy

PINK: Laboratory Copy

Final Report

Page: 1

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP2-1
 Matrix: SOLID
 Lab ID: 851902-SA-A
 Project #: 88-093
 Starting Depth: 0.00
 Percent Solids: 78.3 %

LP #: 9172

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 DQ.C. Batch Nbr M0726908D1
 Date Analyzed: 7/26/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	13.	ug/kg	EPA 8240
Bromomethane	ND	13.	ug/kg	
Vinyl Chloride	ND	13.	ug/kg	
Chloroethane	ND	13.	ug/kg	
Methylene Chloride	15.	6.4	ug/kg	
Acetone	ND	13.	ug/kg	
Carbon Disulfide	ND	6.4	ug/kg	
1,1-Dichloroethane	ND	6.4	ug/kg	
1,1-Dichloroethane	ND	6.4	ug/kg	
1,2-Dichloroethane (total)	ND	6.4	ug/kg	
Chloroform	ND	6.4	ug/kg	
1,2-Dichloroethane	ND	6.4	ug/kg	
2-Butanone	ND	13.	ug/kg	
1,1,1-Trichloroethane	ND	6.4	ug/kg	
Carbon Tetrachloride	ND	6.4	ug/kg	
Vinyl Acetate	ND	13.	ug/kg	
Bromodichloromethane	ND	6.4	ug/kg	
1,2-Dichloropropane	ND	6.4	ug/kg	
cis-1,3-Dichloropropene	ND	6.4	ug/kg	
Trichloroethane	ND	6.4	ug/kg	
Dibromochloromethane	ND	6.4	ug/kg	
1,1,2-Trichloroethane	ND	6.4	ug/kg	
Benzene	ND	6.4	ug/kg	
trans-1,3-Dichloropropene	ND	6.4	ug/kg	
Bromoform	ND	6.4	ug/kg	
4-Methyl-2-pentanone	ND	13.	ug/kg	
2-Hexanone	ND	13.	ug/kg	
Tetrachloroethane	ND	6.4	ug/kg	
1,1,2,2-Tetrachloroethane	ND	6.4	ug/kg	
Toluene	ND	6.4	ug/kg	
Chlorobenzene	ND	6.4	ug/kg	
Ethyl Benzene	ND	6.4	ug/kg	
Styrene	ND	6.4	ug/kg	
Xylene (total)	ND	6.4	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Canonie Environmental Case Narrative

Client: SINCLAIR REFINERY, WELLSVILLE, NY
LP #: 9172

Project #: 88-093

GC/MS Volatile Case Narrative

The soil samples were analyzed for volatile organics and met all OC criteria as specified by EPA SOW 2/88. The blank contained methylene chloride at 3 ug/L. Any positive sample results for methylene chloride below ten times the concentration found in the blank may be considered laboratory artifacts.

Suzanne Draeger
Project Chemist

5-2-90
Date

Final Report

Page: 6

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: DNG-TP2-6
 Matrix: SOLID
 Lab ID: 851907-8A-A
 Project #: 88-093
 Starting Depth: 0.00
 Percent Solids: 77.3 %

LP #: 9172

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: 7/19/90
 Date Analyzed: 7/25/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	430.	ug/kg	EPA 8270
bis(2-Chloroethyl) ether	ND	430.	ug/kg	
2-Chlorophenol	ND	430.	ug/kg	
1,3-Dichlorobenzene	ND	430.	ug/kg	
1,4-Dichlorobenzene	ND	430.	ug/kg	
Benzyl alcohol	ND	430.	ug/kg	
1,2-Dichlorobenzene	ND	430.	ug/kg	
2-Methylphenol	ND	430.	ug/kg	
bis(2-Chloroisopropyl) ether	ND	430.	ug/kg	
4-Methylphenol	ND	430.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	430.	ug/kg	
Hexachloroethane	ND	430.	ug/kg	
Nitrobenzene	ND	430.	ug/kg	
Isophorone	ND	430.	ug/kg	
2-Nitrophenol	ND	430.	ug/kg	
2,4-Dimethylphenol	ND	430.	ug/kg	
Benzoic acid	ND	430.	ug/kg	
bis(2-Chloroethoxy) methane	ND	2100.	ug/kg	
2,4-Dichlorophenol	ND	430.	ug/kg	
1,2,4-Trichlorobenzene	ND	430.	ug/kg	
Naphthalene	ND	430.	ug/kg	
4-Chloroaniline	ND	430.	ug/kg	
Hexachlorobutadiene	ND	430.	ug/kg	
4-Chloro-3-methylphenol	ND	430.	ug/kg	
2-Methylnaphthalene	ND	430.	ug/kg	
Hexachlorocyclopentadiene	ND	430.	ug/kg	
2,4,6-Trichlorophenol	ND	430.	ug/kg	
2,4,5-Trichlorophenol	ND	2100.	ug/kg	
2-Chloronaphthalene	ND	430.	ug/kg	
2-Nitroaniline	ND	2100.	ug/kg	
Dimethylphthalate	ND	430.	ug/kg	
Acenaphthylene	ND	430.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 7

Client: SINOCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP2-6
 Matrix: SOLID
 Lab ID: 851907-8A-A
 Project #: 88-093
 Starting Depth: 0.00
 Percent Solids: 77.3 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 O.C. Batch #: 7/19/90
 Date Analyzed: 7/25/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

LP #: 9172

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	430.	ug/kg	
3-Nitroaniline	ND	2100.	ug/kg	
Acenaphthene	ND	430.	ug/kg	
2,4-Dinitrophenol	ND	2100.	ug/kg	
4-Nitrophenol	ND	2100.	ug/kg	
Dibenzofuran	ND	430.	ug/kg	
2,4-Dinitrotoluene	ND	430.	ug/kg	
Dichlorophthalate	ND	430.	ug/kg	
4-Chlorophenyl-phenylether	ND	430.	ug/kg	
Fluorene	ND	430.	ug/kg	
4-Nitroaniline	ND	2100.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	2100.	ug/kg	
N-Nitrosodiphenylamine	ND	430.	ug/kg	
4-Bromophenyl-phenylether	ND	430.	ug/kg	
Hexachlorobenzene	ND	430.	ug/kg	
Pentachlorophenol	ND	2100.	ug/kg	
Phenanthrene	ND	430.	ug/kg	
Anthracene	ND	430.	ug/kg	
Di-n-butylphthalate	ND	430.	ug/kg	
Fluoranthene	ND	430.	ug/kg	
Pyrene	ND	430.	ug/kg	
Butylbenzylphthalate	ND	430.	ug/kg	
3,3'-Dichlorobenzidine	ND	850.	ug/kg	
Benzo(a)anthracene	ND	430.	ug/kg	
Chrysene	ND	430.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	430.	ug/kg	
Di-n-octylphthalate	ND	430.	ug/kg	
Benzo(b)fluoranthene	ND	430.	ug/kg	
Benzo(k)fluoranthene	ND	390.	ug/kg	
Benzo(a)pyrene	ND	430.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	430.	ug/kg	
Dibenz(a,h)anthracene	ND	430.	ug/kg	
Benzo(g,h,i)perylene	ND	430.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 4

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP2-4
 Matrix: SOLID
 Lab ID: 851905-8A-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 77.7 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: I071790P83
 Date Analyzed: 7/20/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Result*	Reporting Limit	Units	Method
Arsenic	ND	13.	mg/kg	EPA 7060
Mercury	ND	.26	mg/kg	EPA 7471
Antimony	ND	7.7	mg/kg	EPA 6010
Beryllium	ND	1.3	mg/kg	
Cadmium	1.9	1.3	mg/kg	
Chromium	22.	6.4	mg/kg	
Copper	29.	6.4	mg/kg	
Lead	17.	6.4	mg/kg	
Nickel	41.	6.4	mg/kg	
Silver	ND	6.4	mg/kg	
Zinc	82.	6.4	mg/kg	
Selenium	ND	1.3	mg/kg	EPA 7740
Thallium	ND	13.	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Final Report

Page: 3

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TP2-4
Matrix: SOLID
Lab ID: 851905-SA-A
Project #: 88-093 LP #: 9172
Starting Depth: 0.00
Percent Solids: 77.7 %

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: I071990CS2
Date Analyzed: 7/19/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.3	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonic Environmental

Final Report

Page: 5

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TP2-4
Matrix: SOLID
Lab ID: 851903-SA-A
Project #: 88-093 LP #: 9172
Starting Depth: 0.00
Percent Solids: 77.7 %

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: 1071690CS1
Date Analyzed: 7/16/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	8.1	.000	pH	EPA 9045

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CanonieEnvironmental

Final Report

Page: 2

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP2-2
 Matrix: SOLID
 Lab ID: 851903-8A-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 76.3 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Date Extracted: 7/18/90
 Date Analyzed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.6	ug/kg	EPA 8080
alpha-BHC	ND	2.6	ug/kg	
beta-BHC	ND	2.6	ug/kg	
delta-BHC	ND	2.6	ug/kg	
gamma-BHC	ND	2.6	ug/kg	
Chlordane	ND	33.	ug/kg	
4,4'-DDD	ND	2.6	ug/kg	
4,4'-DDE	ND	2.6	ug/kg	
4,4'-DDT	ND	2.6	ug/kg	
Dieldrin	ND	2.6	ug/kg	
Endosulfan I	ND	2.6	ug/kg	
Endosulfan II	ND	2.6	ug/kg	
Endosulfan sulfate	ND	2.6	ug/kg	
Endrin	ND	2.6	ug/kg	
Endrin aldehyde	ND	2.6	ug/kg	
Heptachlor	ND	2.6	ug/kg	
Heptachlor epoxide	ND	2.6	ug/kg	
Methoxychlor	ND	6.6	ug/kg	
Toxaphene	ND	130.	ug/kg	
PCB-1016	ND	33.	ug/kg	
PCB-1221	ND	33.	ug/kg	
PCB-1232	ND	33.	ug/kg	
PCB-1242	ND	33.	ug/kg	
PCB-1248	ND	33.	ug/kg	
PCB-1254	ND	66.	ug/kg	
PCB-1260	ND	66.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental



2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canobie Environmental Services

Client ID: UNG-TP2-3

Lab ID: 053757-0001-SA

Enseco ID: 156212

Matrix: SOIL

Sampled: 12 JUL 90

Received: 14 JUL 90

Authorized: 16 JUL 90

Prepared: 20 JUL 90

Analyzed: 24 JUL 90

Sample Amount 10.5G

Percent Moisture NA

Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
-----------	--------	-------	-----------------	-----------------

Dioxins

2,3,7,8-TCDD	ND	ng/g	0.010	
--------------	----	------	-------	--

% Recovery

13C-2,3,7,8-TCDD

61

ND = Not detected

NA = Not applicable

Requested By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787

Phenolics (4-AAP)

Method 9066

Client Name: Canobie Environmental Services
Matrix: SOIL Received: 14 JUL 90
Units: mg/kg Authorized: 16 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053757-0003-SA	UNG-TP2-7	0.66	0.50	25 JUL 90	25 JUL 90

ND = Not detected
NA = Not applicable

Prepared By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.

Rev 230787

9172

PROJECT NAME Wellsville NY

PROJECT NUMBER 88-093

RECORDER [Signature]

SAMPLERS Grant M. [Signature]

(SIGN)

(See Reverse for Instructions)

SAMPLE CONTAINER DESCRIPTION CODES

A 40-ml VOA Vial
B Glass Ltr
C Plastic 500 ml
D Plastic Ltr

E Brass Tube
F Other Glass

SAMPLE DESCRIPTION CODES

A Ground Water
B Surface Water
C Leachate
D Rinseate
E Soil/Sediment

F Oil
G Waste
H Blank/Spike
I Other

TEST CODES

1 Standard
2 48 Hour
3 24 Hour
4 Other

DATE	TIME	SAMPLE ID	NUMBER OF CONTAINERS AND PRESERVATION		ANALYSIS REQUESTED										NOTES	LABORATORY USE ONLY		
					8240	8280	8270	8280	8210	640/700	8340	9066	9066	9066		ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
1/10	14:00	UNG-TP6-1	FE		X										24 hr	951911	A	+ Below
1/10	14:00	UNG-TP6-2			X											951912	A	"
1/10	14:00	UNG-TP6-3					X									951913	A	"
1/10	14:00	UNG-TP6-4						X								951914	A	SUBCONTRACT
1/10	14:00	UNG-TP6-5							X	X	X				24 hr	951915	A	+ Below
1/10	14:00	UNG-TP6-6									X				24 hr	951916	A	SUBCONTRACT
1/10	14:00	UNG-TP6-7										X				951917	A	SUBCONTRACT
1/10	14:00	UNG-TP6-8											X			951918	A	+ Below
1/10	14:00	UNG-TP6-9														951919	A	+ Below

Relinquished by: (Signature) _____ Date _____ Time _____

Relinquished by: (Signature) _____ Date _____ Time _____

Relinquished by: (Signature) _____ Date _____ Time _____

Received By: (Signature) _____ Date _____ Time _____

Received By: (Signature) _____ Date _____ Time _____

Received By: (Signature) _____ Date _____ Time _____

Dispatched By: (Signature) [Signature] Date 7/14/90 Time 2:15

Received for lab By: (Signature) [Signature] Date 7/15/90 Time 14:55

Verbal Requested: Yes ☒ No ☐

POWER
TEL (214) 985-8851
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SERIAL NO. **01480**

WHITE Field Copy YELLOW Project Copy PINK Laboratory Copy

Final Report

Page: 10

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP6-1
 Matrix: SOLID
 Lab ID: 851911-8A-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 78.5 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 DQ.C. Batch Nbr M072690SD1
 Date Analyzed: 7/26/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	13.	ug/kg	EPA 8240
Bromomethane	ND	13.	ug/kg	
Vinyl Chloride	ND	13.	ug/kg	
Chloroethane	ND	13.	ug/kg	
Methylene Chloride	15.	6.4	ug/kg	
Acetone	ND	13.	ug/kg	
Carbon Disulfide	ND	6.4	ug/kg	
1,1-Dichloroethene	ND	6.4	ug/kg	
1,1-Dichloroethane	ND	6.4	ug/kg	
1,2-Dichloroethane (total)	ND	6.4	ug/kg	
Chloroform	ND	6.4	ug/kg	
1,2-Dichloroethane	ND	6.4	ug/kg	
2-Butanone	ND	13.	ug/kg	
1,1,1-Trichloroethane	ND	6.4	ug/kg	
Carbon Tetrachloride	ND	6.4	ug/kg	
Vinyl Acetate	ND	13.	ug/kg	
Bromodichloromethane	ND	6.4	ug/kg	
1,2-Dichloropropane	ND	6.4	ug/kg	
cis-1,3-Dichloropropene	ND	6.4	ug/kg	
Trichloroethane	ND	6.4	ug/kg	
Dibromochloromethane	ND	6.4	ug/kg	
1,1,2-Trichloroethane	ND	6.4	ug/kg	
Benzene	ND	6.4	ug/kg	
trans-1,3-Dichloropropene	ND	6.4	ug/kg	
Bromoform	ND	6.4	ug/kg	
4-Methyl-2-pentanone	ND	13.	ug/kg	
2-Hexanone	ND	13.	ug/kg	
Tetrachloroethene	ND	6.4	ug/kg	
1,1,2,2-Tetrachloroethane	ND	6.4	ug/kg	
Toluene	ND	6.4	ug/kg	
Chlorobenzene	ND	6.4	ug/kg	
Ethyl Benzene	ND	6.4	ug/kg	
Styrene	ND	6.4	ug/kg	
Xylene (total)	ND	6.4	ug/kg	

Tested By : SLD

Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 12

Client: SINCLAIR REFINERY, WELLSVILLE,

Sample ID: UNG-TP6-3

Matrix: SOLID

Lab ID: 851913-8A-A

Project #: 88-093

Starting Depth: 0.00

Percent Solids: 79.2 %

LP #: 9172

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: 7/19/90
 Date Analyzed: 7/30/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	1700.	ug/kg	EPA 8270
bis(2-Chloroethyl) ether	ND	1700.	ug/kg	
2-Chlorophenol	ND	1700.	ug/kg	
1,3-Dichlorobenzene	ND	1700.	ug/kg	
1,4-Dichlorobenzene	ND	1700.	ug/kg	
Benzyl alcohol	ND	1700.	ug/kg	
1,2-Dichlorobenzene	ND	1700.	ug/kg	
2-Methylphenol	ND	1700.	ug/kg	
bis(2-Chloroisopropyl) ether	ND	1700.	ug/kg	
4-Methylphenol	ND	1700.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	1700.	ug/kg	
Hexachloroethane	ND	1700.	ug/kg	
Nitrobenzene	ND	1700.	ug/kg	
Isophorone	ND	1700.	ug/kg	
2-Nitrophenol	ND	1700.	ug/kg	
2,4-Dimethylphenol	ND	1700.	ug/kg	
Benzoic acid	ND	8100.	ug/kg	
bis(2-Chloroethoxy) methane	ND	1700.	ug/kg	
2,4-Dichlorophenol	ND	1700.	ug/kg	
1,2,4-Trichlorobenzene	ND	1700.	ug/kg	
Naphthalene	ND	1700.	ug/kg	
4-Chloroaniline	ND	1700.	ug/kg	
Hexachlorobutadiene	ND	1700.	ug/kg	
4-Chloro-3-methylphenol	ND	1700.	ug/kg	
2-Methylnaphthalene	ND	1700.	ug/kg	
Hexachlorocyclopentadiene	ND	1700.	ug/kg	
2,4,6-Trichlorophenol	ND	1700.	ug/kg	
2,4,5-Trichlorophenol	ND	8100.	ug/kg	
2-Chloronaphthalene	ND	1700.	ug/kg	
2-Nitroaniline	ND	8100.	ug/kg	
Dimethylphthalate	ND	1700.	ug/kg	
Acenaphthylene	ND	1700.	ug/kg	

Tested By : DSH
 Validated By: RJT

ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 13

Client: SINCLAIR REFINERY, WELLSVILLE,

Date Sampled: 7/12/1990

Sample ID: URG-TP6-3

Date Received: 7/13/1990

Matrix: SOLID

Q.C. Batch #: 7/19/90

Lab ID: 851913-9A-A

Date Analyzed: 7/30/1990

Project #: 88-093

Date Reported: 8/02/1990

Starting Depth: 0.00

Ending Depth: 0.00

Percent Solids: 79.2 %

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	1700.	ug/kg	
3-Nitroaniline	ND	8100.	ug/kg	
Acenaphthene	ND	1700.	ug/kg	
2,4-Dinitrophenol	ND	8100.	ug/kg	
4-Nitrophenol	ND	8100.	ug/kg	
Dibenzofuran	ND	1700.	ug/kg	
2,4-Dinitrotoluene	ND	1700.	ug/kg	
Diethylphthalate	ND	1700.	ug/kg	
4-Chlorophenyl-phenylether	ND	1700.	ug/kg	
Fluorene	ND	1700.	ug/kg	
4-Nitroaniline	ND	8100.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	8100.	ug/kg	
N-Nitrosodiphenylamine	ND	1700.	ug/kg	
4-Bromophenyl-phenylether	ND	1700.	ug/kg	
Hexachlorobenzene	ND	1700.	ug/kg	
Pentachlorophenol	ND	8100.	ug/kg	
Phenanthrene	ND	1700.	ug/kg	
Anthracene	ND	1700.	ug/kg	
Di-n-butylphthalate	13000.	1700.	ug/kg	
Fluoranthene	ND	1700.	ug/kg	
Pyrene	ND	1700.	ug/kg	
Butylbenzylphthalate	ND	1700.	ug/kg	
3,3'-Dichlorobenzidine	ND	3300.	ug/kg	
Benzo(a)anthracene	ND	1700.	ug/kg	
Chrysene	ND	1700.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	1700.	ug/kg	
Di-n-octylphthalate	ND	1700.	ug/kg	
Benzo(b)fluoranthene	ND	1700.	ug/kg	
Benzo(k)fluoranthene	ND	1500.	ug/kg	
Benzo(a)pyrene	ND	1700.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	1700.	ug/kg	
Dibenz(a,h)anthracene	ND	1700.	ug/kg	
Benzo(g,h,i)perylene	ND	1700.	ug/kg	

Tested By : DSH

Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 15

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP6-5
 Matrix: SOLID
 Lab ID: 851915-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 78.5 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: I071790PS3
 Date Analyzed: 7/20/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Result*	Reporting Limit	Units	Method
Arsenic	ND	13.	mg/kg	EPA 7060
Mercury	ND	.26	mg/kg	EPA 7471
Antimony	ND	7.6	mg/kg	EPA 6010
Beryllium	ND	1.3	mg/kg	
Cadmium	ND	1.3	mg/kg	
Chromium	28.	6.4	mg/kg	
Copper	27.	6.4	mg/kg	
Lead	17.	6.4	mg/kg	
Nickel	47.	6.4	mg/kg	
Silver	ND	6.4	mg/kg	
Zinc	88.	6.4	mg/kg	
Selenium	ND	1.3	mg/kg	EPA 7740
Thallium	ND	13.	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonic Environmental

Final Report

Page: 14

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TF6-5
Matrix: SOLID
Lab ID: 851915-SA-A
Project #: 88-093 LP #: 9172
Starting Depth: 0.00
Percent Solids: 78.5 %

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: I071990C82
Date Analyzed: 7/19/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.3	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLB

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 16

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TP6-5
Matrix: SOLID
Lab ID: 851915-SA-A
Project #: 88-093 LP #: 9172
Starting Depth: 0.00
Percent Solids: 78.5 %

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: I071690CS1
Date Analyzed: 7/16/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	8.1	.000	pH	EPA 9045

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 17

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP6-8
 Matrix: SOLID
 Lab ID: 851918-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 79.0 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Date Extracted: 7/18/90
 Date Analyzed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.5	ug/kg	EPA 8080
alpha-BHC	ND	2.5	ug/kg	
beta-BHC	ND	2.5	ug/kg	
delta-BHC	ND	2.5	ug/kg	
gamma-BHC	ND	2.5	ug/kg	
Chlordane	ND	32.	ug/kg	
4,4'-DDD	ND	2.5	ug/kg	
4,4'-DDE	ND	2.5	ug/kg	
4,4'-DDT	ND	2.5	ug/kg	
Dieldrin	ND	2.5	ug/kg	
Endosulfan I	ND	2.5	ug/kg	
Endosulfan II	ND	2.5	ug/kg	
Endosulfan sulfate	ND	2.5	ug/kg	
Endrin	ND	2.5	ug/kg	
Endrin aldehyde	ND	2.5	ug/kg	
Heptachlor	ND	2.5	ug/kg	
Heptachlor epoxide	ND	2.5	ug/kg	
Methoxychlor	ND	6.3	ug/kg	
Toxaphene	ND	130.	ug/kg	
PCB-1016	ND	32.	ug/kg	
PCB-1221	ND	32.	ug/kg	
PCB-1232	ND	32.	ug/kg	
PCB-1242	ND	32.	ug/kg	
PCB-1248	ND	32.	ug/kg	
PCB-1254	ND	63.	ug/kg	
PCB-1260	ND	63.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonic Environmental



2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canonic Environmental Services

Client ID: UNG-TP6-4

Lab ID: 053757-0004-SA

Matrix: SOIL

Authorized: 16 JUL 90

Enseco ID: 156215

Sampled: 12 JUL 90

Prepared: 20 JUL 90

Received: 14 JUL 90

Analyzed: 24 JUL 90

Sample Amount 10.1G
 Percent Moisture NA
 Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
-----------	--------	-------	-----------------	-----------------

Dioxins

2,3,7,8-TCDD

ND

ng/g

0.015

% Recovery

13C-2,3,7,8-TCDD

44

ND = Not detected

NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787



Phenolics (4-AAP)

Method 9066

Client Name: Canobie Environmental Services

Matrix: SOIL

Received: 14 JUL 90

Units: mg/kg

Authorized: 16 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053757-0006-SA	UNG-TP6-7	2.3	0.50	25 JUL 90	25 JUL 90

ND = Not detected
NA = Not applicable

Sorted By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.

Rev 230787

PROJECT NAME: **WELLSVILLE NY**

PROJECT NUMBER: **88-093**

RECORDED BY: *[Signature]*

SAMPLERS: *Grant Price*

(PRINT)

(SIGN)

(See Reverse for Instructions)

9125-A-3

SAMPLE CONTAINER DESCRIPTION CODES

A 40-ml VOA Vial
B Glass Liter
C Plastic 500-ml
D Plastic Liter

SAMPLE DESCRIPTION CODES

A Ground Water
B Surface Water
C Leachate
D Rinseate
E Soil/Sediment

LAB CODES

1 Standard
2 48 Hour
3 24 Hour
4 Other

DATE		TIME	SAMPLE ID	NUMBER OF CONTAINERS AND PRESERVATION		ANALYSIS REQUESTED										NOTES	ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
7/1/90		10:05	UNG-TP10-1			X											851920	A	* Below
7/1/90		10:10	UNG-TP10-2			X											851921	A	ii
7/1/90		10:15	UNG-TP10-3			X											851922	A	ii
7/1/90		10:20	UNG-TP10-4			X											851923	A	ii
7/1/90		10:25	UNG-TP10-5			X											851924	A	ii
7/1/90		10:30	UNG-TP10-6			X											851925	A	SUBCONTRACT
7/1/90		10:35	UNG-TP10-7			X	X	X	X	X	X	X	X	X			851926	A	* Below
7/1/90		10:40	UNG-TP10-8			X											851927	A	SUBCONTRACT
7/1/90		10:45	UNG-TP10-9			X											851928	A	SUBCONTRACT

NOTES/MISCELLANEOUS

9010: TOTAL CYANIDE

9066 PHENOLS

24 HR. HOLD FOR PH

Air bill # 4597556325

Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time

Method of Shipment: **EX**

Description of Transport Container: **PLASTIC COOLER**

Other Chains-Of-Custody Transported with this Chain (by Serial No.): **01480, 01491**

Dispatched By: (Signature) *[Signature]* Date: **7/1/90** Time: **2:15**

Received for Lab By: (Signature) *[Signature]* Date: **7/1/90** Time: **14:05**

Send Lab Results to (Name): **PETE RUTER** (Check Office Below) Verbal Requested: Yes ☒ No ☐

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DENVER

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WHITE: Field Copy YELLOW: Project Copy PINK: Laboratory Copy

Final Report

Page: 20

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP10-2
 Matrix: SOLID
 Lab ID: 851921-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 75.9 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 DQ.C. Batch Nbr M072690SD1
 Date Analyzed: 7/26/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	13.	ug/kg	EPA 8240
Bromomethane	ND	13.	ug/kg	
Vinyl Chloride	ND	13.	ug/kg	
Chloroethane	ND	13.	ug/kg	
Methylene Chloride	12.	6.6	ug/kg	
Acetone	ND	13.	ug/kg	
Carbon Disulfide	ND	6.6	ug/kg	
1,1-Dichloroethene	ND	6.6	ug/kg	
1,1-Dichloroethane	ND	6.6	ug/kg	
1,2-Dichloroethene (total)	ND	6.6	ug/kg	
Chloroform	ND	6.6	ug/kg	
1,2-Dichloroethane	ND	6.6	ug/kg	
2-Butanone	ND	13.	ug/kg	
1,1,1-Trichloroethane	ND	6.6	ug/kg	
Carbon Tetrachloride	ND	6.6	ug/kg	
Vinyl Acetate	ND	13.	ug/kg	
Bromodichloromethane	ND	6.6	ug/kg	
1,2-Dichloropropane	ND	6.6	ug/kg	
cis-1,3-Dichloropropene	ND	6.6	ug/kg	
Trichloroethene	ND	6.6	ug/kg	
Dibromochloromethane	ND	6.6	ug/kg	
1,1,2-Trichloroethane	ND	6.6	ug/kg	
Benzene	ND	6.6	ug/kg	
trans-1,3-Dichloropropene	ND	6.6	ug/kg	
Bromoform	ND	6.6	ug/kg	
4-Methyl-2-pentanone	ND	13.	ug/kg	
2-Hexanone	ND	13.	ug/kg	
Tetrachloroethene	ND	6.6	ug/kg	
1,1,2,2-Tetrachloroethane	ND	6.6	ug/kg	
Toluene	ND	6.6	ug/kg	
Chlorobenzene	ND	6.6	ug/kg	
Ethyl Benzene	ND	6.6	ug/kg	
Styrene	ND	6.6	ug/kg	
Xylene (total)	ND	6.6	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP10-5
 Matrix: SOLID
 Lab ID: 851924-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 85.6 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: 7/19/90
 Date Analyzed: 7/25/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	380.	ug/kg	EPA 8270
bis(2-Chloroethyl) ether	ND	380.	ug/kg	
2-Chlorophenol	ND	380.	ug/kg	
1,3-Dichlorobenzene	ND	380.	ug/kg	
1,4-Dichlorobenzene	ND	380.	ug/kg	
Benzyl alcohol	ND	380.	ug/kg	
1,2-Dichlorobenzene	ND	380.	ug/kg	
2-Methylphenol	ND	380.	ug/kg	
bis(2-Chloroisopropyl) ether	ND	380.	ug/kg	
4-Methylphenol	ND	380.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	380.	ug/kg	
Hexachloroethane	ND	380.	ug/kg	
Nitrobenzene	ND	380.	ug/kg	
Isophorone	ND	380.	ug/kg	
2-Nitrophenol	ND	380.	ug/kg	
2,4-Dimethylphenol	ND	380.	ug/kg	
Benzoic acid	ND	1900.	ug/kg	
bis(2-Chloroethoxy) methane	ND	380.	ug/kg	
2,4-Dichlorophenol	ND	380.	ug/kg	
1,2,4-Trichlorobenzene	ND	380.	ug/kg	
Naphthalene	ND	380.	ug/kg	
4-Chloroaniline	ND	380.	ug/kg	
Hexachlorobutadiene	ND	380.	ug/kg	
4-Chloro-3-methylphenol	ND	380.	ug/kg	
2-Methylnaphthalene	ND	380.	ug/kg	
Hexachlorocyclopentadiene	ND	380.	ug/kg	
2,4,6-Trichlorophenol	ND	380.	ug/kg	
2,4,5-Trichlorophenol	ND	1900.	ug/kg	
2-Chloronaphthalene	ND	380.	ug/kg	
2-Nitroaniline	ND	1900.	ug/kg	
Dimethylphthalate	ND	380.	ug/kg	
Acenaphthylene	ND	380.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP10-3
 Matrix: SOLID
 Lab ID: 851924-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 85.6 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: 7/19/90
 Date Analyzed: 7/23/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	380.	ug/kg	
3-Nitroaniline	ND	1900.	ug/kg	
Acenaphthene	ND	380.	ug/kg	
2,4-Dinitrophenol	ND	1900.	ug/kg	
4-Nitrophenol	ND	1900.	ug/kg	
Dibenzofuran	ND	380.	ug/kg	
2,4-Dinitrotoluene	ND	380.	ug/kg	
Diethylphthalate	ND	380.	ug/kg	
4-Chlorophenyl-phenylether	ND	380.	ug/kg	
Fluorene	ND	380.	ug/kg	
4-Nitroaniline	ND	1900.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	1900.	ug/kg	
N-Nitrosodiphenylamine	ND	380.	ug/kg	
4-Bromophenyl-phenylether	ND	380.	ug/kg	
Hexachlorobenzene	ND	380.	ug/kg	
Pentachlorophenol	ND	1900.	ug/kg	
Phenanthrene	ND	380.	ug/kg	
Anthracene	ND	380.	ug/kg	
Di-n-butylphthalate	ND	380.	ug/kg	
Fluoranthene	ND	380.	ug/kg	
Pyrene	ND	380.	ug/kg	
Butylbenzylphthalate	ND	380.	ug/kg	
3,3'-Dichlorobenzidine	ND	770.	ug/kg	
Benzo (a) anthracene	ND	380.	ug/kg	
Chrysene	ND	380.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	380.	ug/kg	
Di-n-octylphthalate	ND	380.	ug/kg	
Benzo (b) fluoranthene	ND	380.	ug/kg	
Benzo (k) fluoranthene	ND	350.	ug/kg	
Benzo (a) pyrene	ND	380.	ug/kg	
Indeno (1,2,3-cd) pyrene	ND	380.	ug/kg	
Dibenz (a,h) anthracene	ND	380.	ug/kg	
Benzo (g,h,i) perylene	ND	380.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP10-7
 Matrix: SOLID
 Lab ID: 851926-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 76.1 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Q.C. Batch #: 1071790P83
 Date Analyzed: 7/20/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Result*	Reporting Limit	Units	Method
Arsenic	ND	13.	mg/kg	EPA 7060
Mercury	ND	.26	mg/kg	EPA 7471
Antimony	ND	7.9	mg/kg	EPA 6010
Beryllium	ND	1.3	mg/kg	
Cadmium	ND	1.3	mg/kg	
Chromium	29.	6.6	mg/kg	
Copper	26.	6.6	mg/kg	
Lead	16.	6.6	mg/kg	
Nickel	50.	6.6	mg/kg	
Silver	ND	6.6	mg/kg	
Zinc	87.	6.6	mg/kg	
Selenium	ND	1.3	mg/kg	EPA 7740
Thallium	ND	13.	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Final Report

Page: 25

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TP10-7
Matrix: SOLID
Lab ID: 851926-SA-A
Project #: 88-093 LP #: 9172
Starting Depth: 0.00
Percent Solids: 76.1 %

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: I071990C82
Date Analyzed: 7/19/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.3	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Final Report

Page: 27

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TF10-7
Matrix: SOLID
Lab ID: 851926-SA-A
Project #: 88-093 LP #: 9172
Starting Depth: 0.00
Percent Solids: 76.1 %

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: 1071690CS1
Date Analyzed: 7/16/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	8.000	.000	pH	EPA 9045

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CanonieEnvironmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: UNG-TP10-3
 Matrix: SOLID
 Lab ID: 851922-SA-A
 Project #: 88-093 LP #: 9172
 Starting Depth: 0.00
 Percent Solids: 92.6 %

Date Sampled: 7/12/1990
 Date Received: 7/13/1990
 Date Extracted: 7/18/90
 Date Analyzed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.2	ug/kg	EPA 8080
alpha-BHC	ND	2.2	ug/kg	
beta-BHC	ND	2.2	ug/kg	
delta-BHC	ND	2.2	ug/kg	
gamma-BHC	ND	2.2	ug/kg	
Chlordane	ND	27.	ug/kg	
4,4'-DDD	ND	2.2	ug/kg	
4,4'-DDE	ND	2.2	ug/kg	
4,4'-DDT	ND	2.2	ug/kg	
Dieldrin	ND	2.2	ug/kg	
Endosulfan I	ND	2.2	ug/kg	
Endosulfan II	ND	2.2	ug/kg	
Endosulfan sulfate	ND	2.2	ug/kg	
Endrin	ND	2.2	ug/kg	
Endrin aldehyde	ND	2.2	ug/kg	
Heptachlor	ND	2.2	ug/kg	
Heptachlor epoxide	ND	2.2	ug/kg	
Methoxychlor	ND	5.4	ug/kg	
Toxaphene	ND	110.	ug/kg	
PCB-1016	ND	27.	ug/kg	
PCB-1221	ND	27.	ug/kg	
PCB-1232	ND	27.	ug/kg	
PCB-1242	ND	27.	ug/kg	
PCB-1248	ND	27.	ug/kg	
PCB-1254	ND	54.	ug/kg	
PCB-1260	ND	54.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental



2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canobie Environmental Services

Client ID: UNG-TP10-6

Lab ID: 053757-0007-SA

Matrix: SOIL

Authorized: 16 JUL 90

Enseco ID: 156218

Sampled: 12 JUL 90

Prepared: 20 JUL 90

Received: 14 JUL 90

Analyzed: 24 JUL 90

Sample Amount 10.3G

Percent Moisture NA

Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
-----------	--------	-------	-----------------	-----------------

Dioxins

2,3,7,8-TCDD

ND

ng/g

0.019

% Recovery

13C-2,3,7,8-TCDD

56

ND = Not detected

NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787



Phenolics (4-AAP)

Method 9066

Client Name: Canobie Environmental Services

Matrix: SOIL
Units: mg/kgReceived: 14 JUL 90
Authorized: 16 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053757-0009-SA	UNG-TP10-9	4.3	0.50	25 JUL 90	25 JUL 90

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

Canonie Environmental

V. Patel

cc K Fitzgerald
G Shu
FLD-6
Chiron (letter only)

August 23, 1990

RECEIVED

AUG 24 1990

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406

Phone: 215-337-2551

Fax: 215-337-0560

88-093

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07011-3586

THOMAS GRANGER
EBASCO SERVICES INC.

Transmittal
Geotechnical and Chemical Laboratory Results
For Second Dike Fill Source
Partial River Channelization Project
Sinclair Refinery, Wellsville, New York

Dear Mr. Granger:

Canonie Environmental Services Corp. (Canonie) herein submits the following geotechnical and chemical data for a second source of off-site dike fill borrow material for the above-referenced project. The second source of dike fill material is the Babbit Pit located on Wedrick Road, Wellsville, New York. The testing of this material was performed in accordance with Section 4.4 of the Quality Assurance Project Plan. The attached data includes:

Geotechnical Testing

	<u>Page</u>
Babbit Pit Dike Fill Borrow Test Pit: TP-1	
Laboratory maximum density test	A-01
Liquid limit and plasticity index test	A-02
Unconsolidated, undrained compressive strength test	A-03
Natural moisture content test	A-03
Permeability test	A-03
Gradation test	A-04
Material classification test	A-04

Test Pit: TP-2	<u>Page</u>
Laboratory maximum density test	A-05
Liquid limit and plasticity index test	A-06
Unconsolidated, undrained compressive strength test	A-07
Natural moisture content test	A-07
Permeability test	A-07
Gradation test	A-08
Material classification test	A-08
Test Pit: TP-3	<u>Page</u>
Laboratory maximum density test	A-09
Liquid limit and plasticity index test	A-10
Unconsolidated, undrained compressive strength test	A-11
Natural moisture content test	A-11
Permeability test	A-11
Gradation test	A-12
Material classification test	A-12
Test Pit: TP-4	<u>Page</u>
Laboratory maximum density test	A-13
Liquid limit and plasticity index test	A-14
Unconsolidated, undrained compressive strength test	A-15
Natural moisture content test	A-15
Permeability test	A-15
Gradation test	A-16
Material classification test	A-16

Chemical Testing

Babbit Pit Dike Fill-Borrow
Test Pit: TP-1

Page

Chain-of-Custody	A-17
Volatile organic analysis	A-18
Semi-volatile organic analysis	A-19 and A-20
Priority pollutant metals	A-21
Total cyanide	A-22
pH	A-23
PCBs and pesticides	A-24
Dioxin (2,3,7,8-TCDD)	A-25
Total phenol	A-26

Test Pit: TP-3

Page

Chain-of-Custody	A-27
Volatile organic analysis	A-28
Semi-volatile organic analysis	A-29 and A-30
Priority pollutant metals	A-31
Total cyanide	A-32
pH	A-33
PCBs and pesticides	A-34
Dioxin (2,3,7,8-TCDD)	A-35
Total phenol	A-36

Mr. Thomas Granger

4

August 23, 1990

Test Pit: TP-4

Page

Chain-of-Custody

A-37

Volatile organic analysis

A-38

Semi-volatile organic analysis

A-39 and A-40

Priority pollutant metals

A-41

Total cyanide

A-42

pH

A-43

PCBs and pesticides

A-44

Dioxin (2,3,7,8-TCDD)

A-45

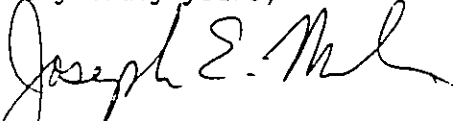
Total phenol

A-46

Note that the Babbit Pit meets the material specification outlined in Section 2.2 of Technical Specification 02200. Canonie requests EBASCO Environmental's acceptance of this material.

If you have any questions, please call me at (215) 337-2551.

Very truly yours,



Joseph E. Mihm, P.E.
Project Manager

JEM/cs

cc: Chris Ramachandra, EBASCO
Gary Stiles, EBASCO

MAXIMUM DENSITY DETERMINATION

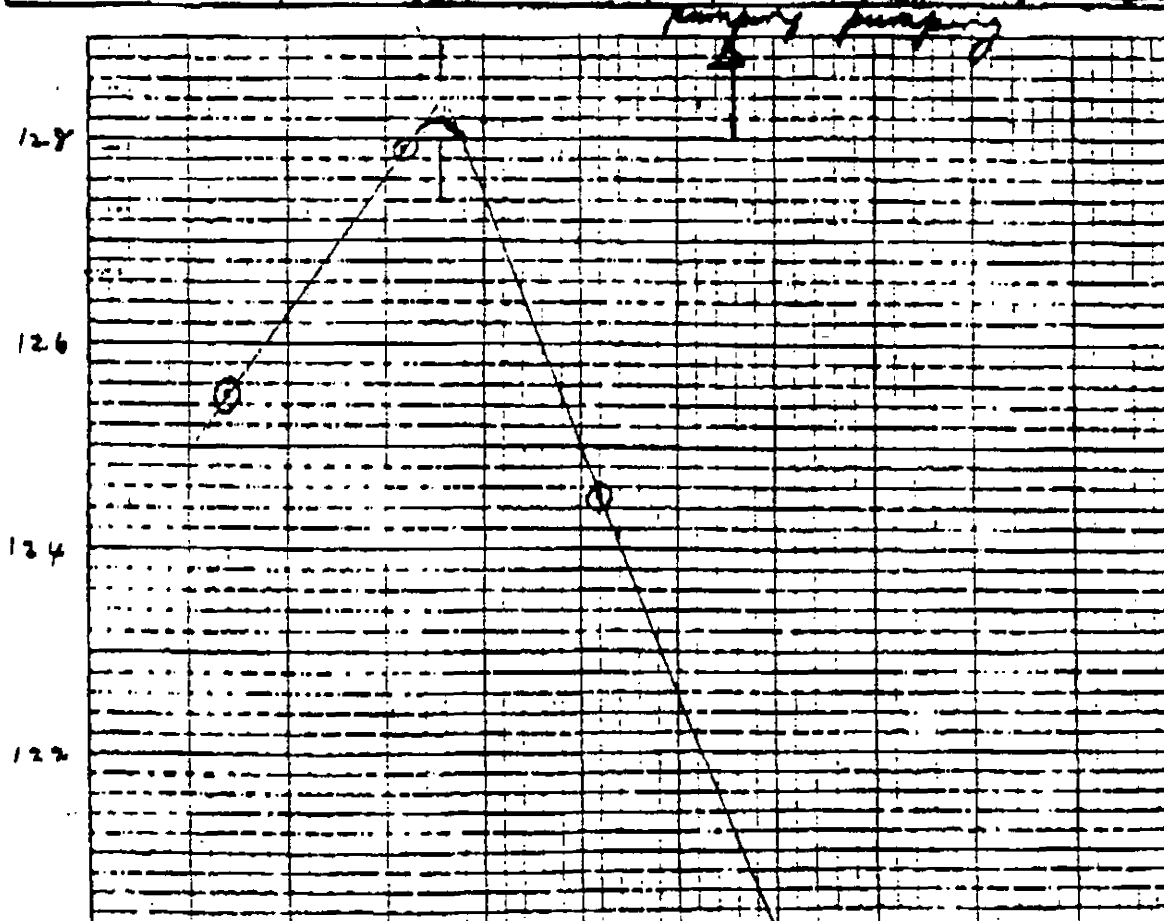
Job Name Canonic - Area Job No 90 p 2137 Date 8-7-90

Boring No Babbitt Sample No TP-1 Depth _____ Preparation D-698

Material brn clayey gravel

Mold 6" No Layers 3 Blow hr. 56 Type Hammer 5.5" 12" Mold Factor 0.0749

Test No.	1420	2530	3640	4750	5	6
Wt. Mold + Wet Soil	7490	7658	7615	7514		
Wt. Mold	2868	2868	2868	2868		
Wt. Soil	4622	4790	4747	4646		
Wet Density (lb./ft ³)	136.0	141.0	139.7	136.7		
Water Content (%)						
Dry Density (lb./ft ³)	125.5	128.2	124.5	119.8		
Tare No.	B-56	B-40	B-55	B-72		
Wet Wt. Tare	849.0	1074.1	951.0	1145.5		
Dry Wt. Tare	788.5	981.2	855.3	1013.4		
Wt. of Water	60.5	92.9	95.7	132.1		
Tare Wt.	71.8	72.2	71.8	74.2		
Wt. of Dry Soil	716.7	909.0	783.5	939.2		
Water Content (%)	8.4	10.2	12.2	14.1		



Moisture Content
10.8 %

Dry Density
128.2 PCF

K & W
2.6 of 128.2
C
10.8 + 2.6

PROJECT: Canonic: Arco

PROJECT No. 90C2137

Page 2

SUMMARY OF LABORATORY TEST RESULTS

*ASTM D 698

BORING and SAMPLE No	Date Rec'd	Sample Label	SPECIAL TESTS	NATURAL WATER CONTENT (%)	ATTERBERG LIMITS		UNCONF. COMPRESS.		UNIT DRY WGT (pcf)	SPECIFIC GRAVITY	GRAIN SIZE		OPT MOIST	CONSOLID	TRIAxIAL		
					LIQUID LIMIT	PLASTIC LIMIT	STRESS (psi)	STRAIN (%)			NO. 20	NO. 40			UU	CU	CELL PRESSURE (psi)
TP-3 3.2-5.5	7/27/90	Baker	K		24	15				2.73	*		*		*		10
TP-3 6.5-8.1	7/27/90	Baker									*						
TP-4 3.3-4.5	7/27/90	Baker	K		25	18				2.75	*		*		*		10
TP-4 6.5-8.0	7/27/90	Baker									*						
TP-1 3.5-5.5	7/27/90	Babbitt	K		NP	NP				2.70	*		*		*		10
TP-1 7.0-8.8	7/27/90	Babbitt									*						
TP-2 4.0-5.1	7/27/90	Babbitt	K		22	17				2.70	*		*		*		10
TP-2 7-9.3	7/27/90	Babbitt	K								*						
TP-3 2-4	7/27/90	Babbitt	K		22	18				2.72	*		*		*		10
TP-3 8.5-9.5	7/27/90	Babbitt									*						

* See Test Curves

Woodward-Clyde Consultants

Woodward-Clyde Consultants

Canonie: Arco
90C2137

SUMMARY OF TRIAXIAL TESTS RESULTS

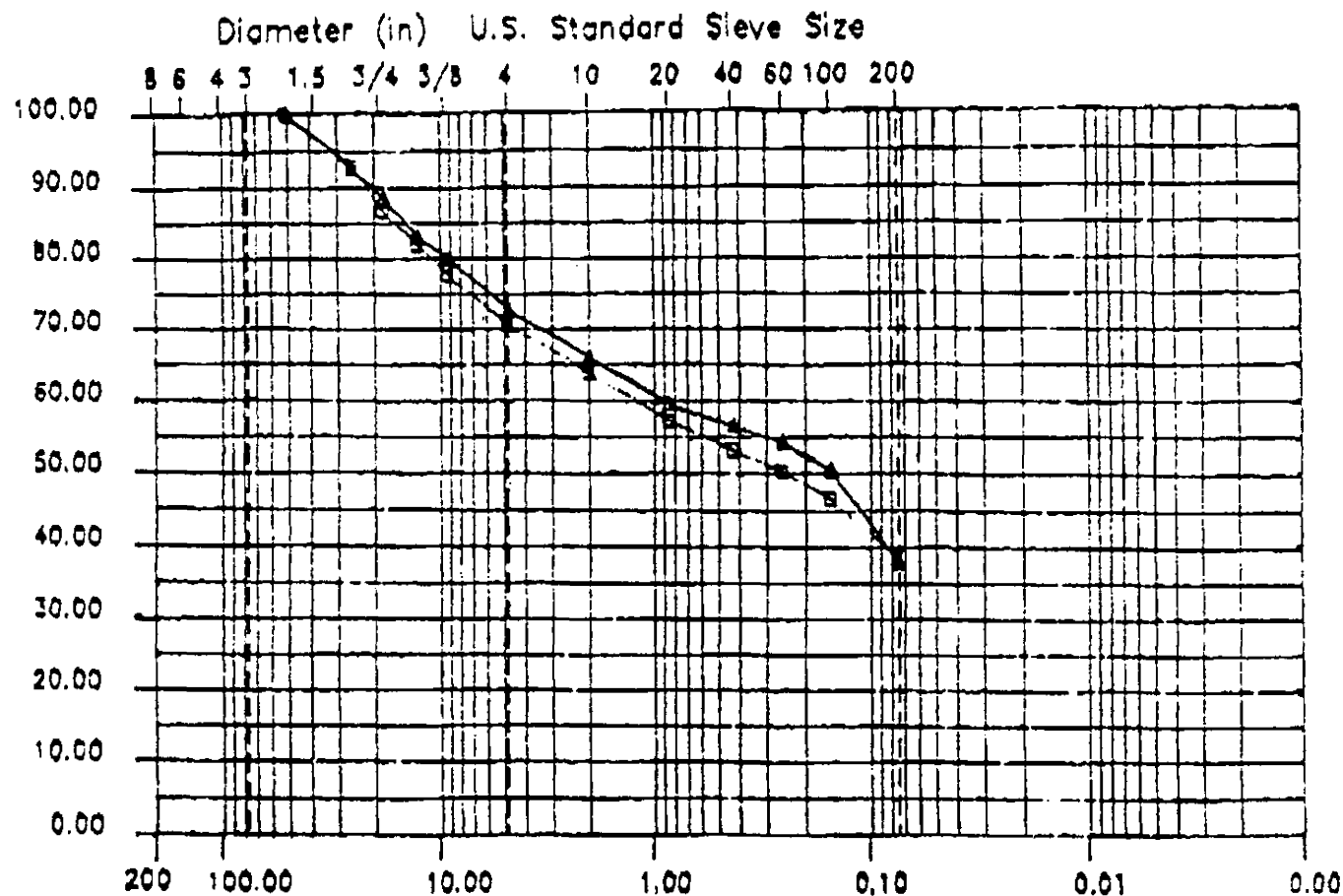
Sample Label	M.C. %	γ_d pcf	S_o %	% Compact.	M.C. _f %	k cm/sec	ϵ_f %	$(\sigma_1 - \sigma_3)_{max}$, tsf
Ungerman TP-1	28.4 27.5	90.0 90.6	86.8	94.1 94.8	32.1	5.72×10^{-8}	16.8	0.90
Ungerman TP-5/6	27.5 27.9	91.0 90.7	85.9	95.4 95.0	30.8	3.93×10^{-8}	15.7	1.28
Ungerman TP-7	26.4 26.5	89.5 89.6	79.7	95.1 95.2	31.2	5.00×10^{-8}	13.2	1.53
Ungerman TP-10	27.4 28.7	90.9 89.9	85.1	95.9 94.8	29.3	6.65×10^{-8}	18.6	0.87
Babbitt TP-1	12.7 12.7	122.0 121.8	90.4	95.2 95.0	13.2	8.60×10^{-8}	17.9	1.20
Babbitt TP-2	12.8 12.6	120.1 120.0	85.6		13.7	8.56×10^{-8}	16.8	1.63
Babbitt TP-3	13.7 13.6	120.3 120.2	90.4	94.5 94.4	13.5	8.78×10^{-8}	17.9	0.88
Babbitt TP-4	12.5 12.5	119.5 119.2	82.1	95.2 95.0	13.9	1.67×10^{-7}	17.5	1.67
Baker TP-1	12.6 12.4	121.3 121.4	87.4	96.8 96.9	13.6	1.52×10^{-7}	17.9	2.17
Baker TP-2	13.7 13.6	118.0 117.9	86.7	95.0 94.9	14.4	3.98×10^{-8}	17.9	1.07
Baker TP-3	12.3 12.4	120.1 119.7	82.6	95.2 94.8	12.6	8.16×10^{-8}	17.9	0.98
Baker TP-4	14.4 14.2	117.6 117.4	89.8	95.0 94.8	14.9	4.36×10^{-8}	17.9	0.69

where:

M.C. = Initial or final water content
 γ_d = Molded dry density
 S_o = Initial degree of saturation
 k = Coefficient of permeability corrected to 20°C
 ϵ_f = Strain at maximum or failure
 $\sigma_1 - \sigma_3$ = Maximum deviator stress

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

JOB NAME : CANONIE ARGO

SYN BORING#	SAMPLE#	DEPTH	DESCRIPTION	W (%)	W _L (%)	W _p (%)
Q	BABBIT	TP-1	2.2-4.2			
A	BABBIT	TP-1	7.0-8.8			

MAXIMUM DENSITY DETERMINATION

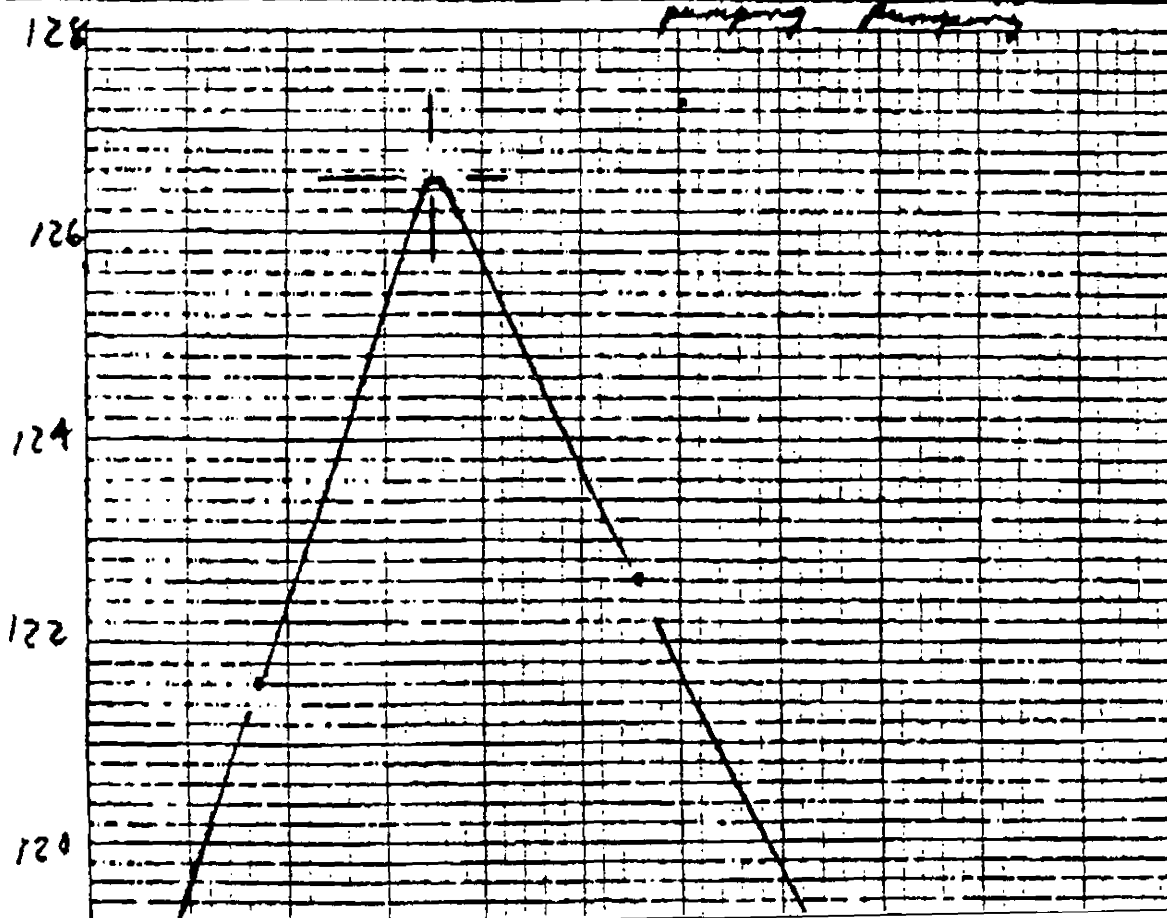
 Job Name Canonie - Area Job No 90 P 2137 Date 8-7-90

 Boring No Babbit Sample No TP-2 Depth _____ Preparation D-698

 Material Iron clayey gravel

 Mold 6" No Layers 3 Blow hr. 56 Type Hammer 5.5" 12" Mold Factor 20749

Test No.	1475	2585	3695	4805	5	6
Wt. Mold + Wet Soil	7360	7608	7561	7489		
Wt. Mold	2868	2868	2868	2868		
Wt. Soil	4492	4740	4693	4621		
Wet Density (lb./ft. ³)	132.2	139.5	138.1	136.0		
Water Content (%)						
Dry Density (lb./ft. ³)						
Tare No.	B-15	B-14	B-10	B-61		
Wet Wt. + Tare	1013.3	988.4	969.4	1002.5		
Dry Wt. + Tare	937.8	905.9	869.1	885.7		
Wt. of Water	75.5	86.5	100.3	116.8		
Tare Wt.	71.4	72.5	74.2	71.9		
Wt. of Dry Soil	866.4	829.4	794.9	813.8		
Water Content (%)	8.7	10.4	12.6	14.4		



Moisture Content

10.5 %

Dry Density

126.5 pcf

PROJECT: Canonic: Arco

PROJECT No. 90C2137

Page 2 of 4

SUMMARY OF LABORATORY TEST RESULTS

*ASTM D 698

BORING and SAMPLE No	Date Rec'd	Sample Label	SPECIAL TESTS	NATURAL WATER CONTENT (%)	ATTENBERG LIMITS		UNCONF. COMPRESS.		UNIT DRY WGT (pcf)	SPECIFIC GRAVITY	GRAIN SIZE		OPT MOIST	CONSOLID	TRIAXIAL		
					LIQUID LIMIT	PLASTIC LIMIT	STRESS (psi)	STRAIN (%)			SIEVE	HYDR.			UU	CU	CELL PRESSURE (psi)
TP-3 3.2-5.5	7/27/90	Baker	K		24	15				2.73	*		*	*			10
TP-3 5.5-8.1	7/27/90	Baker									*						
TP-4 3.5-4.5	7/27/90	Baker	K		25	18				2.75	*		*	*			10
TP-4 6.5-8.0	7/27/90	Baker									*						
TP-1 3.5-5.5	7/27/90	Babbitt	R		NP	NP				2.70	*		*	*			10
TP-1 7.0-8.8	7/27/90	Babbitt									*						
TP-2 4.0-5.1	7/27/90	Babbitt	K		22	17				2.70	*		*	*			10
TP-2 7-9.3	7/27/90	Babbitt	K								*						
TP-3 2-4	7/27/90	Babbitt	K		22	18				2.72	*		*	*			10
TP-3 8.5-9.5	7/27/90	Babbitt									*						

* See Test Curves

Woodward-Clyde Consultants

Woodward-Clyde Consultants

Canonie: Arco
90C2137

SUMMARY OF TRIAXIAL TESTS RESULTS

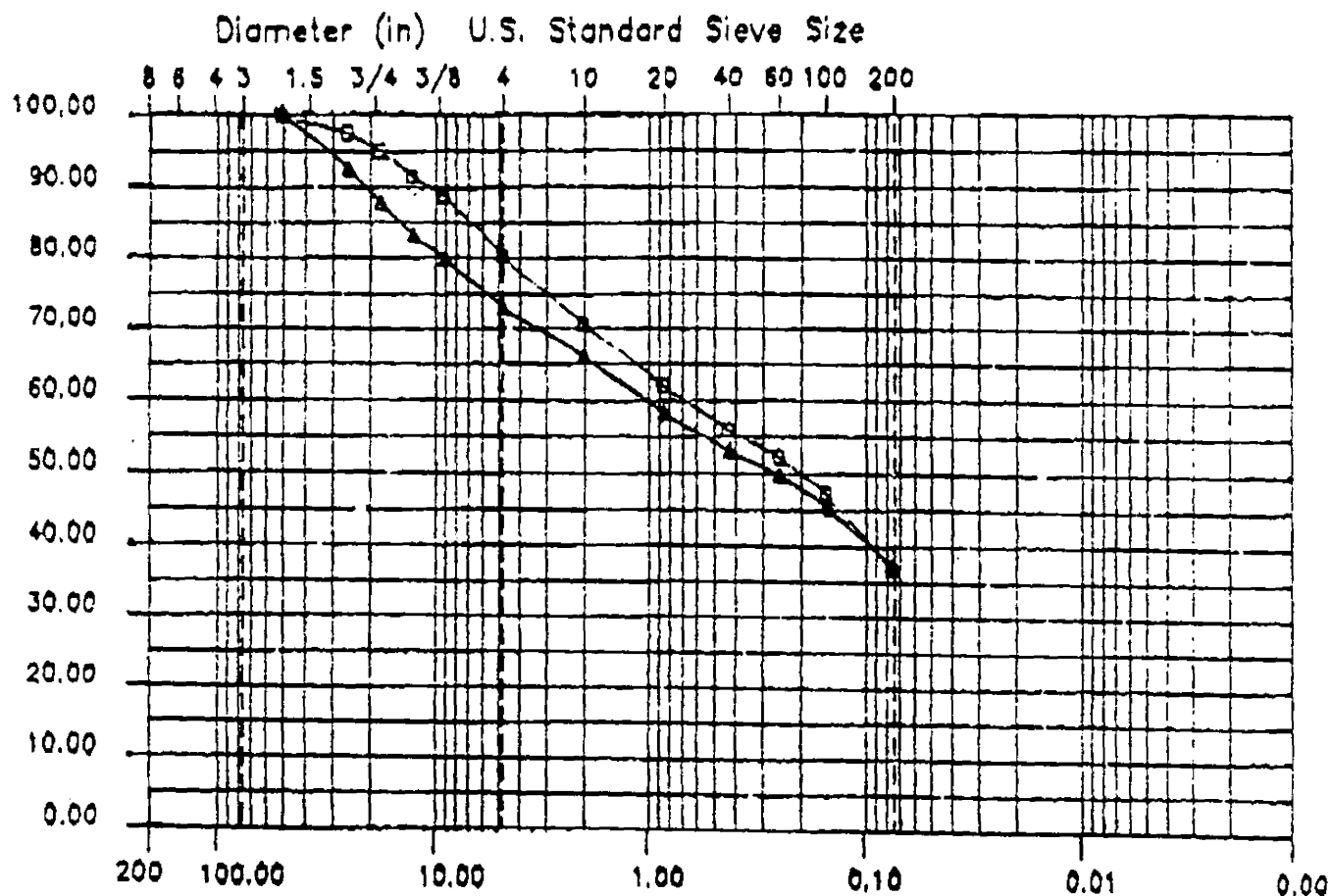
Sample Label	M.C. %	γ_d pcf	S_o %	% Compact.	M.C. _f %	k cm/sec	ϵ_f %	$(\sigma_1 - \sigma_3)_{max}$, tsf
Ungerman TP-1	28.4 27.5	90.0 90.6	86.8	94.1 94.8	32.1	5.72×10^{-8}	16.8	0.90
Ungerman TP-5/6	27.5 27.9	91.0 90.7	85.9	95.4 95.0	30.8	3.93×10^{-8}	15.7	1.28
Ungerman TP-7	26.4 26.5	89.5 89.6	79.7	95.1 95.2	31.2	5.00×10^{-8}	13.2	1.53
Ungerman TP-10	27.4 28.7	90.9 89.9	85.1	95.9 94.8	29.3	6.65×10^{-8}	18.6	0.87
Babbitt TP-1	12.7 12.7	122.0 121.8	90.4	95.2 95.0	13.2	8.60×10^{-8}	17.9	1.20
Babbitt TP-2	12.8 12.6	120.1 120.0	85.6		13.7	8.56×10^{-8}	16.8	1.63
Babbitt TP-3	13.7 13.6	120.3 120.2	90.4	94.5 94.4	13.5	8.78×10^{-8}	17.9	0.68
Babbitt TP-4	12.5 12.5	119.5 119.2	82.1	95.2 95.0	13.9	1.67×10^{-7}	17.5	1.67
Baker TP-1	12.6 12.4	121.3 121.4	87.4	96.8 96.9	13.6	1.52×10^{-7}	17.9	2.17
Baker TP-2	13.7 13.6	118.0 117.9	86.7	95.0 94.9	14.4	3.98×10^{-8}	17.9	1.07
Baker TP-3	12.3 12.4	120.1 119.7	82.6	95.2 94.8	12.6	8.16×10^{-8}	17.9	0.98
Baker TP-4	14.4 14.2	117.6 117.4	89.8	95.0 94.8	14.9	4.36×10^{-8}	17.9	0.69

where:

M.C. = Initial or final water content
 γ_d = Molded dry density
 S_o = Initial degree of saturation
 k = Coefficient of permeability corrected to 20°C
 ϵ_f = Strain at maximum or failure
 $\sigma_1 - \sigma_3$ = Maximum deviator stress

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

JOB NAME : CANONIE:ARCO

SYM	BORING#	SAMPLE#	DEPTH	DESCRIPTION	W (%)	U ₂ (%)	U ₆ (%)
B	BABBIT	TP-2	4.2-5.1	BROWN GRAVELLY SILTY COARSE TO FINE SAND (SIC)			
A	BABBIT	TP-2	7.0-9.3	BROWN GRAVELLY SILTY COARSE TO FINE SAND (SIC)			

MAXIMUM DENSITY DETERMINATI

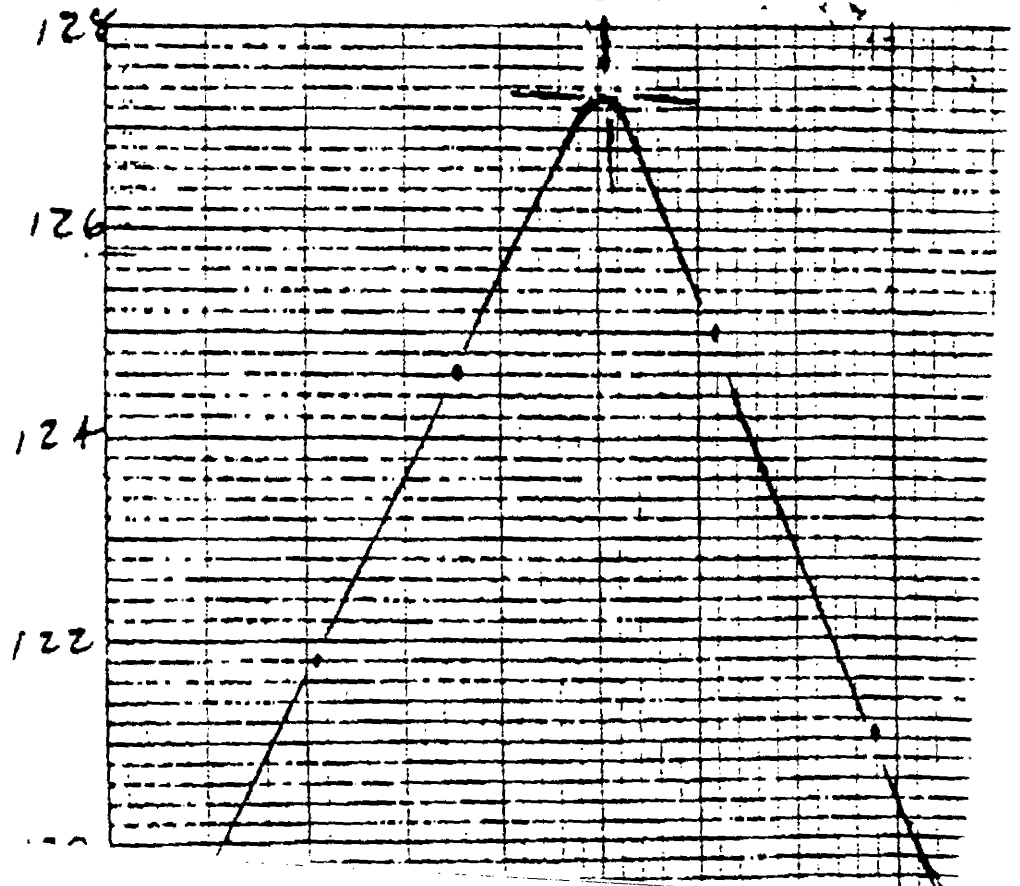
Job Name _____ Job No. 90 P.

Boring No. TP-3 Sample No. B93617 Depth _____ Preparat _____

Material _____

Mold 6" No Layers 3 Blows per. 56 Type Hammer 5.5

Test No.	675114	785814	565114	4551
Wt. Mold + Wet Soil	7634	7548	7501	7341
Wt. Mold	2868	2868	2868	2868
Wt. Soil	4766	4680	4633	4473
Wet Density (lb./ft ³)	140.3	137.7	136.4	131.7
Water Content (%)	124.8	120.4	123.6	
Dry Density (lb./ft ³)				
Tare No.	B-94	B-5	B-87	B-52
Wet Wt. Tare	821.9	294.7	843.2	804.6
Dry Wt. Tare	740.9	707.1	776.5	749.9
Wt. of Water	81.0	87.6	66.7	54.7
Tare Wt.	76.2	72.4	75.6	72.3
Wt. of Dry Soil	664.7	634.7	700.9	677.6
Water Content (%)	12.2	13.8		



PROJECT: Canonic: Arco

PROJECT No. 90C2137

Page 2 of 4

SUMMARY OF LABORATORY TEST RESULTS

*ASTM D 698

BORING and SAMPLE No	Date Rec'd	Sample Label	SPECIAL TESTS	NATURAL WATER CONTENT (%)	ATTENRG LIMITS		UNCON. COMPRESS.		UNIT DRYING (pcf)	SPECIFIC GRAVITY	GRAIN SIZE		1-BIT MOIST.	CONSOL.	TRIAxIAL		
					LIQUID LIMIT	PLASTIC LIMIT	STRESS (psi)	STRAIN (%)			SIEVE	HYD.			UU	CU	CELL PRESSURE (psi)
TP-3 3.2-5.5	7/27/90	Baker	K		24	15				2.73	*		*		*		10
TP-3 6.5-8.1	7/27/90	Baker									*						
TP-4 3.5-4.5	7/27/90	Baker	K		25	18				2.75	*		*		*		10
TP-4 6.5-8.0	7/27/90	Baker									*						
TP-1 3.5-5.5	7/27/90	Babbitt	K		NP	NP				2.70	*		*		*		10
TP-1 7.0-8.8	7/27/90	Babbitt									*						
TP-2 4.0-5.1	7/27/90	Babbitt	K		22	17				2.70	*		*		*		10
TP-2 7-9.3	7/27/90	Babbitt	K								*						
TP-3 2-4	1/27/90	Babbitt	K		22	18				2.72	*		*		*		10
TP-3 8.5-9.5	1/27/90	Babbitt									*						

* See Test Curves

Woodward-Clyde Consultants

Canonie: Arco
90C2137

SUMMARY OF TRIAXIAL TESTS RESULTS

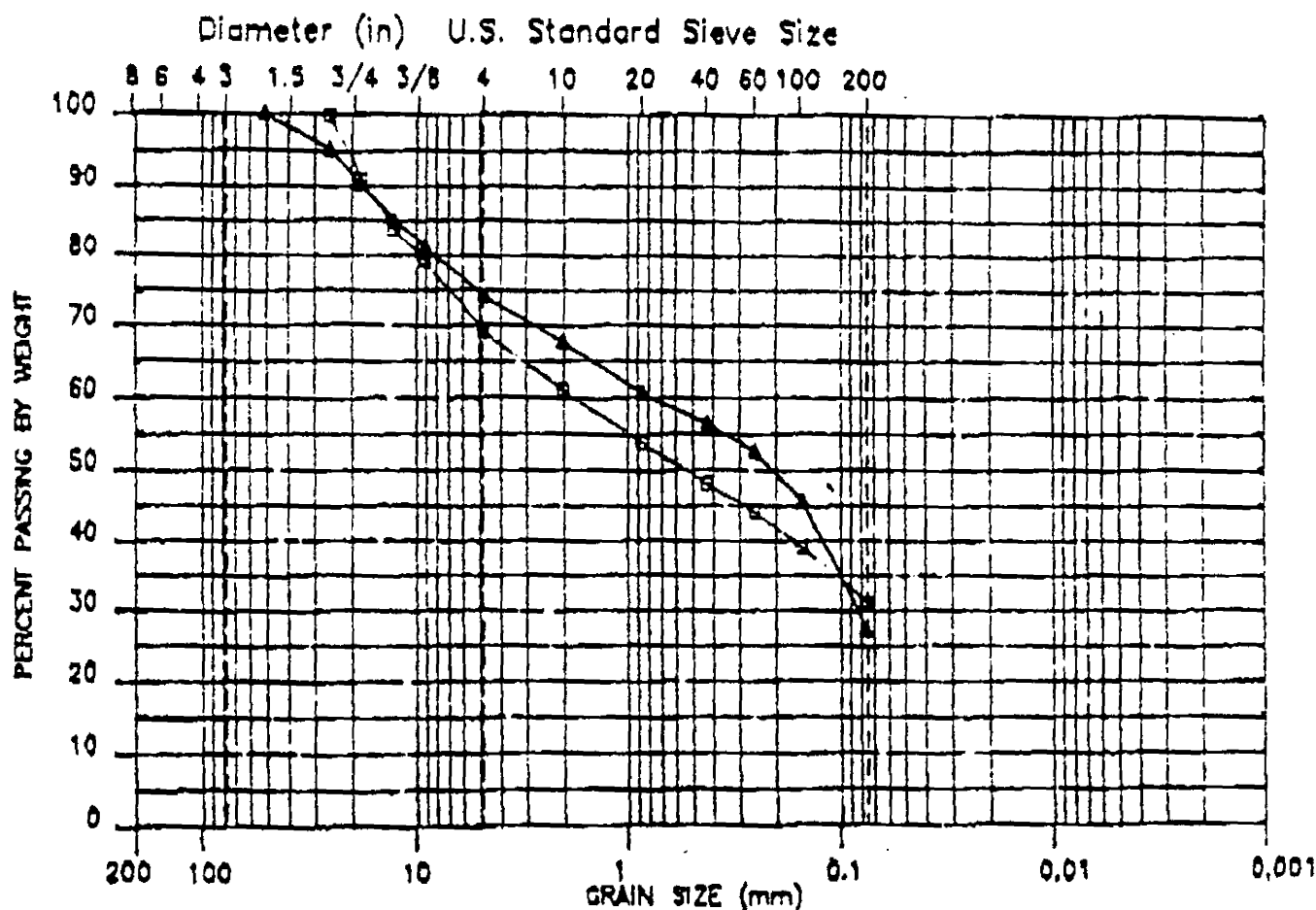
Sample Label	M.C. %	Yd pcf	S ₀ %	% Compact.	M.C. _f %	k cm/sec	e _f %	($\sigma_1 - \sigma_3$) _{max} , tsf
Ungerman TP-1	28.4 27.5	90.0 90.6	86.8	94.1 94.8	32.1	5.72×10^{-8}	16.8	0.90
Ungerman TP-5/6	27.5 27.9	91.0 90.7	85.8	95.4 95.0	30.8	3.93×10^{-8}	15.7	1.28
Ungerman TP-7	26.4 26.5	89.5 89.6	79.7	95.1 95.2	31.2	5.00×10^{-8}	13.2	1.53
Ungerman TP-10	27.4 28.7	90.9 89.8	85.1	95.9 94.8	29.3	6.65×10^{-8}	18.6	0.87
Babbitt TP-1	12.7 12.7	122.0 121.8	90.4	95.2 95.0	13.2	8.60×10^{-8}	17.9	1.20
Babbitt TP-2	12.8 12.6	120.1 120.0	85.6		13.7	8.56×10^{-8}	16.8	1.63
Babbitt TP-3	13.7 13.6	120.3 120.2	90.4	94.5 94.4	13.5	8.78×10^{-8}	17.9	0.88
Babbitt TP-4	12.5 12.5	119.5 119.2	82.1	95.2 95.0	13.9	1.67×10^{-7}	17.5	1.67
Baker TP-1	12.6 12.4	121.3 121.4	87.4	96.8 96.9	13.6	1.52×10^{-7}	17.9	2.17
Baker TP-2	13.7 13.6	118.0 117.9	86.7	95.0 94.9	14.4	3.98×10^{-8}	17.9	1.07
Baker TP-3	12.3 12.4	120.1 119.7	82.6	95.2 94.8	12.6	6.16×10^{-8}	17.9	0.98
Baker TP-4	14.4 14.2	117.6 117.4	89.8	95.0 94.8	14.9	4.36×10^{-8}	17.9	0.69

where:

M.C. = Initial or final water content
 Yd = Molded dry density
 S = Initial degree of saturation
 k = Coefficient of permeability corrected to 20°C
 e_f = Strain at maximum or failure
 $\sigma_1 - \sigma_3$ = Maximum deviator stress

WOODWARD-CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 90C2137

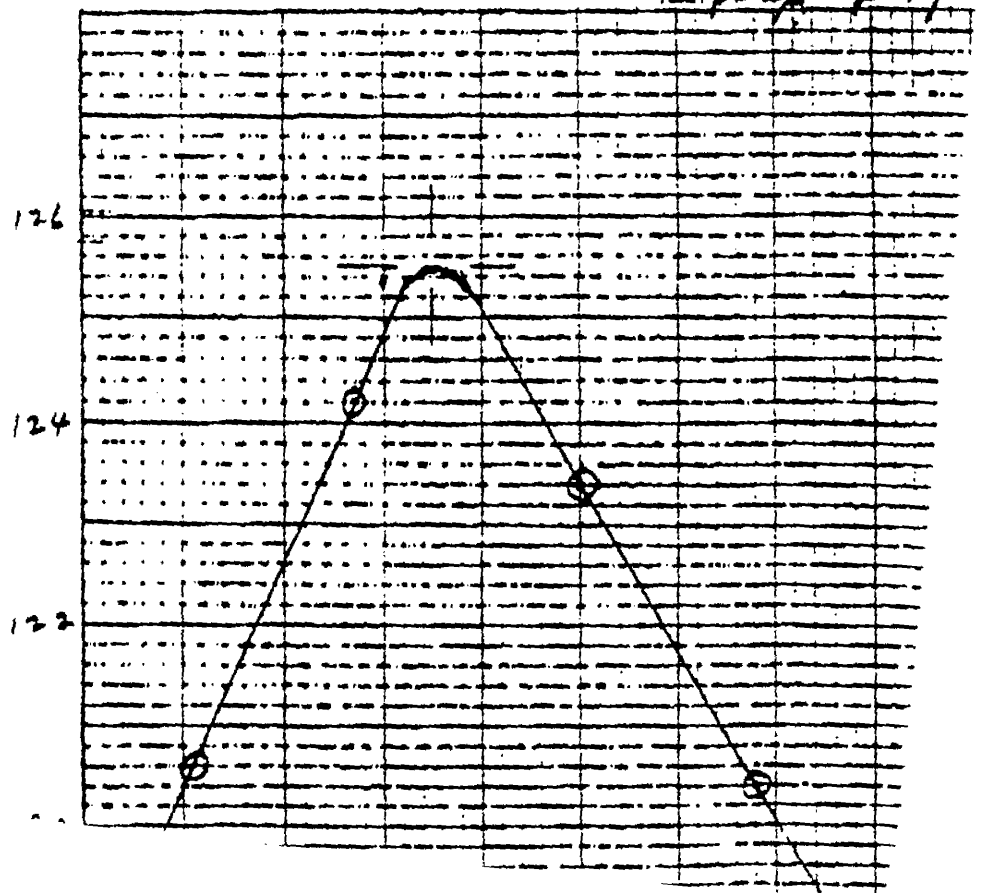
JOB NAME : CANONIE ARCO.

SYM	BORING	SAMPLE	DEPTH	DESCRIPTION	W (%)	U _L (%)	U _C (%)
C	BABBIT	TP-3	2.2-4.0	BROWN GRAVELLY SILTY COARSE TO FINE SAND (SW)			
A	BABBIT	TP-3	8.5-8.8	BROWN GRAVELLY SILTY COARSE TO FINE SAND (SW)			

MAXIMUM DENSITY DETERMINATION

Job Name Anonia - Arc Job No 90 p.21
 Boring No Babbitt Sample No TP-4 Depth _____
 Material brn sa cl si gravel
 Mold 6" No Layers 3 Blow hr. 56 Type Hammer 55, 12"

Test No.	1420	2530	3640	4750
Wt. Mold + Wet Soil	7299	7500	7563	7522
Wt. Mold	2868	2868	2868	2868
Wt. Soil	4431	4632	4695	4654
Wet Density (lb./ft. ³)	130.4	136.3	138.2	137.0
Water Content (%)				
Dry Density (lb./ft. ³)	120.4	124.2	123.4	120.4
Tare No.	B-46	B-44	B-8	B-60
Wet Wt. + Tare	929.4	994.7	999.4	1068.1
Dry Wt. + Tare	864.8	913.3	900.1	947.1
Wt. of Water	64.6	81.4	99.3	121.0
Tare Wt.	71.9	71.9	72.6	72.4
Wt. of Dry Soil	792.9	841.4	827.5	874.7
Water Content (%)	8.1	9.7	12.0	13.8



PROJECT: Canonie: Arco

PROJECT No. 90C2137

Page 3 of 3

SUMMARY OF LABORATORY TEST RESULTS

*ASTM D 698

[illegible]

* See Test Curves

Woodward-Clyde Consultants

Canonie: Arco
90C2137

SUMMARY OF TRIAXIAL TESTS RESULTS

Sample Label	M.C. %	Yd pcf	S _o %	% Compact.	M.C. _f %	k cm/sec	ϵ_f %	$(\sigma_1 - \sigma_3)_{max}$, tsf
Ungerma TP-1	28.4 27.5	90.0 90.8	86.8	94.1 94.8	32.1	5.72×10^{-8}	16.8	0.90
Ungerma TP-5/6	27.5 27.9	91.0 90.7	85.9	95.4 95.0	30.8	3.93×10^{-8}	15.7	1.28
Ungerma TP-7	28.4 28.5	89.5 89.6	79.7	95.1 95.2	31.2	5.00×10^{-8}	13.2	1.53
Ungerma TP-10	27.4 28.7	90.9 89.9	85.1	95.9 94.8	29.3	6.65×10^{-8}	18.6	0.87
Babbitt TP-1	12.7 12.7	122.0 121.8	90.4	95.2 95.0	13.2	8.60×10^{-8}	17.9	1.20
Babbitt TP-2	12.8 12.6	120.1 120.0	85.8		13.7	8.56×10^{-8}	16.8	1.83
Babbitt TP-3	13.7 13.6	120.3 120.2	90.4	94.3 94.4	13.5	8.78×10^{-8}	17.9	0.88
Babbitt TP-4	12.5 12.5	119.5 119.2	82.1	95.2 95.0	13.9	1.67×10^{-7}	17.5	1.67
Baker TP-1	12.6 12.4	121.3 121.4	87.4	96.8 96.9	13.6	1.52×10^{-7}	17.9	2.17
Baker TP-2	13.7 13.6	118.0 117.9	86.7	95.0 94.9	14.4	3.98×10^{-8}	17.9	1.07
Baker TP-3	12.3 12.4	120.1 119.7	82.8	95.2 94.8	12.6	8.16×10^{-8}	17.9	0.98
Baker TP-4	14.4 14.2	117.6 117.4	89.8	95.0 94.8	14.9	4.36×10^{-8}	17.9	0.69

where:

M.C. = Initial or final water content
 Yd = Molded dry density
 S = Initial degree of saturation
 k = Coefficient of permeability corrected to 20°C
 ϵ_f = Strain at maximum or failure
 $\sigma_1 - \sigma_3$ = Maximum deviator stress

CANONIE ENVIRONMENTAL CHAIN-OF-CUSTODY RECORD

LAB PROJECT NO

NO

ECT NAME Wellsville, NY

SAMPLERS Pete Porter

ECT NUMBER 88-093

RECORDER Pete Porter

(See Reverse for Instructions)

SAMPLE CONTAINER DESCRIPTION CODES

A 40-ml VOA Vial
B Glass 1-Liter
C Plastic 500-ml
D Plastic 1-Liter
E Brass Tube
F Other GLASS
G 2-Liter
H 5-Liter

SAMPLE DESCRIPTION CODES

A Ground Water
B Surface Water
C Leachate
D Runoff
E Soil/Sediment
F Oil
G Waste
H Blank/Spill
I Other

TAT CODES

1 Standard
2 48 Hour
3 24 Hour
4 Other

DATE	TIME	SAMPLE ID	Sample Container (enter code)	Sample Description (enter code)	NUMBER OF CONTAINERS AND PRESERVATION		ANALYSIS REQUESTED										Notes	LABORATORY USE ONLY		
					Unpreserved	Preserved	PH	8240	8080	8270	8280	9010	9060	8710	9066	Maximum Holding Time for Sample Analysis		ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
11/15	11:45	Bab-TP1-01	F	E				X								2 wks				
11/15	11:50	Bab-TP1-02						X												
11/15	11:52	Bab-TP1-03						X												
11/15	11:53	Bab-TP1-04						X												
11/15	11:57	Bab-TP1-05							X											
11/15	11:55	Bab-TP1-06								X										
11/15	11:57	Bab-TP1-07									X	X	X			24 hr				24 hr hold for pH
11/15	11:58	Bab-TP1-08											X			2 wks				
11/15	11:59	Bab-TP1-09												X		2 wks				
		Bab-TP1-01																		
		Bab-TP1-02																		

TESTS/MISCELLANEOUS

* 9010 Total Cyanide
9066 Phenols

24 hr. hold for pH

Relinquished by: (Signature) _____ Date _____ Time _____

Relinquished By: (Signature) _____ Date _____ Time _____

Relinquished By: (Signature) _____ Date _____ Time _____

Method of Shipment	Description of Transport Container	Other Chains-Of-Custody Transported with this Chain (by Serial No.)	Dispatched By: (Signature)	Date	Time	Received for lab By: (Signature)	Date	Time
Fed. ex	Plastic metal cooler	02886 02887	Pete Porter	7/11/90	13:30			

Send Lab Results to (Name): Pete Porter (Check Office Below) Verbal Requested: Yes ☒ No ☐

- | | | | | |
|---|--|--|---|---|
| ☐ PORTER
TEL (219) 926-8651
FAX (219) 926-7169 | ☐ SAN MATEO
TEL (415) 573-8012
FAX (415) 573-5654 | ☐ IRVINE
TEL (714) 757-1755
FAX (714) 757-0960 | ☐ ORLANDO
TEL (407) 856-7428
FAX (407) 855-2595 | ☒ OTHER <u>Site</u>
TEL <u>716-582-2066</u>
FAX <u>716-582-2083</u> |
| ☐ DENVER
TEL (303) 790-1747
FAX (303) 799-0186 | ☐ KING OF PRUSSIA
TEL (215) 337-2567
FAX (215) 337-0560 | ☐ HOUSTON
TEL (713) 556-1666
FAX (713) 556-0666 | ☐ MT. VIEW
TEL (415) 960-1640
FAX (415) 960-0739 | ☐ OTHER _____
TEL _____
FAX _____ |

CANONIE ENVIRONMENTAL LABORATORY • 212 FRANK WEST CIRCLE, SUITE A • STOCKTON, CA 95206 • TEL (209) 983-1340 • FAX (209) 983-0304

WHITE: Field Copy YELLOW: Project Copy PINK: Laboratory Copy

Canonic Environmental Case Narrative

Client: Sinclair Refinery, Wellsville, NY
LP#: 9235

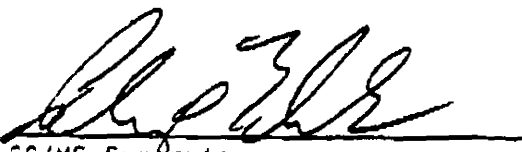
Project #: 88-093

GC/MS Case Narrative - Volatile

The samples were analyzed for volatile target compounds and met all QC criteria stated in EPA CLP SOW 2/88.

The matrix spike and matrix spike duplicate runs were outside the QC limits for comparison percentage RSD. This was an effect of the sample matrix which was not from this SDG.

The blanks contained methylene chloride at concentrations of up to 15 ug/kg and toluene at concentrations of up to 51 ug/kg. Any positive sample results for these compounds at concentrations less than ten times the highest amount found in a blank may be considered laboratory artifacts.


GC/MS Supervisor

8/23/90
Date

Final Report

A-18 B

Page: 1

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP1-01
Matrix: SOLID
Lab ID: 852548-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 89.7 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
DQ.C. Batch Nbr M080590DG1
Date Analyzed: 8/05/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	10.	ug/kg	EPA 8240
Bromomethane	ND	10.	ug/kg	
Vinyl Chloride	ND	10.	ug/kg	
Chloroethane	ND	10.	ug/kg	
Methylene Chloride	7.	6.	ug/kg	
Acetone	ND	10.	ug/kg	
Carbon Disulfide	ND	6.	ug/kg	
1,1-Dichloroethene	ND	6.	ug/kg	
1,1-Dichloroethane	ND	6.	ug/kg	
1,2-Dichloroethene (total)	ND	6.	ug/kg	
Chloroform	ND	6.	ug/kg	
1,2-Dichloroethane	ND	6.	ug/kg	
2-Butanone	ND	10.	ug/kg	
1,1,1-Trichloroethane	ND	6.	ug/kg	
Carbon Tetrachloride	ND	6.	ug/kg	
Vinyl Acetate	ND	10.	ug/kg	
Bromodichloromethane	ND	6.	ug/kg	
1,2-Dichloropropane	ND	6.	ug/kg	
cis-1,3-Dichloropropene	ND	6.	ug/kg	
Trichloroethene	ND	6.	ug/kg	
Dibromochloromethane	ND	6.	ug/kg	
1,1,2-Trichloroethane	ND	6.	ug/kg	
Benzene	ND	6.	ug/kg	
trans-1,3-Dichloropropene	ND	6.	ug/kg	
Bromoform	ND	6.	ug/kg	
4-Methyl-2-pentanone	ND	10.	ug/kg	
2-Hexanone	ND	10.	ug/kg	
Tetrachloroethene	ND	6.	ug/kg	
1,1,2,2-Tetrachloroethane	ND	6.	ug/kg	
Toluene	10.	6.	ug/kg	
Chlorobenzene	ND	6.	ug/kg	
Ethyl Benzene	ND	6.	ug/kg	
Styrene	ND	6.	ug/kg	
Xylene (total)	ND	6.	ug/kg	

Tested By : DEG
Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 3

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP1-05
 Matrix: SOLID
 Lab ID: 852552-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 88.2 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch #: 7/31/90
 Date Analyzed: 8/04/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	800.	ug/kg	EPA 8270
bis(2-Chloroethyl)ether	ND	800.	ug/kg	
2-Chlorophenol	ND	800.	ug/kg	
1,3-Dichlorobenzene	ND	800.	ug/kg	
1,4-Dichlorobenzene	ND	800.	ug/kg	
Benzyl alcohol	ND	800.	ug/kg	
1,2-Dichlorobenzene	ND	800.	ug/kg	
2-Methylphenol	ND	800.	ug/kg	
bis(2-Chloroisopropyl)ether	ND	800.	ug/kg	
4-Methylphenol	ND	800.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	800.	ug/kg	
Hexachloroethane	ND	800.	ug/kg	
Nitrobenzene	ND	800.	ug/kg	
Isophorone	ND	800.	ug/kg	
2-Nitrophenol	ND	800.	ug/kg	
2,4-Dimethylphenol	ND	800.	ug/kg	
Benzoic acid	ND	4000.	ug/kg	
bis(2-Chloroethoxy) methane	ND	800.	ug/kg	
2,4-Dichlorophenol	ND	800.	ug/kg	
1,2,4-Trichlorobenzene	ND	800.	ug/kg	
Naphthalene	ND	800.	ug/kg	
4-Chloroaniline	ND	800.	ug/kg	
Hexachlorobutadiene	ND	800.	ug/kg	
4-Chloro-3-methylphenol	ND	800.	ug/kg	
2-Methylnaphthalene	ND	800.	ug/kg	
Hexachlorocyclopentadiene	ND	800.	ug/kg	
2,4,6-Trichlorophenol	ND	800.	ug/kg	
2,4,5-Trichlorophenol	ND	4000.	ug/kg	
2-Chloronaphthalene	ND	800.	ug/kg	
2-Nitroaniline	ND	4000.	ug/kg	
Dimethylphthalate	ND	800.	ug/kg	
Acenaphthylene	ND	800.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 4

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP1-05
 Matrix: SOLID
 Lab ID: 852552-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 88.2 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch #: 7/31/90
 Date Analyzed: 8/04/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	800.	ug/kg	
3-Nitroaniline	ND	4000.	ug/kg	
Acenaphthene	ND	800.	ug/kg	
2,4-Dinitrophenol	ND	4000.	ug/kg	
4-Nitrophenol	ND	4000.	ug/kg	
Dibenzofuran	ND	800.	ug/kg	
2,4-Dinitrotoluene	ND	800.	ug/kg	
Diethylphthalate	ND	800.	ug/kg	
4-Chlorophenyl-phenylether	ND	800.	ug/kg	
Fluorene	ND	800.	ug/kg	
4-Nitroaniline	ND	4000.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	4000.	ug/kg	
N-Nitrosodiphenylamine	ND	800.	ug/kg	
4-Bromophenyl-phenylether	ND	800.	ug/kg	
Hexachlorobenzene	ND	800.	ug/kg	
Pentachlorophenol	ND	4000.	ug/kg	
Phenanthrene	ND	800.	ug/kg	
Anthracene	ND	800.	ug/kg	
Di-n-butylphthalate	2300.	750.	ug/kg	
Fluoranthene	ND	800.	ug/kg	
Pyrene	ND	800.	ug/kg	
Butylbenzylphthalate	ND	800.	ug/kg	
3,3'-Dichlorobenzidine	ND	2000.	ug/kg	
Benzo(a)anthracene	ND	800.	ug/kg	
Chrysene	ND	800.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	800.	ug/kg	
Di-n-octylphthalate	ND	800.	ug/kg	
Benzo(b)fluoranthene	ND	800.	ug/kg	
Benzo(k)fluoranthene	ND	700.	ug/kg	
Benzo(a)pyrene	ND	800.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	800.	ug/kg	
Dibenz(a,h)anthracene	ND	800.	ug/kg	
Benzo(g,h,i)perylene	ND	800.	ug/kg	

Tested By : DSH

Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP1-07
 Matrix: SOLID
 Lab ID: 852554-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 90.9 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch # : I080690PS2
 Date Analyzed: 8/06/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Flag	Result*	Reporting Limit	Units	Method
Arsenic		9.1	5.5	mg/kg	EPA 7060
Mercury		ND	.22	mg/kg	EPA 7471
Antimony	N	ND	6.6	mg/kg	EPA 6010
Beryllium		ND	1.1	mg/kg	
Cadmium		ND	1.1	mg/kg	
Chromium		14.	5.5	mg/kg	
Copper		22.	5.5	mg/kg	
Lead	N	21.	5.5	mg/kg	
Nickel		25.	5.5	mg/kg	
Silver	N	ND	5.5	mg/kg	
Zinc		56.	5.5	mg/kg	
Selenium	NW	ND	5.5	mg/kg	EPA 7740
Thallium	NW	ND	5.5	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP1-07
Matrix: SOLID
Lab ID: 852554-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 90.9 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
Q.C. Batch # : I080390CS2
Date Analyzed: 8/03/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.1	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP1-07
Matrix: SOLID
Lab ID: 852554-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 90.9 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
Q.C. Batch # : I072590JG1
Date Analyzed: 7/25/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	6.7	.000	pH	EPA 9045

Tested By : MMS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP1-03
 Matrix: SOLID
 Lab ID: 852550-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 89.6 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Date Extracted: 7/31/90
 Date Analyzed: 8/03/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.2	ug/kg	EPA 8080
alpha-BHC	ND	2.2	ug/kg	
beta-BHC	ND	2.2	ug/kg	
delta-BHC	ND	2.2	ug/kg	
gamma-BHC	ND	2.2	ug/kg	
Chlordane	ND	28.	ug/kg	
4,4'-DDD	ND	2.2	ug/kg	
4,4'-DDE	ND	2.2	ug/kg	
4,4'-DDT	ND	2.2	ug/kg	
Dieldrin	ND	2.2	ug/kg	
Endosulfan I	ND	2.2	ug/kg	
Endosulfan II	ND	2.2	ug/kg	
Endosulfan sulfate	ND	2.2	ug/kg	
Endrin	ND	2.2	ug/kg	
Endrin aldehyde	ND	2.2	ug/kg	
Heptachlor	ND	2.2	ug/kg	
Heptachlor epoxide	ND	2.2	ug/kg	
Methoxychlor	ND	5.6	ug/kg	
Toxaphene	ND	110.	ug/kg	
PCB-1016	ND	28.	ug/kg	
PCB-1221	ND	28.	ug/kg	
PCB-1232	ND	28.	ug/kg	
PCB-1242	ND	28.	ug/kg	
PCB-1248	ND	28.	ug/kg	
PCB-1254	ND	56.	ug/kg	
PCB-1260	ND	56.	ug/kg	

Tested By : BJT
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canonie Environmental Services

Client ID: Bab-TP1-06

Lab ID: 053923-0001-SA

Matrix: SOIL

Authorized: 25 JUL 90

Enseco ID: 157345

Sampled: 24 JUL 90

Prepared: 31 JUL 90

Received: 25 JUL 90

Analyzed: 01 AUG 90

Sample Amount 10.9G
Percent Moisture NA
Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
Dioxins				
2,3,7,8-TCDD	ND	ng/g	0.024	
	% Recovery			
13C-2,3,7,8-TCDD	48			

ND = Not detected
NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787

Phenolics (4-AAP)

Method 9066

Client Name: Canonie Environmental Services
Matrix: SOIL Received: 25 JUL 90
Units: mg/kg Authorized: 25 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053923-0002-SA	Bab-TP1-09	ND	0.50	08 AUG 90	09 AUG 90
053923-0004-SA	Bab-TP3-09	1.0	0.50	08 AUG 90	09 AUG 90
053923-0006-SA	Bab-TP4-09	0.54	0.50	08 AUG 90	09 AUG 90

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.

Rev 230787

CANONIE ENVIRONMENTAL CHAIN-OF-CUSTODY RECORD

LAB PROJECT

(See Reverse Instructions)

PROJECT NAME Wetlands, NY SAMPLERS Ph. P. P.
PROJECT NUMBER 88-023 RECORDER Ph. P. P.
(SIGN)

SAMPLE CONTAINER DESCRIPTION CODES		SAMPLE DESCRIPTION CODES		TAT CODES	
A 40-ml VOA Vial	E Brass Tap	A Ground Water	F Oil	1 Standard	
B Glass Litter	F Other	B Surface Water	G Waste	2 48 Hour	
C Plastic 500-ml		C Leachate	H Blank/Spike	3 24 Hour	
D Plastic Litter		D Haze/Silt	I Other	4 Other	
		E Soil/Sediment			

DATE	TIME	SAMPLE ID	Sample Container (See Code)	Sample Description (See Code)	NUMBER OF CONTAINERS AND PRESERVATION		ANALYSIS REQUESTED										NOTES	LABORATORY USE ONLY						
					UNPRESERVED	HNO ₃	First Name (Check)	B2V0	Q080	Q270	Q280	PH	9010	601/1000	B310	9066		TAT Processing (See Code)	Max Time to Log Time to Waiting for Waiting for Waiting for	Sample Size in g (See Code)	No. of Containers (See Code)	ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
2/24/90	10:07	Bub-TP3-01	FE		1			X								1	2 wks							
	10:09	Bub-TP3-02			1			X								1								
	10:10	Bub-TP3-03			1				X							1								
	10:11	Bub-TP3-04			1					X						1								
	10:13	Bub-TP3-05			1					X						1								
	10:13	Bub-TP3-06			1						X					1								
	10:14	Bub-TP3-07			1							X	X	X		1								
	10:16	Bub-TP3-08			1									X		1	24 hr							
	10:16	Bub-TP3-09			1										X	1	2 wks							
																	2 wks							

NOTES / MISCELLANEOUS # 9010: Total Cyanide 9066: Phenols 24 hr hold for pH		Relinquished By: (Signature)		Received By: (Signature)		Date		Time									
		Relinquished By: (Signature)		Received By: (Signature)		Date		Time									
		Relinquished By: (Signature)		Received By: (Signature)		Date		Time									
Method of Shipment Fed ex		Description of Transport Container Metal Cooler		Other Chains-Of-Custody Transported with this Chain (by Serial No.) 02885, 02887		Dispatched By: (Signature) Ph. P. P.		Date 2/24/90		Time 13:30		Received for lab By: (Signature)		Date		Time	

Send Lab Results to (Name): _____ (Check Office Below) Verbal Requested: Yes ☒ No ☐

☐ PORTER TEL (219) 926-8661 FAX (219) 926-7169	☐ SAN MATEO TEL (415) 573-8012 FAX (415) 573-5654	☐ IRVINE TEL (714) 757-1755 FAX (714) 757-0960	☐ ORLANDO TEL (407) 856-7428 FAX (407) 855-2595	☒ OTHER TEL (212) 553-7016 FAX (212) 553-7063
☐ DENVER TEL (303) 790-1747 FAX (303) 799-0186	☐ KING OF PRUSSIA TEL (215) 337-2551 FAX (215) 337-0560	☐ HOUSTON TEL (713) 556-1666 FAX (713) 556-0666	☐ MT VIEW TEL (415) 960-1640 FAX (415) 960-0739	☐ OTHER TEL _____ FAX _____

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP3-01
 Matrix: SOLID
 Lab ID: 852557-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 89.0 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 DQ.C. Batch Nbr M080690DG1
 Date Analyzed: 8/06/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	10.	ug/kg	EPA 8240
Bromomethane	ND	10.	ug/kg	
Vinyl Chloride	ND	10.	ug/kg	
Chloroethane	ND	10.	ug/kg	
Methylene Chloride	9.	6.	ug/kg	
Acetone	ND	10.	ug/kg	
Carbon Disulfide	ND	6.	ug/kg	
1,1-Dichloroethene	ND	6.	ug/kg	
1,1-Dichloroethane	ND	6.	ug/kg	
1,2-Dichloroethene (total)	ND	6.	ug/kg	
Chloroform	ND	6.	ug/kg	
1,2-Dichloroethane	ND	6.	ug/kg	
2-Butanone	ND	10.	ug/kg	
1,1,1-Trichloroethane	ND	6.	ug/kg	
Carbon Tetrachloride	ND	6.	ug/kg	
Vinyl Acetate	ND	10.	ug/kg	
Bromodichloromethane	ND	6.	ug/kg	
1,2-Dichloropropane	ND	6.	ug/kg	
cis-1,3-Dichloropropene	ND	6.	ug/kg	
Trichloroethene	ND	6.	ug/kg	
Dibromochloromethane	ND	6.	ug/kg	
1,1,2-Trichloroethane	ND	6.	ug/kg	
Benzene	ND	6.	ug/kg	
trans-1,3-Dichloropropene	ND	6.	ug/kg	
Bromoform	ND	6.	ug/kg	
4-Methyl-2-pentanone	ND	10.	ug/kg	
2-Hexanone	ND	10.	ug/kg	
Tetrachloroethene	ND	6.	ug/kg	
1,1,2,2-Tetrachloroethane	ND	6.	ug/kg	
Toluene	ND	6.	ug/kg	
Chlorobenzene	ND	6.	ug/kg	
Ethyl Benzene	ND	6.	ug/kg	
Styrene	ND	6.	ug/kg	
Xylene (total)	ND	6.	ug/kg	

Tested By : DEG
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP3-05
 Matrix: SOLID
 Lab ID: 852561-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 89.5 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch #: 7/31/90
 Date Analyzed: 8/04/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	700.	ug/kg	EPA 8270
bis(2-Chloroethyl)ether	ND	700.	ug/kg	
2-Chlorophenol	ND	700.	ug/kg	
1,3-Dichlorobenzene	ND	700.	ug/kg	
1,4-Dichlorobenzene	ND	700.	ug/kg	
Benzyl alcohol	ND	700.	ug/kg	
1,2-Dichlorobenzene	ND	700.	ug/kg	
2-Methylphenol	ND	700.	ug/kg	
bis(2-Chloroisopropyl)ether	ND	700.	ug/kg	
4-Methylphenol	ND	700.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	700.	ug/kg	
Hexachloroethane	ND	700.	ug/kg	
Nitrobenzene	ND	700.	ug/kg	
Isophorone	ND	700.	ug/kg	
2-Nitrophenol	ND	700.	ug/kg	
2,4-Dimethylphenol	ND	700.	ug/kg	
Benzoic acid	ND	4000.	ug/kg	
bis(2-Chloroethoxy) methane	ND	700.	ug/kg	
2,4-Dichlorophenol	ND	700.	ug/kg	
1,2,4-Trichlorobenzene	ND	700.	ug/kg	
Naphthalene	ND	700.	ug/kg	
4-Chloroaniline	ND	700.	ug/kg	
Hexachlorobutadiene	ND	700.	ug/kg	
4-Chloro-3-methylphenol	ND	700.	ug/kg	
2-Methylnaphthalene	ND	700.	ug/kg	
Hexachlorocyclopentadiene	ND	700.	ug/kg	
2,4,6-Trichlorophenol	ND	700.	ug/kg	
2,4,5-Trichlorophenol	ND	4000.	ug/kg	
2-Chloronaphthalene	ND	700.	ug/kg	
2-Nitroaniline	ND	4000.	ug/kg	
Dimethylphthalate	ND	700.	ug/kg	
Acenaphthylene	ND	700.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP3-05
 Matrix: SOLID
 Lab ID: 852561-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 89.5 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch #: 7/31/90
 Date Analyzed: 8/04/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	700.	ug/kg	
3-Nitroaniline	ND	4000.	ug/kg	
Acenaphthene	ND	700.	ug/kg	
2,4-Dinitrophenol	ND	4000.	ug/kg	
4-Nitrophenol	ND	4000.	ug/kg	
Dibenzofuran	ND	700.	ug/kg	
2,4-Dinitrotoluene	ND	700.	ug/kg	
Diethylphthalate	ND	700.	ug/kg	
4-Chlorophenyl-phenylether	ND	700.	ug/kg	
Fluorene	ND	700.	ug/kg	
4-Nitroaniline	ND	4000.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	4000.	ug/kg	
N-Nitrosodiphenylamine	ND	700.	ug/kg	
4-Bromophenyl-phenylether	ND	700.	ug/kg	
Hexachlorobenzene	ND	700.	ug/kg	
Pentachlorophenol	ND	4000.	ug/kg	
Phenanthrene	ND	700.	ug/kg	
Anthracene	ND	700.	ug/kg	
Di-n-butylphthalate	930.	740.	ug/kg	
Fluoranthene	ND	700.	ug/kg	
Pyrene	ND	700.	ug/kg	
Butylbenzylphthalate	ND	700.	ug/kg	
3,3'-Dichlorobenzidine	ND	2000.	ug/kg	
Benzo(a)anthracene	ND	700.	ug/kg	
Chrysene	ND	700.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	700.	ug/kg	
Di-n-octylphthalate	ND	700.	ug/kg	
Benzo(b)fluoranthene	ND	700.	ug/kg	
Benzo(k)fluoranthene	ND	700.	ug/kg	
Benzo(a)pyrene	ND	700.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	700.	ug/kg	
Dibenz(a,h)anthracene	ND	700.	ug/kg	
Benzo(g,h,i)perylene	ND	700.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP3-07
 Matrix: SOLID
 Lab ID: 852563-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 84.8 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch # : I080690PS2
 Date Analyzed: 8/06/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

=====					
Analyte	Flag	Result*	Reporting Limit	Units	Method
=====					
Arsenic		6.7	5.9	mg/kg	EPA 7060
Mercury		ND	.24	mg/kg	EPA 7471
Antimony	N	ND	7.1	mg/kg	EPA 6010
Beryllium		ND	1.2	mg/kg	
Cadmium		ND	1.2	mg/kg	
Chromium		14.	5.9	mg/kg	
Copper		14.	5.9	mg/kg	
Lead	N	10.	5.9	mg/kg	
Nickel		26.	5.9	mg/kg	
Silver	N	ND	5.9	mg/kg	
Zinc		55.	5.9	mg/kg	
Selenium	NW	ND	5.9	mg/kg	EPA 7740
Thallium	NW	ND	5.9	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP3-07
Matrix: SOLID
Lab ID: 852563-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 84.8 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
Q.C. Batch # : I080390CS2
Date Analyzed: 8/03/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.2	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP3-07
Matrix: SOLID
Lab ID: 852563-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 84.8 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
Q.C. Batch # : I072590JG1
Date Analyzed: 7/25/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	7.2	.000	pH	EPA 9045

Tested By : JWG
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP3-03
 Matrix: SOLID
 Lab ID: 852559-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 90.3 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Date Extracted: 7/31/90
 Date Analyzed: 8/03/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

=====				
Analyte	Result*	Reporting Limit	Units	Method
=====				
Aldrin	ND	2.2	ug/kg	EPA 8080
alpha-BHC	ND	2.2	ug/kg	
beta-BHC	ND	2.2	ug/kg	
delta-BHC	ND	2.2	ug/kg	
gamma-BHC	ND	2.2	ug/kg	
Chlordane	ND	28.	ug/kg	
4,4'-DDD	ND	2.2	ug/kg	
4,4'-DDE	ND	2.2	ug/kg	
4,4'-DDT	ND	2.2	ug/kg	
Dieldrin	ND	2.2	ug/kg	
Endosulfan I	ND	2.2	ug/kg	
Endosulfan II	ND	2.2	ug/kg	
Endosulfan sulfate	ND	2.2	ug/kg	
Endrin	ND	2.2	ug/kg	
Endrin aldehyde	ND	2.2	ug/kg	
Heptachlor	ND	2.2	ug/kg	
Heptachlor epoxide	ND	2.2	ug/kg	
Methoxychlor	ND	5.5	ug/kg	
Toxaphene	ND	110.	ug/kg	
PCB-1016	ND	28.	ug/kg	
PCB-1221	ND	28.	ug/kg	
PCB-1232	ND	28.	ug/kg	
PCB-1242	ND	28.	ug/kg	
PCB-1248	ND	28.	ug/kg	
PCB-1254	ND	55.	ug/kg	
PCB-1260	ND	55.	ug/kg	

Tested By : BJT
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canobie Environmental Services

Client ID: Bab-TP3-06

Lab ID: 053923-0003-SA

Enseco ID: 157350

Matrix: SOIL

Sampled: 24 JUL 90

Received: 25 JUL 90

Authorized: 25 JUL 90

Prepared: 31 JUL 90

Analyzed: 01 AUG 90

Sample Amount 10.6G
Percent Moisture NA
Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
Dioxins				
2,3,7,8-TCDD	ND	ng/g	0.033	
	% Recovery			
13C-2,3,7,8-TCDD	59			

ND = Not detected
NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787

Phenolics (4-AAP)

Method 9066

Client Name: Canobie Environmental Services
Matrix: SOIL Received: 25 JUL 90
Units: mg/kg Authorized: 25 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053923-0002-SA	Bab-TP1-09	ND	0.50	08 AUG 90	09 AUG 90
053923-0004-SA	Bab-TP3-09	1.0	0.50	08 AUG 90	09 AUG 90
053923-0006-SA	Bab-TP4-09	0.54	0.50	08 AUG 90	09 AUG 90

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

LAST PROJECT

NC

Pike Park

(PANE)

Robert I. Fort
(S&M)

A. 40 ml VOA Vial
B. Glass Liter
C. Plastic 500 ml
D. Plastic Liter

A. Ground Water	F Oil
B Surface Water	G Waste
C Leachate	H Blank/Spoke
D Haze/Soot	I Other
E Soil/Sediment	

1 Standard
2 48 Hour
3 72 Hour
4 Other

NOTES / MISCELLANEOUS

24h, 1st 12 hr pH

Тесты

Time

I have

Time

Pipe Rock

(Check Office Below)

Verbals Requested: Yes ☒ No ☐

18 OTHER S. Lee
TEL (714) 573-7066
FAX (714) 573-7083

OTHER _____
TEL _____
FAX _____

CANONIE ENVIRONMENTAL LABORATORY • 212 FRANK WEST CIRCLE, SUITE A • STOCKTON, CA 95206 • TEL. (209) 983-1340 • FAX (209) 983-0304

Final Report

Page: 15

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP4-01
 Matrix: SOLID
 Lab ID: 852566-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 84.5 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 DQ.C. Batch Nbr M080390DG1
 Date Analyzed: 8/03/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	10.	ug/kg	EPA 8240
Bromomethane	ND	10.	ug/kg	
Vinyl Chloride	ND	10.	ug/kg	
Chloroethane	ND	10.	ug/kg	
Methylene Chloride	14.	6.	ug/kg	
Acetone	ND	10.	ug/kg	
Carbon Disulfide	ND	6.	ug/kg	
1,1-Dichloroethene	ND	6.	ug/kg	
1,1-Dichloroethane	ND	6.	ug/kg	
1,2-Dichloroethene (total)	ND	6.	ug/kg	
Chloroform	ND	6.	ug/kg	
1,2-Dichloroethane	ND	6.	ug/kg	
2-Butanone	ND	10.	ug/kg	
1,1,1-Trichloroethane	ND	6.	ug/kg	
Carbon Tetrachloride	ND	6.	ug/kg	
Vinyl Acetate	ND	10.	ug/kg	
Bromodichloromethane	ND	6.	ug/kg	
1,2-Dichloropropane	ND	6.	ug/kg	
cis-1,3-Dichloropropene	ND	6.	ug/kg	
Trichloroethene	ND	6.	ug/kg	
Dibromochloromethane	ND	6.	ug/kg	
1,1,2-Trichloroethane	ND	6.	ug/kg	
Benzene	ND	6.	ug/kg	
trans-1,3-Dichloropropene	ND	6.	ug/kg	
Bromoform	ND	6.	ug/kg	
4-Methyl-2-pentanone	ND	10.	ug/kg	
2-Hexanone	ND	10.	ug/kg	
Tetrachloroethene	ND	6.	ug/kg	
1,1,2,2-Tetrachloroethane	ND	6.	ug/kg	
Toluene	ND	6.	ug/kg	
Chlorobenzene	ND	6.	ug/kg	
Ethyl Benzene	ND	6.	ug/kg	
Styrene	ND	6.	ug/kg	
Xylene (total)	ND	6.	ug/kg	

Tested By : DEG
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP4-05
 Matrix: SOLID
 Lab ID: 852570-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 84.2 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch #: 7/31/90
 Date Analyzed: 8/04/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting		Method
		Limit	Units	
Phenol	ND	800.	ug/kg	EPA 8270
bis(2-Chloroethyl)ether	ND	800.	ug/kg	
2-Chlorophenol	ND	800.	ug/kg	
1,3-Dichlorobenzene	ND	800.	ug/kg	
1,4-Dichlorobenzene	ND	800.	ug/kg	
Benzyl alcohol	ND	800.	ug/kg	
1,2-Dichlorobenzene	ND	800.	ug/kg	
2-Methylphenol	ND	800.	ug/kg	
bis(2-Chloroisopropyl)ether	ND	800.	ug/kg	
4-Methylphenol	ND	800.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	800.	ug/kg	
Hexachloroethane	ND	800.	ug/kg	
Nitrobenzene	ND	800.	ug/kg	
Isophorone	ND	800.	ug/kg	
2-Nitrophenol	ND	800.	ug/kg	
2,4-Dimethylphenol	ND	800.	ug/kg	
Benzoic acid	ND	4000.	ug/kg	
bis(2-Chloroethoxy) methane	ND	800.	ug/kg	
2,4-Dichlorophenol	ND	800.	ug/kg	
1,2,4-Trichlorobenzene	ND	800.	ug/kg	
Naphthalene	ND	800.	ug/kg	
4-Chloroaniline	ND	800.	ug/kg	
Hexachlorobutadiene	ND	800.	ug/kg	
4-Chloro-3-methylphenol	ND	800.	ug/kg	
2-Methylnaphthalene	ND	800.	ug/kg	
Hexachlorocyclopentadiene	ND	800.	ug/kg	
2,4,6-Trichlorophenol	ND	800.	ug/kg	
2,4,5-Trichlorophenol	ND	4000.	ug/kg	
2-Chloronaphthalene	ND	800.	ug/kg	
2-Nitroaniline	ND	4000.	ug/kg	
Dimethylphthalate	ND	800.	ug/kg	
Acenaphthylene	ND	800.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 18

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP4-05
 Matrix: SOLID
 Lab ID: 852570-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 84.2 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch #: 7/31/90
 Date Analyzed: 8/04/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	800.	ug/kg	
3-Nitroaniline	ND	4000.	ug/kg	
Acenaphthene	ND	800.	ug/kg	
2,4-Dinitrophenol	ND	4000.	ug/kg	
4-Nitrophenol	ND	4000.	ug/kg	
Dibenzofuran	ND	800.	ug/kg	
2,4-Dinitrotoluene	ND	800.	ug/kg	
Diethylphthalate	ND	800.	ug/kg	
4-Chlorophenyl-phenylether	ND	800.	ug/kg	
Fluorene	ND	800.	ug/kg	
4-Nitroaniline	ND	4000.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	4000.	ug/kg	
N-Nitrosodiphenylamine	ND	800.	ug/kg	
4-Bromophenyl-phenylether	ND	800.	ug/kg	
Hexachlorobenzene	ND	800.	ug/kg	
Pentachlorophenol	ND	4000.	ug/kg	
Phenanthrene	ND	800.	ug/kg	
Anthracene	ND	800.	ug/kg	
Di-n-butylphthalate	1500.	780.	ug/kg	
Fluoranthene	ND	800.	ug/kg	
Pyrene	ND	800.	ug/kg	
Butylbenzylphthalate	ND	800.	ug/kg	
3,3'-Dichlorobenzidine	ND	2000.	ug/kg	
Benzo(a)anthracene	ND	800.	ug/kg	
Chrysene	ND	800.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	800.	ug/kg	
Di-n-octylphthalate	ND	800.	ug/kg	
Benzo(b)fluoranthene	ND	800.	ug/kg	
Benzo(k)fluoranthene	ND	700.	ug/kg	
Benzo(a)pyrene	ND	800.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	800.	ug/kg	
Dibenz(a,h)anthracene	ND	800.	ug/kg	
Benzo(g,h,i)perylene	ND	800.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 20

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP4-07
 Matrix: SOLID
 Lab ID: 852572-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 85.5 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Q.C. Batch # : I080690PS2
 Date Analyzed: 8/06/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Flag	Result*	Reporting Limit	Units	Method
Arsenic		27.	5.8	mg/kg	EPA 7060
Mercury		ND	.23	mg/kg	EPA 7471
Antimony	N	ND	7.0	mg/kg	EPA 6010
Beryllium		ND	1.2	mg/kg	
Cadmium		ND	1.2	mg/kg	
Chromium		16.	5.8	mg/kg	
Copper		19.	5.8	mg/kg	
Lead	N	12.	5.8	mg/kg	
Nickel		25.	5.8	mg/kg	
Silver	N	ND	5.8	mg/kg	
Zinc		64.	5.8	mg/kg	
Selenium	NW	ND	5.8	mg/kg	EPA 7740
Thallium	NW	ND	5.8	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

026

Final Report

Page: 19

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP4-07
Matrix: SOLID
Lab ID: 852572-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 85.5 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
Q.C. Batch # : I080390CS2
Date Analyzed: 8/03/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.2	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 21

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: BAB TP4-07
Matrix: SOLID
Lab ID: 852572-SA-A
Project #: 88-093 LP #: 9235
Starting Depth: 0.00
Percent Solids: 85.5 %

Date Sampled: 7/24/1990
Date Received: 7/25/1990
Q.C. Batch # : I072590JG1
Date Analyzed: 7/25/1990
Date Reported: 8/09/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	6.0	.000	pH	EPA 9045

Tested By : JWG
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CanonieEnvironmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: BAB TP4-03
 Matrix: SOLID
 Lab ID: 852568-SA-A
 Project #: 88-093 LP #: 9235
 Starting Depth: 0.00
 Percent Solids: 84.9 %

Date Sampled: 7/24/1990
 Date Received: 7/25/1990
 Date Extracted: 7/31/90
 Date Analyzed: 8/03/1990
 Date Reported: 8/09/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.4	ug/kg	EPA 8080
alpha-BHC	ND	2.4	ug/kg	
beta-BHC	ND	2.4	ug/kg	
delta-BHC	ND	2.4	ug/kg	
gamma-BHC	ND	2.4	ug/kg	
Chlordane	ND	29.	ug/kg	
4,4'-DDD	ND	2.4	ug/kg	
4,4'-DDE	ND	2.4	ug/kg	
4,4'-DDT	ND	2.4	ug/kg	
Dieldrin	ND	2.4	ug/kg	
Endosulfan I	ND	2.4	ug/kg	
Endosulfan II	ND	2.4	ug/kg	
Endosulfan sulfate	ND	2.4	ug/kg	
Endrin	ND	2.4	ug/kg	
Endrin aldehyde	ND	2.4	ug/kg	
Heptachlor	ND	2.4	ug/kg	
Heptachlor epoxide	ND	2.4	ug/kg	
Methoxychlor	ND	5.9	ug/kg	
Toxaphene	ND	120.	ug/kg	
PCB-1016	ND	29.	ug/kg	
PCB-1221	ND	29.	ug/kg	
PCB-1232	ND	29.	ug/kg	
PCB-1242	ND	29.	ug/kg	
PCB-1248	ND	29.	ug/kg	
PCB-1254	ND	59.	ug/kg	
PCB-1260	ND	59.	ug/kg	

Tested By : BJT
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canonie Environmental Services

Client ID: Bab-TP4-06

Lab ID: 053923-0005-SA

Enseco ID: 157355

Matrix: SOIL

Sampled: 24 JUL 90

Received: 25 JUL 90

Authorized: 25 JUL 90

Prepared: 31 JUL 90

Analyzed: 01 AUG 90

Sample Amount 10.5G
Percent Moisture NA
Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
Dioxins				
2,3,7,8-TCDD	ND	ng/g	0.027	
	% Recovery			
13C-2,3,7,8-TCDD	56			

ND = Not detected
NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787

Phenolics (4-AAP)

Method 9066

Client Name: Canonie Environmental Services
Matrix: SOIL Received: 25 JUL 90
Units: mg/kg Authorized: 25 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053923-0002-SA	Bab-TP1-09	ND	0.50	08 AUG 90	09 AUG 90
053923-0004-SA	Bab-TP3-09	1.0	0.50	08 AUG 90	09 AUG 90
053923-0006-SA	Bab-TP4-09	0.54	0.50	08 AUG 90	09 AUG 90

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.

Rev 230787

Canonie Environmental

August 14, 1990

RECEIVED

AUG 15 1990

THOMAS GRANGER
EBASCO SERVICES INC.

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406
Phone: 215-337-2551
Fax: 215-337-0560
88-093

CC: K. Fitzgerald
V. Patel
GROW File
D-6

Transmittal
Geotechnical and Chemical Results for Bedding Material
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Canonie Environmental Services Corp. (Canonie) herein submits the following geotechnical and chemical data for the bedding material to be used at the Wellsville project. All testing was performed in accordance with Section 4.4 of the Quality Assurance Project Plan. The attached data includes:

Geotechnical Testing

Alfred Atlas Bedding Material
Test Pit: AA-Bucket #3

Page

Gradation Test

A-01

Chemical Testing

Alfred Atlas Bedding Material
Test Pit: AA-Bed

Page

Chain-of-Custody
Volatile Organic Analysis
Semi-Volatile Organic Analysis
Priority Pollutant Metals
Total Cyanide
pH
Polychlorinated Biphenyls and Pesticides
Dioxin (2,3,7,8-TCDD)
Total Phenol

A-02 and A-03
A-04, A-05, and A-06
A-07 and A-08
A-09
A-10
A-11
A-12, A-13, and A-14
A-15
A-16

Mr. Granger

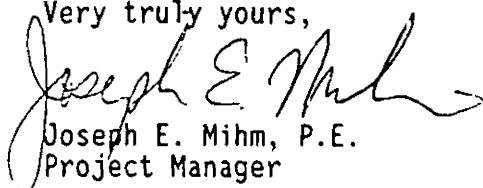
2

August 14, 1990

Note that the bedding material gradation meets the specification outlined in Section 2.2 of 02400. All chemical analytical results are below the detectable levels with the exception of three compounds which were just slightly above the laboratory reporting limits (see case narratives for further explanation). Canonie requests EBASCO Environmental's acceptance of this material.

If you have any questions, please call me at (215) 337-2551.

Very truly yours,



Joseph E. Mihm, P.E.
Project Manager

JEM/pg

Attachment

cc: Chris Ramachandra, EBASCO
Gary Stiles, EBASCO

CanonieEnvironmental

MECHANICAL ANALYSIS

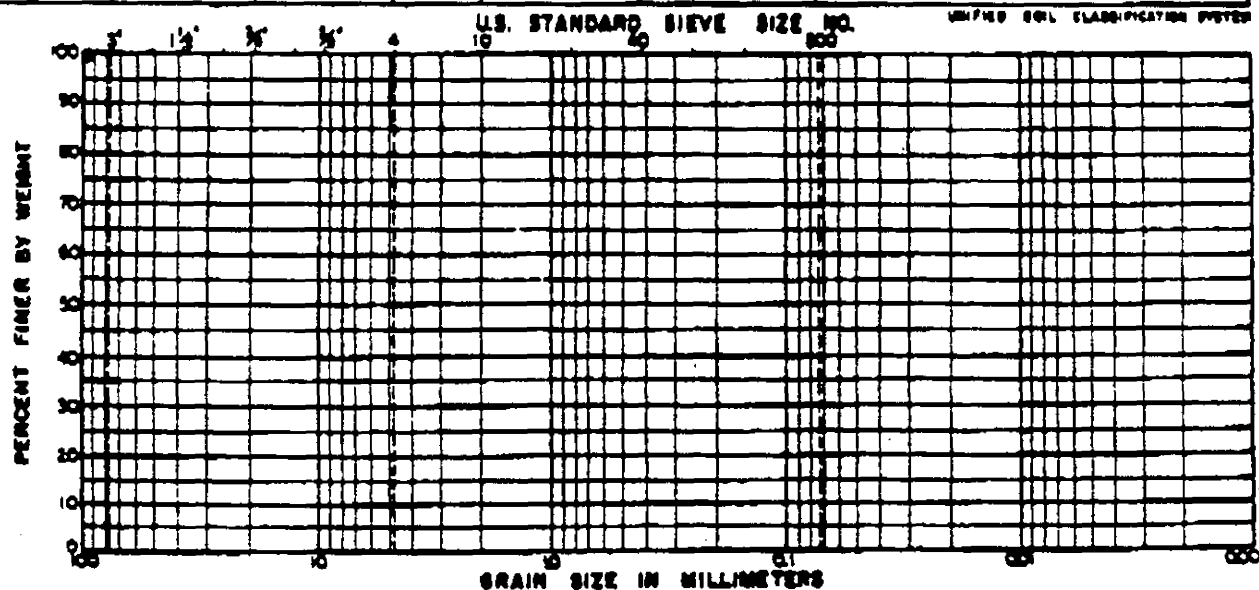
JOB No. 90.2137 DATE 8-10-60 BORING No. CANOMP SAMPLE No. PHUCK #3 DEPTH 2 DISH No. PAN Q1
 TIAL Bedding (of alluvial clay) WT SOIL (oven dry) 156.06

DISP. AGT. BRAKER GRADUATE HYDR No. OVEN DRY (W₀) 156.06

$$W = \frac{\text{wt oven dry (W}_0\text{)}}{\text{g. sample}} \times 100 \quad P = \left[\frac{100,000}{W} \times \frac{R}{0.075} \right] = (\quad) (R-G.) \quad \text{SPECIFIC GRAVITY} \quad (G)$$

SIEVE NO.	WEIGHT RETAINED	% RETAINED	% FINER	TIME	SLAPS TIME (min)	C°	HYDR. READ.	CORREC.	CORRECTED HYDR. READING (R)	R - C ₁	PARTIC SIZE (mm)	% FINER (P)
					0							
					1							
					2							
4"	—	—	100		4							
1"	75.94	49.7	51.3		15							
3/4"					30							
1/2"					60							
3/8"	155.60	99.7	0.3		250							
4	155.72	99.8	.2		1440							
10												
20												
60												
100												
200												
PAN												

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL

CANONIE ENVIRONMENTAL CHAIN-OF-CUSTODY RECORD

(See Reverse for Instructions)

page 2 of 3 LAB PROJECT NO. 9170

JECT NAME Sinclair Refinery

SAMPLERS Pat Riber

JECT NUMBER 88-093

RECORDER Pat Riber

SAMPLE CONTAINER DESCRIPTION CODES

A 40-ml VOA Vial
B Glass Liter
C Plastic 500-ml
D Plastic Liter
E Brass Tube
F Other

SAMPLE DESCRIPTION CODES

A Ground Water
B Surface Water
C Leachate
D Rinseate
E Soil/Sediment
F Oil
G Waste
H Blank/Spike
I Other

TAT CODES

1 Standard
2 48 Hour
3 24 Hour
4 Other

DATE	TIME	SAMPLE ID	NUMBER OF CONTAINERS AND PRESERVATION	ANALYSIS REQUESTED												NOTES	LABORATORY USE ONLY		
				As Received	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved	As Preserved		ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT	NOTES
7/11/90	13:10	AA-Bad-01	1													2 wks	851986A	good 10c	Pres. Spec. QC
7/11/90	13:10	AA-Bad-02	1														851987		"
7/11/90	13:10	AA-Bad-03	1														851988		"
7/11/90	13:10	AA-Bad-04	1														851989		"
7/11/90	13:10	AA-Bad-05	1														851990		"
7/11/90	13:10	AA-Bad-06	1														851991		"
7/11/90	13:10	AA-Bad-07	1														851992		"
7/11/90	13:10	AA-Bad-08	1														851993		"
7/11/90	13:10	AA-Bad-09	1														851994		"
SAMPLE ANALYSIS SWITCHED TO SEC. S.D.																			

NOTES/MISCELLANEOUS
* XT. TOYO (YOUNG) 12/15/90
24hr
NOTE: PH-REQUIRE
24hr
4/15/90 * Pres. Spec. QC- SEE LP 9172 SEC. 4.5

Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
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Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
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Send Lab Results to (Name): _____ (Check Office Below) Verbal Requested: Yes ☐ No ☐

- | | | | | |
|---|--|--|---|---|
| ☐ PORTER
TEL (219) 928-8881
FAX (219) 928-7168 | ☐ SAN MATEO
TEL (415) 873-8012
FAX (415) 873-8864 | ☐ IRVINE
TEL (714) 757-1755
FAX (714) 757-0980 | ☐ ORLANDO
TEL (407) 856-7428
FAX (407) 855-2595 | ☒ OTHER <u>Siler</u>
TEL (714) 593-7046
FAX _____ |
| ☐ DENVER
TEL (303) 790-1747
FAX (303) 798-0188 | ☐ KING OF PRUSSIA
TEL (215) 337-2651
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FAX (713) 656-0888 | ☐ MT. VIEW
TEL (415) 980-1840
FAX (415) 980-0738 | ☐ OTHER _____
TEL _____
FAX _____ |

Canonie Environmental Case Narrative

Client: SINCLAIR REFINERY, WELLSVILLE, NY

Project #: 88-093

LP #: 9178

GC/MS Case Narrative - Volatile

The soil samples were analyzed for volatile organics and met all QC criteria as specified in EPA SOW 2/88. Methylene chloride was present in the blanks run on 7/26/90. The first blank contained 3 ug/L and the second contained 8 ug/L. Any positive sample results for methylene chloride that are less than ten times the amount found in the blank may be considered laboratory artifacts.

Paul E. Gihb
Project Chemist

8/03/90
Date

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-01
 Matrix: SOLID
 Lab ID: 851986-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 94.1 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 DQ.C. Batch Nbr M072790SD1
 Date Analyzed: 7/27/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	11.	ug/kg	EPA 8240
Bromomethane	ND	11.	ug/kg	
Vinyl Chloride	ND	11.	ug/kg	
Chloroethane	ND	11.	ug/kg	
Methylene Chloride	ND	5.3	ug/kg	
Acetone	ND	11.	ug/kg	
Carbon Disulfide	ND	5.3	ug/kg	
1,1-Dichloroethene	ND	5.3	ug/kg	
1,1-Dichloroethane	ND	5.3	ug/kg	
1,2-Dichloroethene (total)	ND	5.3	ug/kg	
Chloroform	ND	5.3	ug/kg	
1,2-Dichloroethane	ND	5.3	ug/kg	
2-Butanone	ND	11.	ug/kg	
1,1,1-Trichloroethane	ND	5.3	ug/kg	
Carbon Tetrachloride	ND	5.3	ug/kg	
Vinyl Acetate	ND	11.	ug/kg	
Bromodichloromethane	ND	5.3	ug/kg	
1,2-Dichloropropane	ND	5.3	ug/kg	
cis-1,3-Dichloropropene	ND	5.3	ug/kg	
Trichloroethene	ND	5.3	ug/kg	
Dibromochloromethane	ND	5.3	ug/kg	
1,1,2-Trichloroethane	ND	5.3	ug/kg	
Benzene	ND	5.3	ug/kg	
trans-1,3-Dichloropropene	ND	5.3	ug/kg	
Bromoform	ND	5.3	ug/kg	
4-Methyl-2-pentanone	ND	11.	ug/kg	
2-Hexanone	ND	11.	ug/kg	
Tetrachloroethene	ND	5.3	ug/kg	
1,1,2,2-Tetrachloroethane	ND	5.3	ug/kg	
Toluene	ND	5.3	ug/kg	
Chlorobenzene	ND	5.3	ug/kg	
Ethyl Benzene	ND	5.3	ug/kg	
Styrene	ND	5.3	ug/kg	
Xylene (total)	ND	5.3	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CanonieEnvironmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-02
 Matrix: SOLID
 Lab ID: 851987-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 93.4 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 DQ.C. Batch Nbr M072690SD1
 Date Analyzed: 7/26/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	11.	ug/kg	EPA 8240
Bromomethane	ND	11.	ug/kg	
Vinyl Chloride	ND	11.	ug/kg	
Chloroethane	ND	11.	ug/kg	
Methylene Chloride	8.	5.4	ug/kg	
Acetone	ND	11.	ug/kg	
Carbon Disulfide	ND	5.4	ug/kg	
1,1-Dichloroethene	ND	5.4	ug/kg	
1,1-Dichloroethane	ND	5.4	ug/kg	
1,2-Dichloroethene (total)	ND	5.4	ug/kg	
Chloroform	ND	5.4	ug/kg	
1,2-Dichloroethane	ND	5.4	ug/kg	
2-Butanone	ND	11.	ug/kg	
1,1,1-Trichloroethane	ND	5.4	ug/kg	
Carbon Tetrachloride	ND	5.4	ug/kg	
Vinyl Acetate	ND	11.	ug/kg	
Bromodichloromethane	ND	5.4	ug/kg	
1,2-Dichloropropane	ND	5.4	ug/kg	
cis-1,3-Dichloropropene	ND	5.4	ug/kg	
Trichloroethene	ND	5.4	ug/kg	
Dibromochloromethane	ND	5.4	ug/kg	
1,1,2-Trichloroethane	ND	5.4	ug/kg	
Benzene	ND	5.4	ug/kg	
trans-1,3-Dichloropropene	ND	5.4	ug/kg	
Bromoform	ND	5.4	ug/kg	
4-Methyl-2-pentanone	ND	11.	ug/kg	
2-Hexanone	ND	11.	ug/kg	
Tetrachloroethene	ND	5.4	ug/kg	
1,1,2,2-Tetrachloroethane	ND	5.4	ug/kg	
Toluene	ND	5.4	ug/kg	
Chlorobenzene	ND	5.4	ug/kg	
Ethyl Benzene	ND	5.4	ug/kg	
Styrene	ND	5.4	ug/kg	
Xylene (total)	ND	5.4	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-05
 Matrix: SOLID
 Lab ID: 851990-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 95.2 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Q.C. Batch #: 7/20/90
 Date Analyzed: 7/30/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	690.	ug/kg	EPA 8270
bis(2-Chloroethyl) ether	ND	690.	ug/kg	
2-Chlorophenol	ND	690.	ug/kg	
1,3-Dichlorobenzene	ND	690.	ug/kg	
1,4-Dichlorobenzene	ND	690.	ug/kg	
Benzyl alcohol	ND	690.	ug/kg	
1,2-Dichlorobenzene	ND	690.	ug/kg	
2-Methylphenol	ND	690.	ug/kg	
bis(2-Chloroisopropyl) ether	ND	690.	ug/kg	
4-Methylphenol	ND	690.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	690.	ug/kg	
Hexachloroethane	ND	690.	ug/kg	
Nitrobenzene	ND	690.	ug/kg	
Isophorone	ND	690.	ug/kg	
2-Nitrophenol	ND	690.	ug/kg	
2,4-Dimethylphenol	ND	690.	ug/kg	
Benzoic acid	ND	3400.	ug/kg	
bis(2-Chloroethoxy) methane	ND	690.	ug/kg	
2,4-Dichlorophenol	ND	690.	ug/kg	
1,2,4-Trichlorobenzene	ND	690.	ug/kg	
Naphthalene	ND	690.	ug/kg	
4-Chloroaniline	ND	690.	ug/kg	
Hexachlorobutadiene	ND	690.	ug/kg	
4-Chloro-3-methylphenol	ND	690.	ug/kg	
2-Methylnaphthalene	ND	690.	ug/kg	
Hexachlorocyclopentadiene	ND	690.	ug/kg	
2,4,6-Trichlorophenol	ND	690.	ug/kg	
2,4,5-Trichlorophenol	ND	3400.	ug/kg	
2-Chloronaphthalene	ND	690.	ug/kg	
2-Nitroaniline	ND	3400.	ug/kg	
Dimethylphthalate	ND	690.	ug/kg	
Acenaphthylene	ND	690.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-05
 Matrix: SOLID
 Lab ID: 851990-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 95.2 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Q.C. Batch #: 7/20/90
 Date Analyzed: 7/30/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	690.	ug/kg	
3-Nitroaniline	ND	3400.	ug/kg	
Acenaphthene	ND	690.	ug/kg	
2,4-Dinitrophenol	ND	3400.	ug/kg	
4-Nitrophenol	ND	3400.	ug/kg	
Dibenzofuran	ND	690.	ug/kg	
2,4-Dinitrotoluene	ND	690.	ug/kg	
Diethylphthalate	ND	690.	ug/kg	
4-Chlorophenyl-phenylether	ND	690.	ug/kg	
Fluorene	ND	690.	ug/kg	
4-Nitroaniline	ND	3400.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	3400.	ug/kg	
N-Nitrosodiphenylamine	ND	690.	ug/kg	
4-Bromophenyl-phenylether	ND	690.	ug/kg	
Hexachlorobenzene	ND	690.	ug/kg	
Pentachlorophenol	ND	3400.	ug/kg	
Phenanthrene	ND	690.	ug/kg	
Anthracene	ND	690.	ug/kg	
Di-n-butylphthalate	ND	690.	ug/kg	
Fluoranthene	ND	690.	ug/kg	
Pyrene	ND	690.	ug/kg	
Butylbenzylphthalate	ND	690.	ug/kg	
3,3'-Dichlorobenzidine	ND	1400.	ug/kg	
Benzo(a)anthracene	ND	690.	ug/kg	
Chrysene	ND	690.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	690.	ug/kg	
Di-n-octylphthalate	ND	690.	ug/kg	
Benzo(b)fluoranthene	ND	690.	ug/kg	
Benzo(k)fluoranthene	ND	630.	ug/kg	
Benzo(a)pyrene	ND	690.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	690.	ug/kg	
Dibenz(a,h)anthracene	ND	690.	ug/kg	
Benzo(g,h,i)perylene	ND	690.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-08
 Matrix: SOLID
 Lab ID: 851993-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 94.0 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Q.C. Batch #: I071790PS3
 Date Analyzed: 7/20/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Flag	Result*	Reporting Limit	Units	Method
Arsenic	N	ND	11.	mg/kg	EPA 7740
Mercury		ND	1.31	mg/kg	EPA 7740
Antimony	N	ND	6.4	mg/kg	EPA 8010
Beryllium		ND	1.1	mg/kg	
Cadmium		ND	1.1	mg/kg	
Chromium		7.0	5.3	mg/kg	
Copper		13.	5.3	mg/kg	
Lead		6.3	5.3	mg/kg	
Nickel		13.	5.3	mg/kg	
Silver		ND	5.3	mg/kg	
Zinc		58.	5.3	mg/kg	
Selenium	NW	ND	1.1	mg/kg	EPA 7740
Thallium	N	ND	11.	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: AA-BED-08
Matrix: SOLID
Lab ID: 851993-SA-A
Project #: 88-093 LP #: 9178
Starting Depth: 0.00
Percent Solids: 94.0 %

Date Sampled: 7/13/1990
Date Received: 7/14/1990
Q.C. Batch # : I071990CS2
Date Analyzed: 7/19/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.1	mg/kg	EPA

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: AA-BED-08
Matrix: SOLID
Lab ID: 851993-SA-A
Project #: 88-093 LP #: 9178
Starting Depth: 0.00
Percent Solids: 94.0 %

Date Sampled: 7/13/1990
Date Received: 7/14/1990
Q.C. Batch #: 1071690CS4
Date Analyzed: 7/16/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	9.000	1.000	pH	12

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental Case Narrative

Client: SINCLAIR REFINERY, WELLSVILLE, NY
LP #: 9178

Project #:88-093

Pesticides Case Narrative

OCP: Calibration was verified for all samples analyzed. In the continuing check standards E3836 and E3837, the following compounds had a lowered response: delta-BHC, gamma-BHC, 4,4'-DDD, and Endosulfan sulfate. These were not found to be positive in the samples. The Method Blank was free from interferences at or above the reporting limits. Spike and spike duplicate recoveries were within acceptable limits with the exception of Lindane and 4,4'-DDT, which had low recoveries. This appears to be the result of degradation because of the presence of 4,4'-DDE.


Project Chemist

8/3/90
Date

Extractions Pest. Case Narrative

8080

All samples were extracted within required holding time by Method 3540. A GPC clean-up was performed to remove non-target petroleum hydrocarbons from samples AA-Bed-03 (851988) and AA-Bed-04 (851989). A TBA clean-up was performed on all samples to remove sulfur compounds.


Project Chemist

8/3/90
Date

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-03
 Matrix: SOLID
 Lab ID: 851988-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 93.1 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Date Extracted: 7/18/90
 Date Analyzed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.2	ug/kg	EPA 8080
alpha-BHC	ND	2.2	ug/kg	
beta-BHC	2.8	2.2	ug/kg	
delta-BHC	ND	2.2	ug/kg	
gamma-BHC	ND	2.2	ug/kg	
Chlordane	ND	27.	ug/kg	
4,4'-DDD	ND	2.2	ug/kg	
4,4'-DDE	2.7	2.2	ug/kg	
4,4'-DDT	ND	2.2	ug/kg	
Dieldrin	ND	2.2	ug/kg	
Endosulfan I	ND	2.2	ug/kg	
Endosulfan II	ND	2.2	ug/kg	
Endosulfan sulfate	ND	2.2	ug/kg	
Endrin	ND	2.2	ug/kg	
Endrin aldehyde	ND	2.2	ug/kg	
Heptachlor	ND	2.2	ug/kg	
Heptachlor epoxide	ND	2.2	ug/kg	
Methoxychlor	ND	5.4	ug/kg	
Toxaphene	ND	110.	ug/kg	
PCB-1016	ND	27.	ug/kg	
PCB-1221	ND	27.	ug/kg	
PCB-1232	ND	27.	ug/kg	
PCB-1242	ND	27.	ug/kg	
PCB-1248	ND	27.	ug/kg	
PCB-1254	ND	54.	ug/kg	
PCB-1260	ND	54.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental

Final Report

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Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-BED-04
 Matrix: SOLID
 Lab ID: 851989-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 92.5 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Date Extracted: 7/18/90
 Date Analyzed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.2	ug/kg	EPA 8080
alpha-BHC	ND	2.2	ug/kg	
beta-BHC	ND	2.2	ug/kg	
delta-BHC	ND	2.2	ug/kg	
gamma-BHC	ND	2.2	ug/kg	
Chlordane	ND	27.	ug/kg	
4,4'-DDD	ND	2.2	ug/kg	
4,4'-DDE	ND	2.2	ug/kg	
4,4'-DDT	ND	2.2	ug/kg	
Dieldrin	ND	2.2	ug/kg	
Endosulfan I	ND	2.2	ug/kg	
Endosulfan II	ND	2.2	ug/kg	
Endosulfan sulfate	ND	2.2	ug/kg	
Endrin	ND	2.2	ug/kg	
Endrin aldehyde	ND	2.2	ug/kg	
Heptachlor	ND	2.2	ug/kg	
Heptachlor epoxide	ND	2.2	ug/kg	
Methoxychlor	ND	5.4	ug/kg	
Toxaphene	ND	110.	ug/kg	
PCB-1016	ND	27.	ug/kg	
PCB-1221	ND	27.	ug/kg	
PCB-1232	ND	27.	ug/kg	
PCB-1242	ND	27.	ug/kg	
PCB-1248	ND	27.	ug/kg	
PCB-1254	ND	54.	ug/kg	
PCB-1260	ND	54.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

CanonieEnvironmental

2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canonic Environmental Services

Client ID: AA-Bed-06

Lab ID: 053757-0013-SA

Matrix: SOIL

Authorized: 16 JUL 90

Enseco ID: 156292

Sampled: 13 JUL 90

Prepared: 20 JUL 90

Received: 17 JUL 90

Analyzed: 24 JUL 90

Sample Amount 10.1G
Percent Moisture NA
Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
Dioxins				
2,3,7,8-TCDD	ND	ng/g	0.016	
	% Recovery			
13C-2,3,7,8-TCDD	37			

ND = Not detected
NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787

Phenolics (4-AAP)

Method 9066

Client Name: Canonic Environmental Services

Matrix: SOIL

Units: mg/kg

Received: 14 JUL 90

Authorized: 16 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053757-0003-SA	UNG-TP2-7	0.66	0.50	25 JUL 90	25 JUL 90
053757-0006-SA	UNG-TP6-7	2.3	0.50	25 JUL 90	25 JUL 90
053757-0009-SA	UNG-TP10-9	4.3	0.50	25 JUL 90	25 JUL 90
053757-0012-SA	AA-Pit-09	ND	0.50	25 JUL 90	25 JUL 90
053757-0015-SA	AA-Bed-09	1.0	0.50	25 JUL 90	25 JUL 90
053757-0018-SA	AA-AGG-09	1.8	0.50	25 JUL 90	25 JUL 90

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.

Rev 230787

Canonie Environmental

August 3, 1990

RECEIVED

AUG 6 - 1990

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07011-3586

THOMAS GRANGER
EBASCO SERVICES INC.

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406

Phone: 215-337-2551

Fax: 215-337-0560

88-093-21

CC: K. Fitzgerald
V. Patel
E-6
CIRCO

Transmittal
Chemical Testing Laboratory Results for Pit Run
Partial River Channelization Project
Sinclair Refinery, Wellsville, New York

Dear Mr. Granger:

Canonie Environmental Services Corp. (Canonie) herein submits the following chemical data results for the Pit Run materials to be used on the above referenced project. The testing was performed in accordance with Section 4.4 of the Quality Assurance Project Plan. The attached data includes:

Pit Run Gravel from Alfred Atlas Pit
Chemical Testing

<u>Test</u>	<u>Method</u>	<u>Page</u>
Volatile Organics	8240	A-1
Semi-Volatile Organics	8270	A-2
Priority Pollutant Metals	6010/7000	A-4
Total Cyanide	9010	A-5
pH	9045	A-6
PCBs and Pesticides	8080	A-7
Dioxin (2,3,7,8-TCDD)	8280	A-8
Total Phenols	9066	A-9

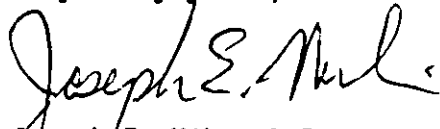
Mr. Thomas Granger

2

August 3, 1990

If you have any questions, please call me at (215) 337-2551.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Joseph E. Mihm". The signature is fluid and cursive, with the first name "Joseph" being more prominent.

Joseph E. Mihm, P.E.
Project Manager

JEM/cs

cc: Gary Stiles, EBASCO

Final Report

Page: 1

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-FIT-01
 Matrix: SOLID
 Lab ID: 851977-8A-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 95.9 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 DQ.C. Batch Nbr: M072690SD1
 Date Analyzed: 7/26/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	10.	ug/kg	EPA 8240
Bromomethane	ND	10.	ug/kg	
Vinyl Chloride	ND	10.	ug/kg	
Chloroethane	ND	10.	ug/kg	
Methylene Chloride	8.	5.2	ug/kg	
Acetone	ND	10.	ug/kg	
Carbon Disulfide	ND	5.2	ug/kg	
1,1-Dichloroethene	ND	5.2	ug/kg	
1,1-Dichloroethane	ND	5.2	ug/kg	
1,2-Dichloroethene (total)	ND	5.2	ug/kg	
Chloroform	ND	5.2	ug/kg	
1,2-Dichloroethane	ND	5.2	ug/kg	
2-Butanone	ND	10.	ug/kg	
1,1,1-Trichloroethane	ND	5.2	ug/kg	
Carbon Tetrachloride	ND	5.2	ug/kg	
Vinyl Acetate	ND	10.	ug/kg	
Bromodichloromethane	ND	5.2	ug/kg	
1,2-Dichloropropane	ND	5.2	ug/kg	
cis-1,3-Dichloropropene	ND	5.2	ug/kg	
Trichloroethene	ND	5.2	ug/kg	
Dibromochloromethane	ND	5.2	ug/kg	
1,1,2-Trichloroethane	ND	5.2	ug/kg	
Benzene	ND	5.2	ug/kg	
trans-1,3-Dichloropropene	ND	5.2	ug/kg	
Bromoform	ND	5.2	ug/kg	
4-Methyl-2-pentanone	ND	10.	ug/kg	
2-Hexanone	ND	10.	ug/kg	
Tetrachloroethene	ND	5.2	ug/kg	
1,1,2,2-Tetrachloroethane	ND	5.2	ug/kg	
Toluene	ND	5.2	ug/kg	
Chlorobenzene	ND	5.2	ug/kg	
Ethyl Benzene	ND	5.2	ug/kg	
Styrene	ND	5.2	ug/kg	
Xylene (total)	ND	5.2	ug/kg	

Tested By : SLD
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 8

Client: SINGLAIR REFINERY, WELLSVILLE,

Date Sampled: 7/13/1990

Sample ID: AA-PIT-07

Date Received: 7/14/1990

Matrix: SOLID

Q.C. Batch #: 7/20/90

Lab ID: 851983-SA-A

Date Analysed: 7/30/1990

Project #: 88-093

LP #: 9178

Date Reported: 8/02/1990

Starting Depth: 0.00

Ending Depth: 0.00

Percent Solids: 96.7 %

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result	Reporting Limit	Units	Method
Phenol	ND	340.	ug/kg	EPA 8270
bis(2-Chloroethyl) ether	ND	340.	ug/kg	
2-Chlorophenol	ND	340.	ug/kg	
1,3-Dichlorobenzene	ND	340.	ug/kg	
1,4-Dichlorobenzene	ND	340.	ug/kg	
Benzyl alcohol	ND	340.	ug/kg	
1,2-Dichlorobenzene	ND	340.	ug/kg	
2-Methylphenol	ND	340.	ug/kg	
bis(2-Chloroisopropyl) ether	ND	340.	ug/kg	
4-Methylphenol	ND	340.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	340.	ug/kg	
Hexachloroethane	ND	340.	ug/kg	
litrobenzene	ND	340.	ug/kg	
Isophorone	ND	340.	ug/kg	
2-Nitrophenol	ND	340.	ug/kg	
2,4-Dimethylphenol	ND	340.	ug/kg	
Benzoic acid	ND	340.	ug/kg	
bis(2-Chloroethoxy) methane	ND	1600.	ug/kg	
2,4-Dichlorophenol	ND	340.	ug/kg	
1,2,4-Trichlorobenzene	ND	340.	ug/kg	
Napthalene	ND	340.	ug/kg	
4-Chloroaniline	ND	340.	ug/kg	
Hexachlorobutadiene	ND	340.	ug/kg	
4-Chloro-3-methylphenol	ND	340.	ug/kg	
2-Methylnaphthalene	ND	340.	ug/kg	
Hexachlorocyclopentadiene	ND	340.	ug/kg	
2,4,6-Trichlorophenol	ND	340.	ug/kg	
2,4,5-Trichlorophenol	ND	1600.	ug/kg	
2-Chloronaphthalene	ND	340.	ug/kg	
2-Nitroaniline	ND	1600.	ug/kg	
Dimethylphthalate	ND	340.	ug/kg	
Acenaphthylene	ND	340.	ug/kg	

Tested By : DSH

Validated By: RJT

ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 9

Client: SINCLAIR REFINERY, WILMSTVILLE,
 Sample ID: AA-PIT-07

Date Sampled: 7/13/1990
 Date Received: 7/14/1990

Matrix: SOLID

Q.C. Batch #: 7/20/90

Lab ID: 851983-SA-A

Date Analyzed: 7/30/1990

Project #: 88-093

Date Reported: 8/02/1990

Starting Depth: 0.00

Ending Depth: 0.00

Percent Solids: 96.7 %

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	340.	ug/kg	
3-Nitroaniline	ND	1600.	ug/kg	
Acenaphthene	ND	340.	ug/kg	
2,4-Dinitrophenol	ND	1600.	ug/kg	
4-Nitrophenol	ND	1600.	ug/kg	
Dibenzofuran	ND	340.	ug/kg	
2,4-Dinitrotoluene	ND	340.	ug/kg	
Diethylphthalate	ND	340.	ug/kg	
4-Chlorophenyl-phenylether	ND	340.	ug/kg	
Fluorene	ND	340.	ug/kg	
4-Nitroaniline	ND	1600.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	1600.	ug/kg	
N-Nitrosodiphenylamine	ND	340.	ug/kg	
4-Bromophenyl-phenylether	ND	340.	ug/kg	
Hexachlorobenzene	ND	340.	ug/kg	
Pentachlorophenol	ND	1600.	ug/kg	
Phenanthrene	ND	340.	ug/kg	
Anthracene	ND	340.	ug/kg	
Di-n-butylphthalate	480.	340.	ug/kg	
Fluoranthene	ND	340.	ug/kg	
Pyrene	ND	340.	ug/kg	
Butylbenzylphthalate	ND	340.	ug/kg	
3,3'-Dichlorobenzidine	ND	680.	ug/kg	
Benzo (a) anthracene	ND	340.	ug/kg	
Chrysene	ND	340.	ug/kg	
bis (2-Ethylhexyl) phthalate	ND	340.	ug/kg	
Di-n-octylphthalate	ND	340.	ug/kg	
Benzo (b) fluoranthene	ND	340.	ug/kg	
Benzo (k) fluoranthene	ND	310.	ug/kg	
Benzo (a) pyrene	ND	340.	ug/kg	
Indeno (1,2,3-cd) pyrene	ND	340.	ug/kg	
Dibenz (a,h) anthracene	ND	340.	ug/kg	
Benzo (g,h,i) perylene	ND	340.	ug/kg	

Tested By : DSH

Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 6

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-PIT-05
 Matrix: SOLID
 Lab ID: 851981-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 96.4 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Q.C. Batch #: 1071790P83
 Date Analysed: 7/20/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

Analyte	Result*	Reporting Limit	Units	Method
Arsenic	ND	10.	mg/kg	EPA 7060
Mercury	ND	.21	mg/kg	EPA 7471
Antimony	ND	6.2	mg/kg	EPA 6010
Beryllium	ND	1.0	mg/kg	
Cadmium	ND	1.0	mg/kg	
Chromium	ND	5.2	mg/kg	
Copper	14.	5.2	mg/kg	
Lead	7.0	5.2	mg/kg	
Nickel	10.	5.2	mg/kg	
Silver	ND	5.2	mg/kg	
Zinc	53.	5.2	mg/kg	
Selenium	ND	1.0	mg/kg	EPA 7740
Thallium	ND	10.	mg/kg	EPA 7841

Tested By : GCZ
 Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 5

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: AA-PIT-05
Matrix: SOLID
Lab ID: 851981-SA-A
Project #: 88-093 LP #: 9178
Starting Depth: 0.00
Percent Solids: 96.4 %

Date Sampled: 7/13/1990
Date Received: 7/14/1990
Q.C. Batch #: I071990CS2
Date Analysed: 7/19/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.0	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 7

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: AA-PIT-05
Matrix: SOLID
Lab ID: 851981-SA-A
Project #: 88-093
Starting Depth: 0.00
Percent Solids: 96.4 %

LP #: 9178

Date Sampled: 7/13/1990
Date Received: 7/14/1990
Q.C. Batch #: I071690CS4
Date Analysed: 7/16/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	9.000	.000	pH	EPA 9045

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 3

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-PIT-03
 Matrix: SOLID
 Lab ID: 851979-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 96.4 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Date Extracted: 7/18/90
 Date Analysed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.1	ug/kg	EPA 8080
alpha-BHC	ND	2.1	ug/kg	
beta-BHC	ND	2.1	ug/kg	
delta-BHC	ND	2.1	ug/kg	
gamma-BHC	ND	2.1	ug/kg	
Chlordane	ND	26.	ug/kg	
4,4'-DDD	ND	2.1	ug/kg	
4,4'-DDE	ND	2.1	ug/kg	
4,4'-DDT	ND	2.1	ug/kg	
Dieldrin	ND	2.1	ug/kg	
Endosulfan I	ND	2.1	ug/kg	
Endosulfan II	ND	2.1	ug/kg	
Endosulfan sulfate	ND	2.1	ug/kg	
Endrin	ND	2.1	ug/kg	
Endrin aldehyde	ND	2.1	ug/kg	
Heptachlor	ND	2.1	ug/kg	
Heptachlor epoxide	ND	2.1	ug/kg	
Methoxychlor	ND	5.2	ug/kg	
Toxaphene	ND	100.	ug/kg	
PCB-1016	ND	26.	ug/kg	
PCB-1221	ND	26.	ug/kg	
PCB-1232	ND	26.	ug/kg	
PCB-1242	ND	26.	ug/kg	
PCB-1248	ND	26.	ug/kg	
PCB-1254	ND	52.	ug/kg	
PCB-1260	ND	52.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonie Environmental



2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canonic Environmental Services

Client ID: AA-Pit-06

Lab ID: 053757-0010-SA

Matrix: SOIL

Authorized: 16 JUL 90

Enseco ID: 156288

Sampled: 13 JUL 90

Prepared: 20 JUL 90

Received: 17 JUL 90

Analyzed: 24 JUL 90

Sample Amount 10.4G
Percent Moisture NA
Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
Dioxins				
2,3,7,8-TCDD	ND	ng/g	0.014	
	% Recovery			
13C-2,3,7,8-TCDD	56			

ND = Not detected
NA = Not applicable

Reported By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787



Phenolics (4-AAP)

Method 9066

Client Name: Canonic Environmental Services

Matrix: SOIL

Received: 14 JUL 90

Units: mg/kg

Authorized: 16 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053757-0012-SA	AA-Pit-09	ND	0.50	25 JUL 90	25 JUL 90

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

CANONIE ENVIRONMENTAL CHAIN-OF-CUSTODY RECORD

(See Reverse Instructions)

page 1 of 1 9178

PROJECT NAME Sinclair Refinery
Wallerstein, NY

SAMPLERS Rob Porter
Rob Porter
(SIGN)

PROJECT NUMBER 88-093
RECORDER Rob J. Porter
(SIGN)

SAMPLE CONTAINER DESCRIPTION CODES
A 40-ml VOA Vial
B Glass Liter
C Plastic 500-ml
D Plastic Liter
E Brass Tube
F Other Glass
G 0.0

SAMPLE DESCRIPTION CODES
A Ground Water
B Surface Water
C Leachate
D Pinnelate
E Soil/Sediment
F Oil
G Waste
H Blank/Spike
I Other

TAT CODES
1 Standard
2 48 Hour
3 24 Hour
4 Other

DATE	TIME	SAMPLE ID	Sample Container (See Codes)	Sample Description (See Codes)	NUMBER OF CONTAINERS AND PRESERVATION			Freezing (Check)	ANALYSIS REQUESTED							Minimum Holding Time by Method Prescribed	Sample Stored at 4°C (Check)	See VOC Requirements (Check)	NOTES	LABORATORY USE ONLY				
					Unpreserved	HOLD			8240	8050	8270	8280	9010	9010/9020	8210					8066				
7/12/90	12:15	AA-Pit-01	FE						X									2 wks	X		851977A	good 10°C	*PROJECT SPEC. QC	
	12:15	AA-Pit-02							X												851978A		"	
	12:15	AA-Pit-03							X												851979A		"	
	12:15	AA-Pit-04							X												851980A		"	
	12:15	AA-Pit-05							X												851981A	Backup Jar	"	
	12:15	AA-Pit-06								X											851982A	good 10°C	SUBCONTRACT	
	12:15	AA-Pit-07									X	X							24 hr		851983A		*PROJECT SPEC. QC	
	12:15	AA-Pit-08												X					2 wks		851984A		*SUBCONTRACT	
	12:15	AA-Pit-09													X				2 wks		851985A		"	
See SIG FORM																								
gsm - SAMPLE ANALYSIS																								
SWITCHED TO ELIMINATE																								
POSSIBILITY OF CONTAMINATION																								

NOTES/MISCELLANEOUS
* 9010: Total Lipids * PROJECT SPEC. QC REQ.
SEE SAP SEC. 7.5
9066 Phenols
24 hr. hold for pH CONTACT GREG NAGLE
FOR QUESTIONS

Relinquished by: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time

Method of Shipment <u>FEDEX</u>	Description of Transport Container <u>Plastic Cooler</u>	Other Chain-Of-Custody Transported with this Chain (by Serial No.) <u>01479, 01477</u>	Dispatched By: (Signature) <u>Rob Porter</u>	Date <u>7/13/90</u>	Time <u>14:00</u>	Received for lab By: (Signature) <u>Colleen D. Andreadis</u>	Date <u>7/13/90</u>	Time <u>11:30</u>
------------------------------------	---	---	---	------------------------	----------------------	---	------------------------	----------------------

Send Lab Results to (Name): Rob Porter (Check Office Below) Verbal Requested: Yes ☒ No ☐

- | | | | | |
|--|--|--|---|---|
| ☐ PORTER
TEL (219) 926-8851
FAX (219) 926-7169 | ☐ SAN MATEO
TEL (415) 873-8012
FAX (415) 573-5654 | ☐ IRVINE
TEL (714) 757-1756
FAX (714) 757-0800 | ☐ ORLANDO
TEL (407) 856-7426
FAX (407) 855-2595 | ☒ OTHER <u>Siler</u>
TEL (219) 572-7006
FAX _____ |
| ☒ DENVER
TEL (303) 790-1747
FAX (303) 790-0186 | ☐ KING OF PRUSSIA
TEL (215) 337-2551
FAX (215) 337-0560 | ☐ HOUSTON
TEL (713) 556-1666
FAX (713) 556-0806 | ☐ MT. VIEW
TEL (415) 980-1640
FAX (415) 980-0739 | ☐ OTHER _____
TEL _____
FAX _____ |

CANONIE ENVIRONMENTAL LABORATORY • 212 FRANK WEST CIRCLE, SUITE A • STOCKTON, CA 95206 • TEL (209) 983-1340 • FAX (209) 983-0304

SERIAL NO. **01478**

WHITE: Field Copy YELLOW: Project Copy PINK: Laboratory Copy

Canonie Environmental

Canonie Environmental Services Corp.
300 North Gulph Road - Suite 312
West of Pottsville, Pennsylvania 19406
Phone (717) 337-2221
Fax (717) 337-0560

October 10, 1990

88-093

Mr. Thomas Granger
EBASCO Services Incorporated
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Transmittal
Roadway Aggregate Geotechnical Testing Results
Partial River Channelization Project
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Enclosed find the results for the geotechnical testing performed for the roadway aggregate to be used for the west bank dike as outlined in section 02546 of the project specifications. The roadway aggregate is being supplied by the Alfred Atlas Gravel and Sand Corporation of Alfred Station, New York, who is also supplying the bedding and pit run gravel for this project. The geotechnical analysis of the roadway aggregate was performed by Empire Soils Investigations, Inc. of Hamburg, New York, in accordance with section 4.5.4 of the Quality Assurance Project Plan (QAPP) by EBASCO.

The chemical analysis results for the roadway aggregate were previously forwarded to your office on August 7, 1990.

Canonie is planning to place the roadway aggregate the week of October 15, 1990; therefore a timely response to the information provided herein is requested.

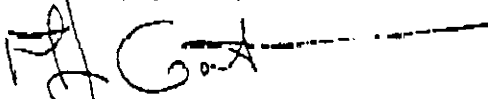
Roadway Aggregate

2

October 10, 1990

We are confident that this information will meet with your approval. If you have any questions, please contact me at (716) 593-7066.

Very truly yours,



Frank J. Gontowski
QA/QC Officer



David A. Dekker
Construction Manager

DAD/FJG/lid

Enclosures



PROJECT: Canonic Environmental Services -Lab Testing
CLIENT: Canonic Environmental
DATE: October 10, 1990
PROJECT NO.: BT-90-303
REPORT NO.: L-1

REPORT OF MATERIAL TESTING

Material: Project sample #CE-1 of Proposed Roadway Aggregate delivered to our laboratory in Hamburg, New York on August 27, 1990. Sample source was not identified.

Mechanical Analysis: ASTM C-136/C-117

<u>SIEVE SIZE</u>	<u>PERCENT FINER</u>
2"	100
1"	98.7
1/2"	65.0
1/4"	48.7
#10	37.3
#20	24.6
#40	14.2
#100	7.7
#200	6.1

MAGNESIUM SULFATE SOUNDNESS: ASTM C-88

Coarse Fraction Loss after 4 cycles: .74%
Fine Fraction Loss after 4 cycles: 7.8 %

ATTERBERG LIMITS: ASTM D-4318

Plasticity Index: NP

FLAT & ELONGATED PARTICLES:

Particles retained on 1/2" Sieve = 21.8%

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Niel W. Zuern
Niel W. Zuern
Laboratory Services Manager
djm

Charles C. Keipper
Charles C. Keipper
Testing Services Manager



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ORCHARD PARK DISTRICT OFFICE: 5-3838 SHELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-649-0110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES-LAB TESTING Report No. L-1

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: UNKNOWN

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ JAASHO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
4	8	12.1		108.87			10.1	1.8
8	16	27.3		103.97				
16	30	42.4		102.51			10.4	6.0
30	50	13.2		104.14				
								6.80

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: FINE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

EMPIRE

SOILS INVESTIGATIONS INC.

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WASHINGTON, D.C. • WOODBRIDGE, N.J. • HARRISBURG, PA.

ORCHARD PARK DISTRICT OFFICE: S-3858 SHELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-649-1110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES-LAB TESTING Report No. L-1

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: UNKNOWN

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
3/8	4	41.1		309.16		1.7		.67
3/4	3/8	52.0		1001.50		.3		.17
1 1/2	3/4	26.9						
								.74

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: COARSE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.



PROJECT: Canonic Environmental Services -Lab Testing
CLIENT: Canonic Environmental
DATE: October 10, 1990
PROJECT NO.: BT-90 303
REPORT NO.: L-2

REPORT OF MATERIAL TESTING

Material: Project sample #CE-2 of Bank Run Gravel delivered to our laboratory in Hamburg, New York on August 27, 1990. Sample source was not identified.

Mechanical Analysis: ASTM C-136/C-117.

<u>SIEVE SIZE</u>	<u>PERCENT FINER</u>
2"	100
1 1/2"	99.3
1"	98.3
3/4"	86.6
1/2"	71.4
1/4"	55.7
#4	51.4
#10	41.0
#20	25.9
#40	15.4
#100	9.0
#200	7.4

MAGNESIUM SULFATE SOUNDNESS: ASTM C-86

Coarse Fraction Loss after 4 cycles: 1.43
Fine Fraction Loss after 4 cycles: 5.93

ATTERBERG LIMITS: ASTM D-4318

Plasticity Index: NP

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Niel W. Zuern
Niel W. Zuern
Laboratory Services Manager

djm

Charles C. Keipper
Charles C. Keipper
Testing Services Manager

FROM

10.10.1990 10:56

F. 6



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ORCHARD PARK DISTRICT OFFICE: 9-3858 SHELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-444-8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES -LAB TESTING Report No. 1-2

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: UNKNOWN

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYS DOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
4	8	15.1		104.44			12.6	1.1
8	16	18.9		100.57				
16	30	26.4		105.00			17.6	1.7
30	50	13.2		105.75				
								5.9

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: FINE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

FROM

10.10.1990 10:57

P. 7

EMPIRE

SOILS INVESTIGATIONS INC.

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ORCHARD PARK DISTRICT OFFICE, 5-3050 SHELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-649-8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES-LAB TESTING Report No. 1-2

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: UNKNOWN

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
3/8	4			300.17		2.9		1.8
3/4	3/8			998.83		2.3		
1 1/2	3/4							1.0
								2.8

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: COARSE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Canonie Environmental

OK
10/26/90

KMF
VP
GLS

FL D-6, Chlon

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406

Phone: 215-337-2551
Fax: 215-337-0560

RECEIVED

OCT 19 1990

October 17, 1990

THOMAS GRANGER
EBASCO SERVICES INC.

88-093

Mr. Thomas Granger
EBASCO Services Incorporated
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

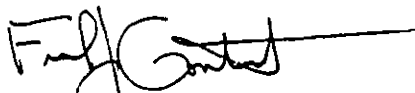
Transmittal
Revised Roadway Aggregate Geotechnical Testing Results
Partial River Channelization Project
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Enclosed find the revised geotechnical testing data sheets for the roadway aggregate. The information under the headings "Material" and "Source" on these sheets was clarified by the testing laboratory, Empire Soils Investigations of Hamburg, New York. These revisions were performed at the request of Mike Hsieh of EBASCO. The revised data sheets supersede those enclosed with our "Roadway Aggregate Geotechnical Testing Results" transmittal dated October 10, 1990.

We are confident that this information will meet with your approval. If you have any questions, please contact me at (716) 593-7066.

Very truly yours,



Frank J. Gontowski
QA/QC Officer



David A. Dekker
Construction Manager

DAD/FJG/ld



PROJECT: Canonie Environmental Services -Lab Testing
CLIENT: Canonie Environmental
DATE: October 10, 1990
PROJECT NO.: BT-90-303
REPORT NO.: L-1 (REVISED 10/17/90)

REPORT OF MATERIAL TESTING

Material: Project sample #CE-1 of Proposed Roadway Aggregate delivered to our laboratory in Hamburg, New York on August 27, 1990. Sample source identified as Alfred Atlas Gravel & Sand-Alfred Station, New York.

Mechanical Analysis: ASTM C-136/C-117

<u>SIEVE SIZE</u>	<u>PERCENT FINER</u>	<u>PROJECT SPECIFICATIONS</u> <u>NYS DOT ITEM #304-2</u>
2"	100	100%
1"	98.7	
1/2"	65.0	
1/4"	48.2	30-65%
#10	37.3	
#20	24.6	
#40	14.2	5-40%
#100	7.7	
#200	6.1	0-10%

MAGNESIUM SULFATE SOUNDNESS: ASTM C-88

Coarse Fraction Loss after 4 cycles: .74% < 20%
Fine Fraction Loss after 4 cycles: 7.8 % < 20%

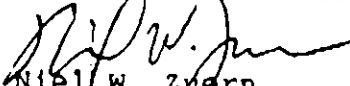
ATTERBERG LIMITS: ASTM D-4318

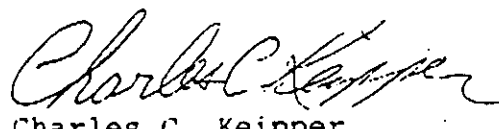
Plasticity Index: NP < 5%

FLAT & ELONGATED PARTICLES:

Particles retained on 1/2" Sieve = 21.8% < 30%

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.


Niel W. Zuern
Laboratory Services Manager


Charles C. Keipper
Testing Services Manager

ORCHARD PARK DISTRICT OFFICE: S-3858 SHELTON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-649-8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES-LAB TESTING Report No. L-1

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: Alfred Atlas Gravel & Sand

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test	Combined Weight Before Test	% Passing After Test	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(%Retained)		(grams)	(grams)	(% Loss On Sieve)		
4	8	12.1		108.87			10.2	1.8
8	16	27.3		103.97				
16	30	42.4		102.51			20.8	6.0
30	50	18.2		104.14				
				—	—	—	—	6.80

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: FINE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.



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ORCHARD PARK DISTRICT OFFICE: 5-3050 SHIELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-849-8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES-LAB TESTING Report No. L-1

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: Alfred Atlas Gravel & Sand

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
3/8	4	21.1		300.16		1.7		.57
3/4	3/8	52.0		1001.50		.3		
1 1/2	3/4	26.9						.17
								.74

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: COARSE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.



PROJECT: Canonie Environmental Services -Lab Testing
CLIENT: Canonie Environmental
DATE: October 10, 1990
PROJECT NO.: BT-90-303
REPORT NO.: L-2 (REVISED 10/17/90)

REPORT OF MATERIAL TESTING

Material: Project sample #CE-2 of Proposed Roadway Aggregate delivered to our laboratory in Hamburg, New York on August 27, 1990. Sample source identified as Alfred Atlas Gravel & Sand-Alfred Station, New York.

Mechanical Analysis: ASTM C-136/C-117.

SIEVE SIZE PERCENT FINER

2"	100
1 1/2"	99.5
1"	98.3
3/4"	86.6
1/2"	71.4
1/4"	55.7
#4	51.4
#10	41.0
#20	25.9
#40	15.4
#100	9.0
#200	7.4

PROJECT SPECIFICATIONS
NYSDOT ITEM #304-2

100%

30-65%

5-40%

0-10%

MAGNESIUM SULFATE SOUNDNESS: ASTM C-88

Coarse Fraction Loss after 4 cycles: 1.4% < 20%

Fine Fraction Loss after 4 cycles: 5.9%

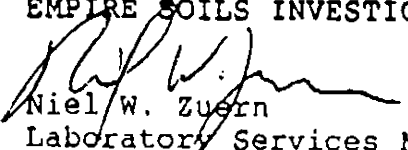
ATTERBERG LIMITS: ASTM D-4318

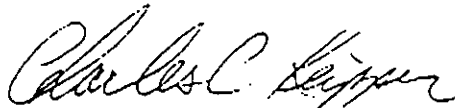
Plasticity Index:

NP

< 5%

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.


Niel W. Zuern
Laboratory Services Manager
djm/11


Charles C. Keipper
Testing Services Manager



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ORCHARD PARK DISTRICT OFFICE: S-3838 SHELDON ROAD
ORCHARD PARK, NEW YORK 14127 AREA CODE 716-649-8110

REPORT OF AGGREGATE SOUNDNESS TEST

Project: CANONIE ENVIRONMENTAL SERVICES-LAB TESTING Report No. L-2

Client: CANONIE ENVIRONMENTAL Date: 10/10/90

Material Type: CRUSHED GRAVEL Source: Alfred Atlas Gravel & Sand

Type of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4

Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHTO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test	Combined Weight Before Test	% Passing After Test	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)		(grams)	(grams)	(% Loss On Sieve)		
3/8	4			300.17		2.9		1.8
3/4	3/8			998.83		2.3		
1 1/2	3/4			-				1.0
								2.8

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: COARSE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

CHARLES C. KEIPPER, MTS

REPORT OF AGGREGATE SOUNDNESS TESTProject: CANONIE ENVIRONMENTAL SERVICES -LAB TESTING Report No. L-2Client: CANONIE ENVIRONMENTAL Date: 10/10/90Material Type: CRUSHED GRAVEL Source: Alfred Atlas Gravel & SandType of Solution: ☐ Magnesium Sulfate ☐ Sodium Sulfate No. of Cycles: 4Test Method: ☒ ASTM C-88 ☐ NYSDOT 207 ☐ AASHO T-104

Sieve Size		Sample Gradation	Percent Retained If Combined	Weight Of Test Fraction Before Test (grams)	Combined Weight Before Test (grams)	% Passing After Test (% Loss On Sieve)	Combined Percent Passing	Weighted Percent Loss
Passing	Retained	(% Retained)						
4	8	15.1		104.44			12.8	2.2
8	16	18.9		100.57				
16	30	26.4		105.00			17.6	3.7
30	50	13.2		105.75				
				—	—	—	—	5.9

NOTES:

1. Combined columns are used for calculation of losses in A.S.T.M. C-88 and A.A.S.H.O. T-104 tests.
2. Actual gradation of the total sample is used for A.S.T.M. C-88 and A.A.S.H.O. T-104 calculations.
3. Actual gradation of the test sample only is used for N.Y.S.D.O.T. 207 calculations for Base, Subbase, and other soil items.
4. Standard gradations are used for N.Y.S.D.O.T. 207 calculations for concrete aggregate tests.

REMARKS: FINE FRACTION OF SAMPLE.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

CHARLES C. KEIPPER, MTS

CANONIE ENVIRONMENTAL CHAIN-OF-CUSTODY RECORD

LAB PROJECT

PROJECT NAME

Wellsville, NY

SAMPLERS

Rob P. P.

(See Reverse Instructions)

page 3 of 3

9173

PROJECT NUMBER

88-073

RECORDER

Rob P. P.

SAMPLE CONTAINER DESCRIPTION CODES

- A 40 ml VOA Vial
- B Glass 1 liter
- C Plastic 500 ml
- D Plastic 1 liter
- E Brass Tube
- F Other GLASS

SAMPLE DESCRIPTION CODES

- A Ground Water
- B Surface Water
- C Leachate
- D Runoff
- E Soil/Sediment
- F Oil
- G Waste
- H Blank/Spill
- I Other

TAT CODES

- 1 Standard
- 2 48 Hour
- 3 24 Hour
- 4 Other

DATE	TIME	SAMPLE ID	NUMBER OF CONTAINERS AND PREPARATION	ANALYSIS REQUESTED										NOTES	LABORATORY USE ONLY	
				8240	8080	8270	8280	14	9010	9010/2000	8310	9060	14		ASSIGNED BOTTLE NUMBERS	SAMPLE CONDITION UPON RECEIPT
7/13/90	17:16	AA-AGG-01	FE	X										24hr	851925	7000 IPC Pass. Spec. QC
	17:18	AA-AGG-02		X											851996	"
	17:19	AA-AGG-03			X										851997	"
	17:20	AA-AGG-04		X											851998	"
	17:21	AA-AGG-05				X									851999	"
	17:22	AA-AGG-06					X								852000	* SUBCONTRACT
	17:23	AA-AGG-07						X	X	X				24hr	852001	Pass. Spec. QC
	17:24	AA-AGG-08									X			24hr	852002	* SUBCONTRACT
	17:25	AA-AGG-09									X			24hr	852003	"

NOTES/MISCELLANEOUS: Pass QC - page 2 of 3
 * 9010: Total Cyanide of 3
 9066 Phenols
 24 hr hold for pH
 9085043
 9085043

Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Received By: (Signature)	Date	Time

Method of Shipment	Description of Transport Container	Other Chain-Of-Custody Transported with this Chain (by Serial No.)	Dispatched By: (Signature)	Date	Time	Received for Lab By: (Signature)	Date	Time
Fed. Ex	Plastic Cooler	91479 01480	Rob P. P.	7/13/90	14:00	Collan P. Bruckette	7/14/90	11:31

Send Lab Results to (Name): Rob P. P. (Check Office Below) Verbal Requested: Yes ☒ No ☐

- ☐ PORTER
TEL (219) 828-8861
FAX (219) 828-7189

☐ SAN MATEO
TEL (415) 573-8012
FAX (415) 573-5854

☐ IRVINE
TEL (714) 767-1755
FAX (714) 767-0900

☐ ORLANDO
TEL (407) 858-7428
FAX (407) 855-2585

☒ OTHER Site
TEL (714) 582-7070
FAX

☐ DENVER
TEL (303) 780-1747
FAX (303) 780-0186

☐ KING OF PRUSSIA
TEL (215) 337-2561
FAX (215) 337-0560

☐ HOUSTON
TEL (713) 556-1666
FAX (713) 556-0880

☐ MT VIEW
TEL (415) 960-1840
FAX (415) 960-0739

☐ OTHER
TEL
FAX

CANONIE ENVIRONMENTAL LABORATORY • 212 FRANK WEST CIRCLE, SUITE A • STOCKTON, CA 95206 • TEL (209) 983-1340 • FAX (209) 983-0304

SERIAL NO. 01477

WHITE Field Copy YELLOW Project Copy PINK Laboratory Copy

Final Report

Page: 20

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-AGG-02
 Matrix: SOLID
 Lab ID: 851996-SA-A
 Project #: 88-093
 Starting Depth: 0.00
 Percent Solids: 92.3 %

LP #: 9178

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 DQ.C. Batch Nbr M072690SD1
 Date Analyzed: 7/26/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Volatile Organics, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Chloromethane	ND	11.	ug/kg	EPA 8240
Bromomethane	ND	11.	ug/kg	
Vinyl Chloride	ND	11.	ug/kg	
Chloroethane	ND	11.	ug/kg	
Methylene Chloride	5.	5.4	ug/kg	
Acetone	ND	11.	ug/kg	
Carbon Disulfide	ND	5.4	ug/kg	
1,1-Dichloroethene	ND	5.4	ug/kg	
1,1-Dichloroethane	ND	5.4	ug/kg	
1,2-Dichloroethene (total)	ND	5.4	ug/kg	
Chloroform	ND	5.4	ug/kg	
1,2-Dichloroethane	ND	5.4	ug/kg	
2-Butanone	ND	11.	ug/kg	
1,1,1-Trichloroethane	ND	5.4	ug/kg	
Carbon Tetrachloride	ND	5.4	ug/kg	
Vinyl Acetate	ND	11.	ug/kg	
Bromodichloromethane	ND	5.4	ug/kg	
1,2-Dichloropropane	ND	5.4	ug/kg	
cis-1,3-Dichloropropene	ND	5.4	ug/kg	
Trichloroethene	ND	5.4	ug/kg	
Dibromochloromethane	ND	5.4	ug/kg	
1,1,2-Trichloroethane	ND	5.4	ug/kg	
Benzene	ND	5.4	ug/kg	
trans-1,3-Dichloropropene	ND	5.4	ug/kg	
Bromoform	ND	5.4	ug/kg	
4-Methyl-2-pentanone	ND	11.	ug/kg	
2-Hexanone	ND	11.	ug/kg	
Tetrachloroethene	ND	5.4	ug/kg	
1,1,2,2-Tetrachloroethane	ND	5.4	ug/kg	
Toluene	ND	5.4	ug/kg	
Chlorobenzene	ND	5.4	ug/kg	
Ethyl Benzene	ND	5.4	ug/kg	
Styrene	ND	5.4	ug/kg	
Xylene (total)	ND	5.4	ug/kg	

Tested By : SLD

Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonte Environmental

Canonie Environmental Case Narrative

Client: SINCLAIR REFINERY, WELLSVILLE, NY
LP #: 9178

Project #: 88-093

GC/MS Case Narrative - Volatile

The soil samples were analyzed for volatile organics and met all QC criteria as specified in EPA SOW 2/88. Methylene chloride was present in the blanks run on 7/26/90. The first blank contained 3 ug/L and the second contained 8 ug/L. Any positive sample results for methylene chloride that are less than ten times the amount found in the blank may be considered laboratory artifacts.

Dele E. Mitchell
Project Chemist

8/03/90
Date

Final Report

Page: 23

Client: SIMCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-AGG-05
 Matrix: SOLID
 Lab ID: 851999-8A-A
 Project #: 88-093
 Starting Depth: 0.00
 Percent Solids: 92.3 %

LP #: 9178

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Q.C. Batch #: 7/20/90
 Date Analyzed: 7/30/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
Phenol	ND	360.	ug/kg	EPA 8270
bis (2-Chloroethyl) ether	ND	360.	ug/kg	
2-Chlorophenol	ND	360.	ug/kg	
1,3-Dichlorobenzene	ND	360.	ug/kg	
1,4-Dichlorobenzene	ND	360.	ug/kg	
Benzyl alcohol	ND	360.	ug/kg	
1,2-Dichlorobenzene	ND	360.	ug/kg	
2-Methylphenol	ND	360.	ug/kg	
bis (2-Chloroisopropyl) ether	ND	360.	ug/kg	
4-Methylphenol	ND	360.	ug/kg	
N-Nitroso-di-n-dipropylamine	ND	360.	ug/kg	
Hexachloroethane	ND	360.	ug/kg	
Nitrobenzene	ND	360.	ug/kg	
Isophorone	ND	360.	ug/kg	
2-Nitrophenol	ND	360.	ug/kg	
2,4-Dimethylphenol	ND	360.	ug/kg	
Benzoic acid	ND	1700.	ug/kg	
bis (2-Chloroethoxy) methane	ND	360.	ug/kg	
2,4-Dichlorophenol	ND	360.	ug/kg	
1,2,4-Trichlorobenzene	ND	360.	ug/kg	
Naphthalene	ND	360.	ug/kg	
4-Chloroaniline	ND	360.	ug/kg	
Hexachlorobutadiene	ND	360.	ug/kg	
4-Chloro-3-methylphenol	ND	360.	ug/kg	
2-Methylnaphthalene	ND	360.	ug/kg	
Hexachlorocyclopentadiene	ND	360.	ug/kg	
2,4,6-Trichlorophenol	ND	360.	ug/kg	
2,4,5-Trichlorophenol	ND	1700.	ug/kg	
2-Chloronaphthalene	ND	360.	ug/kg	
2-Nitroaniline	ND	1700.	ug/kg	
Dimethylphthalate	ND	360.	ug/kg	
Acenaphthylene	ND	360.	ug/kg	

Tested By : DSH

Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 24

Client: SIMCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-AGG-05
 Matrix: SOLID
 Lab ID: 851999-SA-A
 Project #: 88-093
 Starting Depth: 0.00
 Percent Solids: 92.3 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Q.C. Batch #: 7/20/90
 Date Analyzed: 7/30/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

LP #: 9178

All results reported on a dry weight basis.

Test Description: Base/Neutrals and Acids, GC/MS - TCL

Analyte	Result*	Reporting Limit	Units	Method
2,6-Dinitrotoluene	ND	360.	ug/kg	
3-Nitroaniline	ND	1700.	ug/kg	
Acenaphthene	ND	360.	ug/kg	
2,4-Dinitrophenol	ND	1700.	ug/kg	
4-Nitrophenol	ND	1700.	ug/kg	
Dibenzofuran	ND	360.	ug/kg	
2,4-Dinitrotoluene	ND	360.	ug/kg	
Diethylphthalate	ND	360.	ug/kg	
4-Chlorophenyl-phenylether	ND	360.	ug/kg	
Fluorene	ND	360.	ug/kg	
4-Nitroaniline	ND	1700.	ug/kg	
4,6-Dinitro-2-methylphenol	ND	1700.	ug/kg	
N-Nitrosodiphenylamine	ND	360.	ug/kg	
4-Bromophenyl-phenylether	ND	360.	ug/kg	
Hexachlorobenzene	ND	360.	ug/kg	
Pentachlorophenol	ND	1700.	ug/kg	
Phenanthrene	ND	360.	ug/kg	
Anthracene	ND	360.	ug/kg	
Di-n-butylphthalate	ND	360.	ug/kg	
Fluoranthene	1600.	360.	ug/kg	
Pyrene	ND	360.	ug/kg	
Butylbenzylphthalate	ND	360.	ug/kg	
3,3'-Dichlorobenzidine	ND	720.	ug/kg	
Benzo(a)anthracene	ND	360.	ug/kg	
Chrysene	ND	360.	ug/kg	
bis(2-Ethylhexyl)phthalate	ND	360.	ug/kg	
Di-n-octylphthalate	ND	360.	ug/kg	
Benzo(b)fluoranthene	ND	360.	ug/kg	
Benzo(k)fluoranthene	ND	320.	ug/kg	
Benzo(a)pyrene	ND	360.	ug/kg	
Indeno(1,2,3-cd)pyrene	ND	360.	ug/kg	
Dibenz(a,h)anthracene	ND	360.	ug/kg	
Benzo(g,h,i)perylene	ND	360.	ug/kg	

Tested By : DSH
 Validated By: RJT

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: UNG-TP10-7
Matrix: SOLID
Lab ID: 851926-SA-A
Project #: 88-093
Starting Depth: 0.00
Percent Solids: 76.1 %

LP #: 9172

Date Sampled: 7/12/1990
Date Received: 7/13/1990
Q.C. Batch #: 1071790PS3
Date Analyzed: 7/20/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Total Metals Analysis

=====					
Analyte	Flag	Result*	Reporting Limit	Units	Method
=====					
Arsenic	N	ND	13.	mg/kg	EPA 7060
Mercury		ND	.26	mg/kg	EPA 7471
Antimony	N	ND	7.9	mg/kg	EPA 6010
Beryllium		ND	1.3	mg/kg	
Cadmium		ND	1.3	mg/kg	
Chromium		29.	6.6	mg/kg	
Copper		26.	6.6	mg/kg	
Lead		16.	6.6	mg/kg	
Nickel		50.	6.6	mg/kg	
Silver		ND	6.6	mg/kg	
Zinc		87.	6.6	mg/kg	
Selenium	NW	ND	1.3	mg/kg	EPA 7740
Thallium	N	ND	3.	mg/kg	EPA 7841

Tested By : GCZ
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Final Report

Page: 25

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: AA-AGG-07
Matrix: SOLID
Lab ID: 852001-SA-A
Project #: 88-093 LP #: 9178
Starting Depth: 0.00
Percent Solids: 91.6 %

Date Sampled: 7/13/1990
Date Received: 7/14/1990
Q.C. Batch #: I071990CS2
Date Analyzed: 7/19/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
Cyanide, total	ND	1.1	mg/kg	EPA 9010

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canonic Environmental

Final Report

Page: 27

Client: SINCLAIR REFINERY, WELLSVILLE,
Sample ID: AA-ACG-07
Matrix: SOLID
Lab ID: 852001-SA-A
Project #: 88-093
Starting Depth: 0.00
Percent Solids: 91.6 %

LP #: 9178

Date Sampled: 7/13/1990
Date Received: 7/14/1990
Q.C. Batch #: 1071690CS4
Date Analyzed: 7/16/1990
Date Reported: 8/02/1990
Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Inorganic Analysis

Analyte	Result*	Reporting Limit	Units	Method
pH	8.7	.000	pH	EPA 9045

Tested By : CAS
Validated By: TLH

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.

Canon Environmental

Final Report

Page: 22

Client: SINCLAIR REFINERY, WELLSVILLE,
 Sample ID: AA-AGG-04
 Matrix: SOLID
 Lab ID: 851998-SA-A
 Project #: 88-093 LP #: 9178
 Starting Depth: 0.00
 Percent Solids: 83.3 %

Date Sampled: 7/13/1990
 Date Received: 7/14/1990
 Date Extracted: 7/18/90
 Date Analyzed: 7/24/1990
 Date Reported: 8/02/1990
 Ending Depth: 0.00

All results reported on a dry weight basis.

Test Description: Organochlorine Pesticides and PCB's

Analyte	Result*	Reporting Limit	Units	Method
Aldrin	ND	2.4	ug/kg	EPA 8080
alpha-BHC	ND	2.4	ug/kg	
beta-BHC	ND	2.4	ug/kg	
delta-BHC	ND	2.4	ug/kg	
gamma-BHC	ND	2.4	ug/kg	
Chlordane	ND	30.	ug/kg	
4,4'-DDD	ND	2.4	ug/kg	
4,4'-DDE	ND	2.4	ug/kg	
4,4'-DDT	ND	2.4	ug/kg	
Dieldrin	ND	2.4	ug/kg	
Endosulfan I	ND	2.4	ug/kg	
Endosulfan II	ND	2.4	ug/kg	
Endosulfan sulfate	ND	2.4	ug/kg	
Endrin	ND	2.4	ug/kg	
Endrin aldehyde	ND	2.4	ug/kg	
Heptachlor	ND	2.4	ug/kg	
Heptachlor epoxide	ND	2.4	ug/kg	
Methoxychlor	ND	6.0	ug/kg	
Toxaphene	ND	120.	ug/kg	
PCB-1016	ND	30.	ug/kg	
PCB-1221	ND	30.	ug/kg	
PCB-1232	ND	30.	ug/kg	
PCB-1242	ND	30.	ug/kg	
PCB-1248	ND	30.	ug/kg	
PCB-1254	ND	60.	ug/kg	
PCB-1260	ND	60.	ug/kg	

Tested By : LAL
 Validated By: DDJ

* ND indicates a compound was not detected at a concentration level greater than the reporting limit.



2,3,7,8-TCDD

LOW RESOLUTION

Client Name: Canobie Environmental Services

Client ID: AA-AGG-06

Lab ID: 053757-0016-SA

Matrix: SOIL

Authorized: 16 JUL 90

Enseco ID: 156297

Sampled: 13 JUL 90

Prepared: 20 JUL 90

Received: 17 JUL 90

Analyzed: 24 JUL 90

Sample Amount 10.5G

Percent Moisture NA

Column Type SP-2331

Parameter	Result	Units	Detection Limit	Data Qualifiers
Dioxins				
2,3,7,8-TCDD	ND	ng/g	0.012	
	% Recovery			
13C-2,3,7,8-TCDD	50			

ND = Not detected
NA = Not applicable

rtd By: Dan Vickers

Approved By: Steve Rogers

The cover letter is an integral part of this report.

Rev 230787



Phenolics (4-AAP)

Method 9066

Client Name: Canobie Environmental Services
Matrix: SOIL Received: 14 JUL 90
Units: mg/kg Authorized: 16 JUL 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
053757-0018-SA	AA-AGG-09	1.8	0.50	25 JUL 90	25 JUL 90

ND = Not detected
NA = Not applicable

orted By: Hamid Foolad

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

Canonie Environmental

cc: K. Fitzgerald
V. Patel
ID-6
Chron

July 25, 1990

RECEIVED

JUL 27 1990

THOMAS GRANGER
EBASCO SERVICES INC.

Mr. Thomas Granger
EBASCO Environmental
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406
Phone: 215-337-2531
Fax: 215-337-0560
88-093

Transmittal
Geotextile Fabric Certification
Partial River Channelization Project
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

In accordance with your request in a July 20, 1990 letter to Mr. Joseph E. Mihm, Canonie Environmental Services Corp. (Canonie) is submitting three original and notarized certifications for the geotextile material (Spartan Technologies ST-80) to be used at the Partial River Channelization Project.

If you have any questions, please contact me at (215) 337-2551.

Very truly yours,

Frank Gontowski

Frank Gontowski
Assistant Project Engineer

Joseph E. Mihm, P.E.

Joseph E. Mihm, P.E.
Project Manager

FG/JEM/pg

Attachment

cc: Gary Stiles, EBASCO

JUL 25 1990



A Subsidiary of
SPARTAN MILLS

SPARTAN TECHNOLOGIES

SPARTAN TECHNOLOGIES ST 80 PRODUCT DESCRIPTION

The following is the certification you requested pertaining to our ST 80 in compliance with your specification for the ARCO Wellsville project:

Spartan Technologies ST 80 is a nonwoven fabric made up of polypropylene fibers. These fibers are needled to form a stable and durable network such that the fibers retain their relative position. The fabric is inert to naturally encountered chemicals, alkalies, acids and biological degradation. Spartan Technologies ST 80 conforms to the minimum property values listed in the following table.

PROPERTY	TEST PROCEDURE	MINIMUM VALUE
Weight, oz/sqyd	ASTM D-3776	7.2
Thickness, Mils	ASTM D-1777	90
Tensile, Strength	ASTM D-4632	200
Elongation, %	ASTM D-4632	50
Puncture, Strength, Lbs.	ASTM D-3787	110
Mullen Burst Strength, Lbs.	ASTM D-3786	375
Trapezoidal Tear Strength, Lbs.	ASTM D-4533	65
Water Permeability	ASTM D-4491	.50
Water Flow Rate	ASTM D-4491	130
EOS (AOS)	ASTM D-4751	100+
U.S. Std Sieve Size		
UV Resistance	ASTM D-4355	70
% Strength Retention Hrs of Exposure (150)		
Abrasion Resistance	ASTM D-3884	35
% Tensile Strength, Lbs. 1000 Rotations		

1) The values listed are minimum values unless otherwise stated. Contact the Spartan Technologies Technical Department for further information.

Patricia Ann Smith
Notary Public for S. C.
My Commission expires 9/24/94

Jeffrey A. Bennett
Jeffrey A. Bennett
Process Control Manager



MANUFACTURERS OF QUALITY NONWOVEN FABRICS
P.O. BOX 1658 / SPARTANBURG / SOUTH CAROLINA 29304

Tel. (803) 576-2353
Fax. (803) 574-2246



A Subsidiary of
SPARTAN MILLS

SPARTAN TECHNOLOGIES

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Thickness, Mils	ASTM D-1777	90
Tensile, Strength	ASTM D-4632	200
Elongation, %	ASTM D-4632	50
Puncture, Strength, Lbs.	ASTM D-3787	110
Mullen Burst Strength, Lbs.	ASTM D-3786	375
Trapezoidal Tear Strength, Lbs.	ASTM D-4533	65
Water Permeability	ASTM D-4491	.50
Water Flow Rate	ASTM D-4491	130
EOS (AOS)	ASTM D-4751	100+
U.S. Std Sieve Size		
UV Resistance	ASTM D-4355	70
% Strength Retention Hrs of Exposure (150)		
Abrasion Resistance	ASTM D-3884	35
% Tensile Strength, Lbs. 1000 Rotations		

1) The values listed are minimum values unless otherwise stated. Contact the Spartan Technologies Technical Department for further information.

Patricia Ann Smith
Notary Public for S. C.
My Commission expires 9/24/94

Jeffrey A. Bennett
Jeffrey A. Bennett
Process Control Manager



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P.O. BOX 1658 / SPARTANBURG / SOUTH CAROLINA 29304

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PROPERTY	TEST PROCEDURE	MINIMUM VALUE
Weight, oz/sqyd	ASTM D-3776	7.2
Thickness, Mils	ASTM D-1777	90
Tensile, Strength	ASTM D-4632	200
Elongation, %	ASTM D-4632	50
Puncture, Strength, Lbs.	ASTM D-3787	110
Mullen Burst Strength, Lbs.	ASTM D-3786	375
Trapezoidal Tear Strength, Lbs.	ASTM D-4533	65
Water Permeability	ASTM D-4491	.50
Water Flow Rate	ASTM D-4491	130
EOS (AOS)	ASTM D-4751	100+
U.S. Std Sieve Size		
UV Resistance	ASTM D-4355	70
% Strength Retention Hrs of Exposure (150)		
Abrasion Resistance	ASTM D-3884	35
% Tensile Strength, Lbs. 1000 Rotations		

1) The values listed are minimum values unless otherwise stated. Contact the Spartan Technologies Technical Department for further information.

Patricia Ann Smith
Notary Public for S.C.

My Commission expires 9/24/94

Jeffrey A. Bennett
Jeffrey A. Bennett
Process Control Manager



MANUFACTURERS OF QUALITY NONWOVEN FABRICS
P.O. BOX 1658 / SPARTANBURG / SOUTH CAROLINA 29304

Tel. (803) 576-2353
Fax. (803) 574-2246

Canonie Environmental

CC KMF
VP - Action
OK 10/15 GLS
FILE D-6
Chion

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406

Phone: 215-337-2551
Fax: 215-337-0560

RECEIVED

October 11, 1990

OCT 11 1990

88-093

THOMAS GRANGER
EBASCO SERVICES INC.

Mr. Thomas Granger
EBASCO Services Incorporated
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Transmittal
Liming Material Certificate of Registration
Partial River Channelization Project
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Enclosed find the Agricultural Liming Material Certificate of Registration for the lime we are planning to blend with the on-site topsoil. This material will be supplied by Walck Brothers Agricultural Service, Incorporated of Sanborn, New York.

We are confident that this information will meet with your approval. If you have any questions, please contact me at (716) 593-7066.

Very truly yours,



Frank J. Gontowski
QA/QC Officer



David A. Dekker
Construction Manager

DAD/FJG/ld

Enclosures

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE AND MARKETS
DIVISION OF PLANT INDUSTRY
ALBANY, NEW YORK 12235

OFFICE USE ONLY

License No.

000200

AGRICULTURAL LIMING MATERIAL
CERTIFICATE OF REGISTRATION

Pursuant to Article 9-A of the Agriculture and Markets law, application has been made for a license to sell the following brand of Agricultural Liming Material for the period ending December 31, 1991.



MANUFACTURER



DISTRIBUTOR

- 1a. Name of Manufacturer or Distributor WALCK BROS. AG. SERVICE, INC.
- b. Principal Office Address P.O. BOX 512 SANBORN, NEW YORK 14132
- c. Plant Location 1080 HINMAN ROAD LOCKPORT, NEW YORK 14094
2. Type of Liming Material (check one):
- ☒ Agricultural Limestone ☐ Slag ☐ Burned Lime
- ☐ Hydrated Lime ☐ Marl ☐ Carbonate of Lime
3. Brand Name NIAGARA HI-CALCIUM
4. Guaranteed Analysis at Time of Delivery:
- (a) Total Neutralizing Value 92.37 % CaCO₃ equivalence.
- (b) Fineness 83.4 % by weight passing a 20 mesh sieve.
59.5 % by weight passing a 100 mesh sieve.
- (c) Calcium (Ca) 29.44 % by weight.
- (d) Magnesium (Mg) 4.58 % by weight.
- (e) Effective Neutralizing Value (Bulk Materials Only) 70.0 %.

LABEL OR ACCOMPANYING STATEMENT

Pursuant to Section 142-cc of the Agriculture and Markets Law, the label or statement proposed to accompany such material will contain all the information set forth above together with the following:

5. Net Weight (Bagged) SOLD BULK
6. Kind and Amount of Adulterant or Foreign Material (if any):
NONE KNOWN
7. Damage, hydration, adulteration or other change subsequent to original packaging, labeling or loading.
Identifying kind and degree (if any) NONE KNOWN

THE UNDERSIGNED HEREBY CERTIFIES that the information appearing above is true and correct in every respect; that each package and bulk sale of the above brand of Agricultural Liming Material will be labeled as above or accompanied by a statement or weight slip containing the above information (except that different net weight declaration may be used); that the above certificate constitutes a warranty by the vendor to the purchaser that the material will meet the minimum specifications stated therein at the time of delivery.

Name Of Individual, Firm or Corporation <u>WALCK BROS. AG. SERVICE, INC.</u>		Date <u>2/28/90</u>
Signature <u>[Signature]</u>	Title <u>PRESIDENT</u>	

NEW YORK STATE
DEPARTMENT OF AGRICULTURE AND MARKETS
ALBANY, NEW YORK 12235

LICENSE NO.

000200

9
Receipt No.

Fee \$ 40. NIAGARA HI-CALCIUM

Expires 12/31/91

Pursuant to Article 9A of the Agriculture and Markets Law, the licensee is authorized to perform those activities for which it has applied to be performed at the following address or at another authorized location:

POST CONSPICUOUSLY

New York State
Department of Agriculture and Markets
Validation Number

WALCK BROTHERS AG. SERVICE, INC.
P.O. BOX #512
SANBORN, NEW YORK 14132

05369

License cannot be sold or transferred. Richard T. McGuire, Commissioner Not official until validated.

Canonie Environmental

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 315
King of Prussia, Pennsylvania 19406
Phone: 215-337-2551
Fax: 215-337-0560

September 19, 1990

88-093

Mr. Thomas Granger
EBASCO Services Incorporated
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Transmittal
Seed, Fertilizer and Mulch Information
Partial River Channelization Project
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Enclosed find certifications for the seed and fertilizer products which Canonie is proposing to utilize for this project. Both the seed and fertilizer meet the requirements of section 02485 of the project specifications, and will most likely be purchased through the local Agway dealer.

Additionally, Canonie would like to propose the use of hydro mulch instead of hay or straw mulch. We have enclosed information for three hydro mulch products we are proposing to use: Conwed Hydro Mulch Fiber, Conwed Hydro Mulch 2000 Fiber, and American Excelsior Company Excel Fibermulch. These hydro mulch products are composed entirely of organic materials. Also enclosed is an article outlining the advantages of Excelsior mat to other methods of mulch treatment.

A mulch specification supplied to us by the U.S Army Corps of Engineers - Buffalo District (USCOE) has been included. This specification is from their Mount Morris project. Canonie spoke to USCOE representatives, who indicated hydro mulch products similar to the ones we are proposing to use were successfully utilized on the Mount Morris project.

If the seeding and fertilizing operations cannot be undertaken until next spring, then Canonie will cover exposed topsoil areas with hay or straw mulch. Conversations with your office indicated that no environmental or physical testing will be required for any hay or straw used for mulching.

Seed, Fertilizer and Mulch

2

September 19, 1990

We are confident that this information will meet with your approval. If you have any questions, please contact me at (716) 593-7066.

Very truly yours,



Frank J. Gontowski
QA/QC Officer



David A. Dekker
Construction Manager

DAD/FJG/lld

Enclosures



Stanford Seed

560 Fulton Street, P.O. Box 388, Buffalo, NY 14240 / 716-825-3300 / TWX 7105411573

September 14, 1990

TO WHOM IT MAY CONCERN:

This is to certify that seed can be supplied that meets or exceeds the following specifications.

VARIETY	PURITY	GERMINATION
RED FESCUE - CREEPING TYPE	97.00%	85.00%
PERENNIAL RYEGRASS	97.00%	90.00%
WHITE CLOVER-VARIETY NOT STATED	98.00%	75.00% + 10.00% Hard Seed

STANFORD SEED COMPANY

Betty M. Ackley
Betty M. Ackley

AGWAY TURFOOD FERTILIZER 10-6-4

Covers 5,000 sq. ft. (465 sq. meters)

GUARANTEED ANALYSIS

Total Nitrogen (N)	10.00%
Available Phosphoric Acid (P ₂ O ₅)	6.00%
Soluble Potash (K ₂ O)	4.00%

DIRECTIONS FOR USE

This fertilizer is specially prepared for use on growing lawns and perennial shrubs. Certain precautions are necessary to secure the most satisfactory results. Do not use in excessive amounts or when grass is wet as some burning may result.

ESTABLISHED LAWNS: Apply evenly 8 lbs./1,000 sq. ft. (5 kg/100 sq. meters) of ground surface three times a year — early spring, late spring and September. Fertilize lawns only when grass is dry and water in if possible.

PERENNIAL SHRUBS AND TREES: On shrubs and trees, application should be adjusted to size of tree. Use at the rate of 20 lbs./1,000 sq. ft. (10 kg/100 sq. meters) of root area. For best results, punch holes 12 to 15 in. (30-40 cm) deep, spaced 12-24 in. (30-60 cm) apart around the area to be fed and apply the fertilizer evenly (approximately same amount) in each of the holes. Never put any fertilizer directly on the plants.

CAUTION: TO AVOID BURNING OF GRASS, APPLY ONLY WHEN GRASS IS DRY AND WATER INTO GROUND AFTER APPLICATION.

SPREADER SETTING GUIDES*

For Agway Turfood Fertilizer 10-6-4

Rate per 1,000 sq. Ft.	Rate per 100 sq. Meters	Agway Prizelawn Drop Type		Scotts Drop Type		Cyclone Spinner Type		Ortho Spinner Type		Scotts Spinner Type		Lesco Spinner Type	
		Once Over	Twice Over	Once Over	Twice Over	Once Over	Twice Over	Once Over	Twice Over	Once Over	Twice Over	Once Over	Twice Over
8 lbs.	3.9 kg	7½	4	6	5½	5½	4½	6	3½	L	H	O	

*NOTE: These settings are furnished as a Guide Only. Age, condition of spreader, speed of operation and roughness of terrain can cause variation in rates applied.

DISCLAIMER: AGWAY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Any damages shall be limited to direct damages, not to exceed the purchase price of the product and shall not include any direct, incidental or consequential damages.

Code No. 865-426



Manufactured by
Agway Inc., PO Box 4741, Syracuse, NY 13221

4/88

Net Wt. 40 Lbs. (18.14 kg)

SPECIFICATIONS

Hydro Mulch is made of a blend of virgin wood cellulose fiber and contains no germination or growth promoting factors. It is formulated to disperse evenly and remain suspended in agitated water. Hydro Mulch is then applied as a harmless temporary green dye which acts as a visual guide to aid uniform application of the mulch. When sprayed uniformly on the soil surface, the fibers form an absorbent cover, allowing percolation of water to the underlying soil.

Each package of Hydro Mulch fiber contains 50 pounds air dry weight. The moisture resistant kraft bags measure 18" x 24" x 36". The bags are packaged in a unique manner allowing metering in exact increments of 1/3 package.

HYDRO MULCH

Conwed Hydro Mulch fiber is generally applied with hydraulic mulching equipment at the rate of 500 to 1000 pounds per acre. Hydro Mulch fiber is added to the water slurry with the appropriate quantities of seed, fertilizer, or any other approved materials that have been introduced into the



HYDRO MULCH FIBER

PROPERTY

HYDRO MULCH FIBER (nominal values)

1. Percent Moisture Content 10.0%±3%
1. Percent Organic Matter (Wood Fiber) 99.2%±0.8% O.D. Basis
3. Percent Ash Content 0.8%±0.2%
4. pH 4.8±0.5
5. Water Holding Capacity
(grams of water/100 grams of fiber) 1000 minimum

HYDRO MULCH 2000

Hydro Mulch 2000 fiber is a ready mixed tackifier and mulch in one. It is formulated to disperse evenly and remain suspended in agitated water. Hydro Mulch 2000 fiber is then applied as a harmless temporary green dye which acts as a visual guide to aid uniform application of the mulch. When sprayed uniformly on the soil surface, the fibers form an absorbent cover, allowing percolation of water to the underlying soil. Hydro Mulch 2000 fiber is also used for holding down the fiber mulch, seed, and fertilizer while it protects against wind erosion. The fiber mulch holds water and stabilizes temperature variances for fast seed germination and



HYDRO MULCH 2000 FIBER

PROPERTY

HYDRO MULCH 2000 FIBER (nominal values)

1. Percent Moisture Content 10.0%±3.0%
2. Percent Organic Matter
(Wood Fiber) 96.2%±0.8% O.D. Basis
3. Percent Organic Matter
(Tackifier) 3.0%±0.5% O.D. Basis
4. Percent Ash Content 0.8%±0.2% O.D. Basis
5. pH 4.8±0.5
6. Water Holding Capacity
(grams of water/100 grams of fiber) 1000 minimum

The performance data herein reflects Conwed's expectation based on tests conducted in accordance with recognized standard methods. The sale of these products shall be subject to the Terms and Conditions of Sale, including warranties, as set forth in Conwed's sales forms.

No agent, employee or representative of Conwed is authorized to modify this disclaimer.

Distributed by:
STERLING BAG & SUPPLY CO., INC.

FOOT OF FISHER ROAD
LACKAWANNA, N. Y. 14218
(716) 824-1991



CONWED HYDRO MULCH AND HYDRO MULCH 2000

WHAT ARE HYDRO MULCH FIBERS?

Hydro Mulch fibers are natural products made from select wood chips. These are clean, weed-free mulches designed to aid in the establishment of turf or sprigged ground covers. *Hydro Mulch* fibers quickly disperse with water, seed and fertilizer to form a slurry that can be applied in just one efficient and economical step. Its uniform quality helps prevent clogging in hydraulic mulching equipment and the harmless green dye allows even coverage, leaving no bare spots or wasted excess.

WHAT BENEFITS DO HYDRO MULCH FIBERS PROVIDE?

When applied to soil surfaces, it forms a tenacious continuous mat that:

- Resists soil erosion by wind and water
- Absorbs and retains moisture to promote rapid seed germination and growth
- Reduces evaporation of soil moisture
- Provides an insulating blanket to protect seed from temperature fluctuations
- Slowly breaks down after ground cover establishment, supplying organic nourishment to the soil.

The hydraulic mulching process utilizing *Hydro Mulch* fibers can offer significant labor savings over other mulching practices.

WHERE SHOULD HYDRO MULCH FIBERS BE USED?

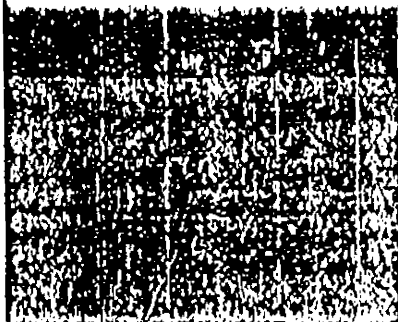
For Roadways, hydraulic mulching is perfect because of its ability to shoot mulch into normally inaccessible areas and onto steep slopes. It requires minimal labor and has excellent mobility. For Strip Mine Reclamation, *Hydro Mulch* fibers provides the quick turf establishment needed in this area and is particularly effective on rugged terrain. For Industrial, Commercial, and Home Lawn Establishment, you find the high quality of *Hydro Mulch* especially important. This clean, weed-free fiber mulch helps establish a uniform, high quality turf. Tree Nurseries find *Hydro Mulch* fibers weed-free, tenacious mat an excellent environment for the development of seedlings.

Parks, golf courses, cemeteries, athletic fields, along pipelines, power lines, railroad tracks... wherever turf establishment is called for, *Hydro Mulch* fibers is the answer.

HOW ARE HYDRO MULCH PRODUCTS APPLIED?

Standard hydraulic mulching equipment consists of a mixing tank and pump, powered spray gun. Water, seed and fertilizer are mixed in the tank with Conwed *Hydro Mulch* fibers. This slurry is then pumped through the gun onto the desired area. *Hydro Mulch* products come in easily-handled cubes which quickly separate when dropped in the tank.

Recommended application rates for *Hydro Mulch* or *Hydro Mulch 2000* fibers are generally 1,500 to 2,000 pounds per acre, depending on slope, soil type, rainfall, etc.

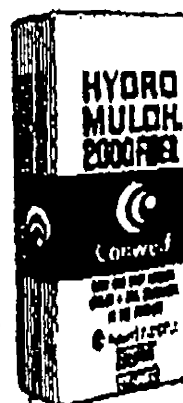
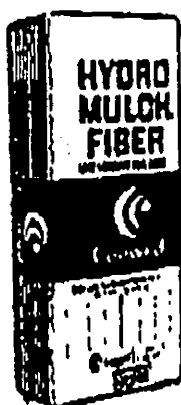


**STERLING
BAG & SUPPLY
CO., INC.**
FOOT OF FISHER ROAD, LACKAWANNA, NEW YORK 14218
PHONE: (716) 828-1800

PRICE LIST
SPRING 1990
EFFECTIVE 2/5/90

HYDRO MULCH & TACKIFIER

CONWED HYDRO MULCH - A cellulose wood fiber mulch, dyed green. Proven to be the most economical and effective method of weedless turf establishment along roadways, on industrial, commercial, and home lawns, in strip mine reclama-tion, and at tree nurseries. All mulch is weighed dry and compressed in 60 lb. moisture-resistant bags to give you the most fiber for your dollar.



F.O.B. Lackawanna, NY Prices - Price per Ton

Type	1-4 Tons	5-9 Tons	10-22.8 Tons
REGULAR			
2000*			

Dropped Shipped Prices¹ - Freight prepaid; Price per Ton (NET)

Quantity	REGULAR	2000*
22.8 ton T/L		

Combination loads of Regular and 2000 can be arranged without any difficulty.

¹T/L prices applicable to Alabama, Arkansas, Connecticut, Florida, Georgia, Louisiana, Massachusetts, Mississippi, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas.

*Conwed 2000 is used for hydro-seeding in high erosion areas. It combines an effective soil stabilizer with hydro mulch fibers.

Recommended application rates for Hydro Mulch or Hydro Mulch 2000 fibers are generally 1,500 to 2,000 pounds per acre, depending on slope, soil type, rainfall, etc.

Excel® Fibermulch

with tackifier

- Is manufactured from 100% Aspenwood and contains no pitch, tar or resin.

Wood Fiber Specifications:

pH	4.9% ± 2
Moisture	10.0% ± 3
Organic Matter (oven dried weight basis)	99.3% ± 0.2
Inorganic - Ash - (oven dried weight basis)	.7% ± 0.2

Application Rate:

1500 pounds per acre

Mixture:

50 pounds per 100 gallons of water

For additional information contact your nearest American Excelsior Co. Branch Office:

Eastern Region

Atlanta Area
Woodbury, GA 30281
P.O. Box 889
(404) 553-3841

Baltimore Area
Annapolis, MD 20701
P.O. Box 25
(301) 725-0461

Birmingham Area
Gardenside, AL 35071
2408 Decatur Hwy
P.O. Box 945
(205) 631-2335

Cincinnati, OH 45215
415 W. Seymour Avenue
(513) 781-7354

Cleveland, OH 44114
3875 King Ave.
(216) 881-1122

Detroit Area
Westland, MI 48185
1210 Manufacturers Dr
(313) 722-4540

Pittsburgh, PA 15205
214 N. Lexington Ave
P.O. Box 56892
(412) 247-6414

Central Region

Chicago Area
Lombard, IL 60148
1111 North DuPage Avenue
(708) 627-3200

Dallas/Fort Worth Area
Arlington, TX 76011
900 Avenue H East
P.O. Box 5024
(817) 640-7161

Minneapolis, MN 55414
2101 Talmadge Avenue, SE
(612) 331-1831

New Orleans, LA 70181
301 Coolidge Street
P.O. Box 10632
(504) 037-5834

North Kansas City, MO 64116
1612 Taney Street
P.O. Box 13320
(816) 842-3034

North Little Rock, AR 72117
P.O. Box 3311
213 Phillips Road
(501) 945-4651

Oklahoma City, OK 73127
5011 West Reno
P.O. Box 270788
(405) 916-0512

St. Louis, MO 63132
1203 Ambassador Blvd.
P.O. Box 12414
(314) 993-5540

Sheboygan, WI 53081
3127 South 51st
P.O. Box 249
(414) 458-4333

Western Region

Albuquerque, NM 87107
4019 Edith Boulevard, NE
P.O. Box 8494
(505) 345-7808

Amarillo, TX 79120
803 S. Garfield
P.O. Box 30249
(806) 373-8371

Denver, CO 80220
6475 North Franklin Street
(303) 287-3261

El Paso, TX 79923
3818 Durazno
P.O. Box 3611
(915) 642-1057

Los Angeles Area
Pico Rivera, CA 90660
8320 Canford Street
P.O. Box 245
(213) 949-2161

Phoenix, AZ 85043
6031 West Washington
(612) 280-3000

Sacramento, CA 95824
8109 Elder Creek Road
(916) 383-3033

N. Salt Lake, UT 84024
950 N. Redwood Rd
P.O. Box 518
(801) 202-6000

Tucson, AZ 85713
3300 East 38th Street
(602) 623-0384

Yakima, WA 98901
609 South Front Street
(509) 676-0791



American Excelsior Company

AN EMPLOYEE OWNED COMPANY

HOME OFFICE: P.O. Box 5067/850 Ave. H East/Arlington, Texas 76011/(817) 640-1553

MAY, 1967

Mulch Performance On Steep Construction Slopes¹

A. E. Dudeck, N. P. Swanson, and A. R. Dedrick²

THE Nebraska Department of Roads is constantly faced with the problem of establishing and maintaining vegetative cover along roadsides throughout the state. Prairie grass hay is most commonly used for mulching purposes. Anchorage is effectively and economically accomplished by means of a tractor-drawn mulch packer. Conventional tractor-drawn equipment, however, cannot be operated safely on slopes steeper than 4:1.

Slopes steeper than 4:1 pose special problems in the establishment of vegetation. Mulches, other than prairie hay and grain straw, and methods of application should be evaluated in the State on steep slopes for ease of application, feasibility, erosion control, soil moisture retention, and for their effect on soil temperature during the critical periods of germination and establishment.

In 1965 a cooperative study was initiated between the Department of Agricultural Engi-

Table 1. Mulch treatments, description and rates of application.

Mulch treatments ^a	Description and method of application	Rate per acre
Latex	An emulsifiable material diluted 1:5 with water and sprayed on the plot	1050 gal
Fiberglass	Continuous filaments of fiberglass applied with compressed air	1000 lbs
Wood cellulose	Wood cellulose fiber applied hydraulically as a water slurry	1000 lbs in 3000 gal
Asphalt	An emulsifiable asphalt diluted 1:1 with water and sprinkled on plot	2400 gal
Fiberglass and asphalt	Fiberglass anchored with 1:5 asphalt emulsion	1000 lbs and 900 gal
Wood cellulose and asphalt	Wood cellulose fiber anchored with 1:5 asphalt emulsion	1000 lbs and 900 gal
Woodchips and asphalt	Pine woodchips from a portable chipper anchored with 1:5 asphalt emulsion	6 tons and 900 gal
Corncobs and asphalt	Ground corncobs slightly larger than 1/4 inch anchored with 1:5 asphalt emulsion	6 tons and 900 gal
Prairie hay and asphalt	Prairie hay anchored with 1:5 asphalt emulsion	1 ton and 900
Prairie hay and light paper netting	Prairie hay anchored with tightly twisted kraft paper netting with a 2 by 0.5 yarn count	1 ton
Medium paper netting	Tightly twisted, random colored kraft netting with a 7 by 4 yarn count	
Excelsior mat	High grade wood excelsior covered with large mesh, kraft paper netting	
Jute netting	Heavy woven jute net with a 1.6 by 1.2 yarn count	
No mulch		

¹Published with the approval of the Director as Paper No. 2037, Journal Series, Nebraska Agricultural Experiment Station, Lincoln. Originally presented at the 46th Annual Meeting of the Highway Research Board.

²Assistant Professor of Horticulture and Forestry, University of Nebraska, and Research Agricultural Engineer and Agricultural Engineer, USDA respectively.

^aThe latex is manufactured by the Veiscol Chemical Corp. The fiberglass is manufactured by the Pittsburgh Plate Glass Co. The wood cellulose was manufactured by the International Paper Co. The asphalt (LS-1) is manufactured by the American Bitumuls and Asphalt Co. The paper nettings and jute net are manufactured by the Bemis Bro. Bag Co. The excelsior mat is manufactured by American Excelsior Corp. The average composition of the prairie hay was 74 percent bluestem, 23 percent switchgrass, and miscellaneous grasses and weeds.

neering and the Department of Horticulture and Forestry at the University of Nebraska. The purpose of this study was to evaluate a number of mulching materials relative to their effects on erosion control and grass establishment on a variety of different soil types, slope gradients, and cut and fill sections. Swansen et. al. (5) presents the results of the first study on a 8:1 roadside cut section relative to erosion control under simulated rainstorms. The objective was to evaluate the same selected mulches on the same regraded slope and soil type in terms of their effects on soil temperature, soil moisture and seedling grass cover during the critical period of germination and establishment.

Materials and Methods

On September 3, 1965, thirteen mulch treatments were applied to plots along State Spur 841 approximately two miles south of Firth, Nebraska. Plots 10 ft. wide by 20 ft. long were replicated twice in a randomized block design on a west-facing 8:1 back-slope. A check plot receiving no mulch was included in each replication.

The soil on the experimental site is classified as a Wymore silty clay loam and tested pH 6.7, very low (5 ppm) in phosphorus and high (215 ppm) in potassium. Therefore, a 16-48-0 fertilizer at the rate of 415 pounds per acre was applied to the surface but was not worked in. All plots were seeded with Lincoln bromegrass, *Bromus inermis* Leyss., at the rate of 120 pure live seeds per square ft. with a cyclone-type seeder. The mulch treatments at the rates listed in Table 1 were then applied.

Data were gathered on soil temperatures, soil moisture, seedling stand, seedling height, and percent cover as affected by each mulch treatment.

Summary

Plots protected with excelsior mat; prairie hay anchored with a loose paper netting; or a combination of emulsifiable asphalt as an

Table 2.
Effect of various mulch treatments on soil temperature one-half inch below surface on clear and cloudy days.

Treatments	9/11 Clear			9/13 Cloudy
	Minimum	Maximum	Range	Maximum
Excelsior mat	58.3 a	82.0 a	23.7 a	71.8 ab
Prairie hay and light paper netting	57.5 a	85.0 b	27.5 b	71.8 ab
Fiberglass and asphalt	57.5 a	93.2 f	35.7 def	74.8 d
Prairie hay and asphalt	57.0 ab	86.8 bc	30.0 bc	72.3 ab
Corncobs and asphalt	57.0 ab	88.6 cd	32.0 cd	71.8 ab
Jute netting	56.8 ab	89.8 cd	32.8 cde	71.2 a
Asphalt	56.2 bc	101.5 g	45.3 g	76.6 e
Woodchips and asphalt	56.2 bc	89.6 de	33.4 cdef	73.2 bc
Latex	56.2 bc	90.2 de	34.0 cdef	71.7 ab
Wood cellulose and asphalt	56.2 bc	93.8 f	37.2 f	74.2 cd
Medium paper netting	55.8 bc	89.8 cd	33.4 cdef	72.5 bc
Fiberglass	55.7 bc	91.7 ef	36.0 ef	72.7 bc
No mulch	55.2 c	91.0 def	35.7 def	72.0 ab
Wood cellulose	55.0 c	90.8 de	35.4 def	72.2 ab

* Any two means with different letters are significantly different at the five percent level.

Table 4.
Percent grass cover eight and fourteen months after seeding.*

Treatments	Percent cover May 24, 1966	Percent cover November 30, 1966
Excelsior mat	93.5 a	89.2 a
Prairie hay and light paper netting	78.2 ab	75.8 ab
Woodchips and asphalt	73.6 b	69.2 b
Corncobs and asphalt	72.5 b	71.7 b
Jute netting	71.7 b	70.0 b
Prairie hay and asphalt	71.5 b	74.2 ab
Wood cellulose and asphalt	62.5 c	53.3 c
Medium paper netting	61.7 c	47.5 c
Fiberglass and asphalt	60.8 c	45.8 c
Fiberglass	48.8 c	46.7 c
No mulch	38.8 cd	38.3 cd
Latex	35.8 cd	47.5 c
Asphalt	35.8 cd	30.0 d
Wood cellulose	29.2 d	43.3 cd

* Any two means with different letters are significantly different at the five percent level.

5.3.2 Other liming material shall have a minimum calcium carbonate equivalent of 80 percent and crushed to a fineness specified by the County Extension Service Agent.

5.3.3 Sulphur shall be commercial grade.

5.4 Fertilizer Fertilizer shall be commercial grade, free flowing, uniform in composition, and shall conform to applicable State and Federal regulations. Fertilizer shall conform to Fed. Spec. O-F-241, Type I Class 2 or Type II, Class 1 and shall bear the manufacturer's guaranteed statement of analysis. Fertilizer shall contain a minimum percentage by weight of 10 percent nitrogen, 20 percent available phosphoric acid, and 20 percent potash. When slow release nitrogen forms are used in the fertilizer mixture, they shall be derived from sulfur coated urea, urea formaldehyde, plastic or polymer coated prills, or isobuylenediurea. Containers shall bear the name, trade name, or trademark and warranty of the producer.

5.5 Mulch Mulch shall be straw or hay mulch, tacked with asphalt; straw or hay mulch fixed in place with disk land packers or disk harrows; or fiber mulch applied simultaneously with grass seed and fertilizer by the use of hydroseeding machinery.

5.5.1 Straw shall be stalks from oats, wheat, rye, barley, or rice that are free from noxious weeds, mold, or other objectionable material. Straw shall be in an air-dry condition and suitable for placing with blower equipment.

5.5.2 Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, free from noxious weeds, mold, or other objectionable material. Hay shall be in an air-dry condition and suitable for placing with blower equipment.

5.5.3 Wood cellulose fiber for use with hydraulic application of grass seed and fertilizer shall consist of specially prepared wood cellulose fiber or a combination of wood cellulose and recycled newsprint fibers, processed to contain no growth or germination-inhibiting factors and dyed an appropriate color to facilitate visual metering of the application of materials. On an air-dry weight basis, the wood cellulose fiber shall contain a maximum of 12 percent moisture, plus or minus 3 percent at the time of manufacture. The combination of wood cellulose and recycled newsprint fibers shall contain a maximum of 10 percent moisture plus or minus 3 percent at the time of manufacture. The pH range for either mix shall be between 6.0 and 7.0. The wood cellulose fiber shall be manufactured so that:

(1) After addition and agitation in slurry tanks with fertilizers, grass seeds, water, and other approved additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry.

(2) When hydraulically sprayed on the ground, the material will form a blotterlike cover impregnated uniformly with grass seed.

FACSIMILE HEADER SHEET
(ER 105-1-5)

FROM (Name) ROBERT NICAISE	OFFICE SYMBOL CENCBED-E	TELEPHONE NO. 716/879-4233	RELEASEE'S SIGNATURE <i>Robert Nicaise</i>
	OFFICE SYMBOL	TELEPHONE NO.	PAGES PRECEDENCE DTG

(3) The cover will allow the absorption of moisture and allow rainfall or applied water to percolate to the underlying soil. Shrinkage after wetting shall not exceed 20 percent of the surface area.

5.6 Asphalt Adhesive. Asphalt adhesive for application with straw or hay mulch shall be cutback asphalt conforming to ASTM D 2028, designation RC-70, or emulsified asphalt conforming to ASTM D 977, Grade SS-1.

5.7 Water. Water shall not contain elements toxic to plant life.

PART 3 - EXECUTION

6. SITE PREPARATION.

6.1 Preparation of Seed and Planting Beds.

6.1.1 Tillage. Except on slopes steeper than 2 horizontal to 1 vertical, the soil shall be tilled to a depth of at least 4 inches. On slopes between 2 horizontal to 1 vertical and 1 horizontal to 1 vertical, tillage depths shall be 2 inches. On slopes steeper than 1 horizontal to 1 vertical, no tillage will be permitted. Tillage shall be accomplished by plowing, disking, harrowing, by the use of roto-tillage machinery or other approved operations until the condition of the soil is acceptable. The work shall be performed only during periods when beneficial results are likely to be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. Undulations or irregularities in the surface shall be leveled before the next specified operations.

6.1.2 Placing Topsoil. Topsoil shall be distributed uniformly and spread evenly to a minimum thickness of 4 inches. Topsoil shall be spread so that planting can proceed with little additional soil preparation or additional tillage. Surface irregularities resulting from topsoiling or other operations shall be leveled to prevent depressions. Grade shall be adjusted to assure that planted grade will be 1 inch below adjoining grade of any surfaced area. Topsoil shall not be spread when frozen or excessively wet or dry. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, excessively compacted, or in a condition detrimental to the proposed planting or grading. Soil compacted by construction equipment or soil on compacted cut slopes of grades shall be pulverized to a minimum depth of 2 inches by disking or plowing before applying topsoil.

6.1.3 Application of Fertilizer and pH adjusters: Fertilizer shall be applied at the rate of 725 pounds per acre. All fertilizers and pH adjusters shall be incorporated into the soil to a depth of at least 4 inches and may be incorporated as part of the tillage operation, except that lime will be applied by tillage at a rate recommended based on soil tests 2 to 3 months before fertilizer is applied. Immediately before seeding, the soil shall be restored to an even condition.

Canonie Environmental

C.C. V Patel
File D-6

Canonie Environmental Services Corp.
500 North Gulph Road - Suite 313
King of Prussia, Pennsylvania 19406

Phone: 215-337-2551
Fax: 215-337-0560

RECEIVED

October 10, 1990

OCT 11 1990

88-093

THOMAS GRANGER
EBASCO SERVICES INC.

Mr. Thomas Granger
EBASCO Services Incorporated
160 Chubb Avenue
Lyndhurst, NJ 07071-3586

Transmittal
Topsoil Analysis and Fertilizer Information
Partial River Channelization Project
Sinclair Refinery Site, Wellsville, New York

Dear Mr. Granger:

Enclosed find the topsoil analysis results performed by the Cornell University Nutrient Analysis Laboratories. This testing was performed in accordance with section 02485 of the project specifications. Four topsoil samples were submitted for analysis, two from the west bank and two from the east bank stockpiles. The analytical results indicate that it will be preferential to utilize a fertilizer with a 6-24-24 ratio of nitrogen, phosphoric acid and soluble potash instead of the specified 10-6-4 fertilizer. The 6-24-24 fertilizer will require an application rate of 145 pounds per acre.

Also enclosed is a material data safety sheet for the fertilizer we are intending to use, which is a product of AGWAY Incorporated Crop Services. Additionally, the topsoil analysis indicates that it will also be beneficial to apply one ton of lime per acre. Canonie is presently securing a lime supplier and will forward information on the type to be utilized as soon as it is provided.

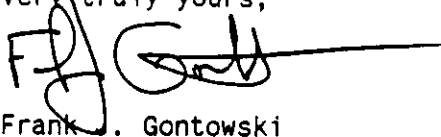
Canonie has not received any formal correspondence in regards to our request to utilize hydromulch instead of the specified hay or straw mulch. This request was made in our transmittal letter dated September 19, 1990. Canonie is planning to utilize one of the hydromulch products whose literature was included with the September 19 transmittal letter, unless EBASCO provides written correspondence to the contrary prior to October 12, 1990.

Topsoil and Fertilizer Information 2

October 10, 1990

We are confident that this information will meet with your approval. If you have any questions, please contact me at (716) 593-7066.

Very truly yours,



Frank J. Gontowski
QA/QC Officer



David A. Dekker
Construction Manager

DAD/FJG/lid

Enclosures



Cornell Nutrient Analysis Laboratories

New York State College of Agriculture and Life Sciences • A Statutory College of the State University
804 Bradfield Hall, Cornell University, Ithaca, NY 14853 • 607/255-4540

LAB INFORMATION

ROUTING	COUNTY	SECTOR/COUNTY	REPORT DATE	LAB ID
Grower	ALLE	ALLE	09/26/90	1260-4 (C)

ADDRESSES

REPRESENTATIVE	GROWER	COOPERATIVE/EXTENSION AGENT
BROOKS FARM & HOME CENTER WELLSVILLE NY 14895	CANONIE ENV. SERVICES CORP 500 N. QUELPH RD STE 315 KING OF PRUSSIA PA 19406	PAUL W. WESTFALL COOPERATIVE EXT HQS RD #1, BOX 226, COUNTY RD. 48 BELMONT NY 14813 Agents Phone: 716-268-7644

BACKGROUND INFORMATION

IDENTIFICATION	SOIL	SOIL ESTIMATION	CROPS	SPECIAL CROPS	MANURE/FERTILIZER
Bag # : 68393 Sample ID: WS BK NORT Acre : 10 ASCS: No Sampled : 09/18/90 Received : 09/19/90	Soil Name : CHENANGO Map Symbol Till Depth: 9+ IN. Art Drain : ADEQ Soil Group: 3	Soil Assoc: Drainage : Texture : Topography:	Last: GRT 2ago: GRT 3ago: GRT Next: CGE 2nd: CGT 3rd: CGT Variety : CLOVER GRASS Estab Year: Cover Crop:	Recommend : Grnd Cover: Sun: Sub: Tissue ID : Pot, Recab: 1	Type : Management: Legume: Yr: 90

SOIL TEST RESULTS

Very Low			Low			Medium			High			Excess		
pH		7.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
PHOSPHORUS (P #/A)		8	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
POTASSIUM (K #/A)		105	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
MAGNESIUM (Mg #/A)		220	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
CALCIUM (Ca #/A)		2410	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Aluminum (Al #/A):	45	Zinc (Zn #/A):	0.9											
Iron (Fe #/A):	14	Organic Matter (%):	1.9											
Manganese (Mn #/A):	45	Nitrate (NO3-N #/A):	5											

LIME AND FERTILIZER RECOMMENDATIONS

1ST YEAR: CLOVER GRASS (CGE)	2ND YEAR: CLOVER GRASS (CGT)	3RD YEAR: CLOVER GRASS (CGT)
Lime (T/A): 0	Lime (T/A): 0	Lime (T/A): 0
Nitrogen (N #/A): 0	Nitrogen (N #/A): 0	Nitrogen (N #/A): 0
Phosphate (P2O5 #/A): 30	Phosphate (P2O5 #/A): 15	Phosphate (P2O5 #/A): 15
Potash (K2O #/A): 25	Potash (K2O #/A): 25	Potash (K2O #/A): 25

1ST YEAR. CLOVER GRASS (CGE)

1. MAINTAIN A GOOD SAMPLING PROGRAM AND KEEP A RECORD OF ALL NUTRIENT ANALYSES AND RECOMMENDATIONS.
2. BAND MOST IF NOT ALL P2O5 AT PLANTING.

2ND YEAR. CLOVER GRASS (CGT)

3. AN ECONOMIC RESPONSE MAY BE OBTAINED TO 20-40 #/A OF N WHEN THERE IS LESS THAN 25-30 % LEGUME IN THE STAND.

3RD YEAR. CLOVER GRASS (CGT)

- * Also see the above comments: 3



Cornell Nutrient Analysis Laboratories

New York State College of Agriculture and Life Sciences • A Statutory College of the State University
804 Bradfield Hall, Cornell University, Ithaca, NY 14853 • 607/255-4540

LAB INFORMATION

ROUTING	COUNTY	GEN (G-COUNTY)	REPORT DATE	LAB ID
GROWER	ALLE	ALLE	09/26/90	1260-3 (C)

ADDRESSES

REPRESENTATIVE	GROWER	COOPERATIVE EXTENSION AGENT
BROOKS FARM & HOME CENTER WELLSVILLE NY 14895	CANONIE ENV. SERVICES CORP 500 N. GUELPH RD STE 315 KING OF PRUSSIA PA 19406	PAUL W. WESTFALL COOPERATIVE EXT HQD RD #1, BOX 226, COUNTY RD. 48 BELMONT NY 14813 Agents Phone: 716-268-7644

BACKGROUND INFORMATION

IDENTIFICATION	SOIL	SOIL ESTIMATION	CROPS	SPECIAL CROPS	MANURE/LEGUMES
Ag # : 0 Sample ID: W6 BK SOUT Acre : 10 A6C6: Yes Sampled : 09/18/90 Received : 09/19/90	Soil Name : CHENANGO Map Symbol Till Depth: 9+ IN. Art Drain : EXCEL Soil Group: 3	Soil Assoc: Drainage : Texture : Topography:	Last: GRT 2ago: GRT 3ago: GRT Next: CGE 2nd: CGT 3rd: CGT Variety : CLOVER GRASS Estab Year: 90 Cover Crop:	Recommend : Grnd Cover: Sur: Sub: Tissue ID : Pot. Scab :	Type : Management: Legume: Yr: 90

SOIL TEST RESULTS

	Very Low	Low	Medium	High	Exceed
N	6.6	*****			
PHOSPHORUS (P #/A)	9	*****			
POTASSIUM (K #/A)	115	*****			
MAGNESIUM (Mg #/A)	350	*****			
CALCIUM (Ca #/A)	1810	*****			
Aluminum (Al #/A):	37				
Iron (Fe #/A):	15				
Manganese (Mn #/A):	51				
Zinc (Zn #/A):	0.9				
Organic Matter (%):	2.0				
Nitrate (NO3-N #/A):	5				

LIME AND FERTILIZER RECOMMENDATIONS

1ST YEAR: CLOVER GRASS (CGE)	2ND YEAR: CLOVER GRASS (CGT)	3RD YEAR: CLOVER GRASS (CGT)
Lime (T/A): 0	Lime (T/A): 0	Lime (T/A): 0
Nitrogen (N #/A): 0	Nitrogen (N #/A): 0	Nitrogen (N #/A): 0
Phosphate (P2O5 #/A): 25	Phosphate (P2O5 #/A): 10	Phosphate (P2O5 #/A): 10
Potash (K2O #/A): 20	Potash (K2O #/A): 20	Potash (K2O #/A): 20

1ST YEAR. CLOVER GRASS (CGE)

1. MAINTAIN A GOOD SAMPLING PROGRAM AND KEEP A RECORD OF ALL NUTRIENT ANALYSES AND RECOMMENDATIONS.
2. BAND MOST IF NOT ALL P2O5 AT PLANTING.

2ND YEAR. CLOVER GRASS (CGT)

3. AN ECONOMIC RESPONSE MAY BE OBTAINED TO 20-40 #/A OF N WHEN THERE IS LESS THAN 25-30 % LEGUME IN THE STAND.

3RD YEAR. CLOVER GRASS (CGT)

- * Also see the above comments: 3



Cornell Nutrient Analysis Laboratories

New York State College of Agriculture and Life Sciences • A Statutory College of the State University
804 Bradfield Hall, Cornell University, Ithaca, NY 14853 • 607/255-4540

LAB INFORMATION

ROUTING	COUNTY	SENT TO COUNTY	REPORT DATE	LAB ID
Grower	ALLE	ALLE	09/26/90	1260- 2 (C)

ADDRESSES

REPRESENTATIVE	GROWER	COOPERATIVE EXTENSION AGENT
BROOKS FARM & HOME CENTER WELLSVILLE NY 14895	CANONIE ENV. SERVICES CORP 500 N. GUELPH RD STE 315 KING OF PRUSSIA PA 19406	PAUL W. WESTFALL COOPERATIVE EXT HQD RD #1, BOX 226, COUNTY RD. 48 BELMONT NY 14813 Agents Phone: 716-268-7644

BACKGROUND INFORMATION

IDENTIFICATION	SOIL	SOIL FERTILIZATION	CROPS	SPECIAL CROPS	NATURE/REMARKS
Reg # : 68313 Sample ID: EST BANKP1 Acre : 10 ASCS: No Sampled : 09/18/90 Received : 09/19/90	Soil Name : CHENANGO Map Symbol Till Depth: 9+ IN. Art Drain : ADEQ Soil Group: 3	Soil Assoc: Drainage : Texture : Topography:	Last: GRT 2sg: GRT 3sg: GRT Next: CGE 2nd: CGT 3rd: CGT Variety : CLOVER GRASS Estab Year: 90 Cover Crop:	Recommend : Grnd Cover: Suri Sub: Tissue ID : Pot. Scab :	Type : Management: Legume: Yr: 90

SOIL TEST RESULTS

	Very Low	Low	Medium	High	Excess
pH	5.8				
PHOSPHORUS (P #/A)	4				
POTASSIUM (K #/A)	95				
MAGNESIUM (Mg #/A)	145				
CALCIUM (Ca #/A)	1500				
Ex Acidity (ME/100g):	7	Manganese (Mn #/A): 65	Nitrate (NO3-N #/A): 9		
Aluminum (Al #/A):	80	Zinc (Zn #/A): 0.9			
Iron (Fe #/A):	36	Organic Matter (%): 2.0			

LIME AND FERTILIZER RECOMMENDATIONS

1ST YEAR: CLOVER GRASS (CGE)	2ND YEAR: CLOVER GRASS (CGT)	3RD YEAR: CLOVER GRASS (CGT)
Lime (T/A): 1.0 Nitrogen (N #/A): 0 Phosphate (P2O5 #/A): 30 Potash (K2O #/A): 30	Lime (T/A): 0 Nitrogen (N #/A): 0 Phosphate (P2O5 #/A): 35 Potash (K2O #/A): 30	Lime (T/A): 0 Nitrogen (N #/A): 0 Phosphate (P2O5 #/A): 35 Potash (K2O #/A): 30

1ST YEAR. CLOVER GRASS (CGE)

1. MAINTAIN A GOOD SAMPLING PROGRAM AND KEEP A RECORD OF ALL NUTRIENT ANALYSES AND RECOMMENDATIONS.
2. BAND MOST IF NOT ALL P2O5 AT PLANTING.
3. LIME RATE IS FOR 100% ENV. TO CALCULATE ACTUAL RATE: RATE TO USE = RECOMMENDED RATE/ENV (OF LIME SOURCE) X 100.
4. APPLY DOLOMITIC LIME CONTAINING AT LEAST 1 % Mg.
5. WORK LIME INTO SEED ZONE BEFORE PLANTING.

2ND YEAR. CLOVER GRASS (CGT)

6. AN ECONOMIC RESPONSE MAY BE OBTAINED TO 20-40 #/A OF N WHEN THERE IS LESS THAN 25-30 % LEGUME IN THE STAND.

3RD YEAR. CLOVER GRASS (CGT)

- * Also see the above comments: 6



Cornell Nutrient Analysis Laboratories

New York State College of Agriculture and Life Sciences • A Statutory College of the State University
804 Bradfield Hall, Cornell University, Ithaca, NY 14853 • 607/255-4540

LAB INFORMATION

ROUTING	COUNTY	SHIP TO COUNSEL	REPORT DATE	LAB NO
Grower	ALLE	ALLE	09/26/90	1260-1 (C)

ADDRESSES

REPRESENTATIVE	OWNER	COOPERATIVE EXTENSION AGENT
BROOKS FARM & HOME CENTER WELLSVILLE NY 14895	CANONIE ENV. SERVICES CORP 500 N. GUELPH RD STE 315 KING OF PRUSSIA PA 19406	PAUL W. WESTFALL COOPERATIVE EXT HQD RD #1, BOX 226, COUNTY RD. 48 BELMONT NY 14813 Agents Phone: 716-268-7644

BACKGROUND INFORMATION

IDENTIFICATION	SOIL	SOIL INFORMATION	CROPS	SPECIAL CROPS	MANURE/LEGUMES
Bag # : 68312 Sample ID: EST BK PIP Acre : 10 ASCS: No Sampled : 09/18/90 Received : 09/19/90	Soil Name : CHENANGO Map Symbol Till Depth: 9+ IN. Art Drain : EXCEL Soil Group: 3	Soil Assoc: Drainage : Texture : Topography:	Last: GRT 2ago: GRT 3ago: GRT Next: CGE 2nd: CGT 3rd: CGT Variety : CLOVER GRASS Estab Year: 90 Cover Crop:	Recommend : Grnd Cover: Sur: Sub: Tissue ID : Pot. Scab :	Type : Management: Legume: Yr: 90

SOIL TEST RESULTS

		Very Low	Low	Medium	High	EXCESS
pH	6.1	*****				
PHOSPHORUS (P #/A)	22	*****				
POTASSIUM (K #/A)	75	*****				
MAGNESIUM (Mg #/A)	150	*****				
CALCIUM (Ca #/A)	1400	*****				
Aluminum (Al #/A):	56					
Iron (Fe #/A):	27					
Manganese (Mn #/A):	51					
Zinc (Zn #/A):	1.0					
Organic Matter (%):	1.7					
Nitrate (NO3-N #/A):	6					

LIME AND FERTILIZER RECOMMENDATIONS

1ST YEAR: CLOVER GRASS (CGE)	2ND YEAR: CLOVER GRASS (CGT)	3RD YEAR: CLOVER GRASS (CGT)
Lime (T/A): 0	Lime (T/A): 0	Lime (T/A): 0
Nitrogen (N #/A): 0	Nitrogen (N #/A): 0	Nitrogen (N #/A): 0
Phosphate (P2O5 #/A): 10	Phosphate (P2O5 #/A): 0	Phosphate (P2O5 #/A): 0
Potash (K2O #/A): 45	Potash (K2O #/A): 45	Potash (K2O #/A): 45

1ST YEAR. CLOVER GRASS (CGE)

1. MAINTAIN A GOOD SAMPLING PROGRAM AND KEEP A RECORD OF ALL NUTRIENT ANALYSES AND RECOMMENDATIONS.
2. BAND MOST IF NOT ALL P2O5 AT PLANTING.

2ND YEAR. CLOVER GRASS (CGT)

3. AN ECONOMIC RESPONSE MAY BE OBTAINED TO 20-40 #/A OF N WHEN THERE IS LESS THAN 25-30 % LEGUME IN THE STAND.

3RD YEAR. CLOVER GRASS (CGT)

- * Also see the above comments: 3



MATERIAL SAFETY DATA SHEET

AGWAY INC., CROP SERVICES
P/C-114 (R) (REV. 3 87)

FERT NB - 5

IDENTITY (As Used on Label)

Agway Nutri-Bond Fertilizer N-P₂O₅-K₂O ratio = 1-4-4
and 1-3-3

Product Code:

See Section II

EPA Reg. No.:

SECTION I

Manufacturer's Name

Agway Inc. - Crop Services

Night Emergency Telephone Number

315-449-6244

Address (Number, Street, City, State, Zip)

P.O. Box 4741

Day Telephone Number for Information

315-449-6354

Syracuse, NY 13221

Date Prepared

Date Revised

6/1/88

Signature of Preparer (optional)

SECTION II — HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific)

Chemical Identity; Common Names(s)

OSHA PEL

ACGIH TLV

Other Limits

Recommended

The finished granular fertilizer grades are not considered hazardous under the Hazardous Communication Standard 29 CFR 1910.1200. Ingredients used in the manufacture of the fertilizer are: nitrogen 22-66-6 and 37-0-31 solutions, triple superphosphate (CAS NO. 45996-95-4), phosphoric acid (7664-38-2), sulfuric acid (7664-93-9), ammonium sulfate (7783-20-2), Muriate of Potash (7447-40-7) and dolomitic limestone (1317-65-3). Grades include 4-15-16, 5-20-20, (22-4531, 22-4532, 22-4541, 22-4542, 22-5661, 22-5662), and 6-24-24 (22-4471, 22-4472). Also, 6-18-6, 8-24-8 (22-4371, 22-4372), 7-21-21 (22-4431, 22-4432) and similar grades in a 1-4-4 or 1-3-x 2 ratio (N-P₂O₅-K₂O).

From triple superphosphate:

Monocalcium Orthophosphate

none established

none established

Silica (CAS NO. 14808-60-7)

10 Mg/M3

10 Mg/M3

Free Acid (as H₃PO₄)

2.5 Mg/M3

1 Mg/M3

Fluoride Salts

2.5 Mg/M3 (as F)

2.5 Mg/M3 (as F)

Phosphoric Acid

Air TWA: 1 Mg/M3

Sulfuric Acid

Air TWA: 1 Mg/M3

OSHA Nuisance dust limit of 15 Mg/M3 and ACGIH Nuisance dust limit of 10 Mg/M3 may apply to this mixture.

SECTION III — PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point

NA

Specific Gravity (H₂O = 1)

approx. 1.0

Vapor Pressure (mm Hg.)

NA

Melting Point

NA

Vapor Density (AIR = 1)

NA

Evaporation Rate

NA

Solubility in Water

Partially Soluble

Appearance and Odor

Varied color granules, grey to tan to red. No significant odor.

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

NA

Flammable Limits

NA

LEL

UEL

NA

NA

Extinguishing Media

Water spray and flooding, foam, carbon dioxide, (CO₂), spread product out.

Special Fire Fighting Procedures

Full protective clothing and self-contained NIOSH approved breathing apparatus. Contain runoff by diking. Fine sand

helps to smother fire.

Unusual Fire and Explosion Hazards

Possible decomposition above 160°C (320° F) producing irritating and toxic gases including ammonia, oxides of nitrogen,

phosphorus, and sulfur.

NA = Not Applicable

NIA - No Information Available

SECTION V — REACTIVITY DATA

FERT NB - 6

Stability	Unstable	Stable X	Conditions to Avoid Normally stable; absorbs moisture above 60% R.H.
-----------	----------	-------------	---

Incompatibility (Materials to Avoid)

Moderately corrosive to metals when wet. Avoid heat and alkalis.

Hazardous Decomposition or Byproducts

Ammonia, oxides of nitrogen, phosphorus and sulfur.

Hazardous Polymerization	May Occur	Will Not Occur X	Conditions to Avoid if Polymerization will occur NA
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SECTION VI — HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? Possible	Skin? Possible	Ingestion? Possible
--------------------	-------------------------	-------------------	------------------------

Health Hazards (Acute and Chronic)

Contact with skin or eyes may cause irritation, particularly under hot, dusty, humid conditions. Minimize exposure to
and inhalation of dust.

Carcinogenicity:	NTP? No	IARC Monographs? No	OSHA Regulated? No
------------------	------------	------------------------	-----------------------

Signs and Symptoms of Exposure

Skin or eye irritation. Respiratory dryness or irritation.

Emergency and First Aid Procedures

Skin/eyes: Wash skin thoroughly with soap and water. Flush eyes repeatedly with clear water. Respiratory difficulty:
remove to fresh air. Get medical attention if necessary.

SECTION VII — PRECAUTIONS FOR SAFE HANDLING AND USE**Steps to be Taken in Case Material is Released or Spilled**

Collect and sweep up product and dispose of it in accordance with applicable federal, state, and local environmental
requirements. May be applied to the soil according to label directions.

Waste Disposal Method

As described above.

Precautions to be Taken in Handling and Storing

Store product in cool, dry storage, avoiding locations or conditions which could cause tearing or puncturing of packages.

Other Precautions

Special care and attention by bagging and shipping crews and fork lift operators when handling packaged or bulk product.

SECTION VIII — CONTROL MEASURES**Respiratory Protection (Specify Type)**

Use NIOSH approved respirators as specified by plant operating and safety procedures.

Ventilation	Local Exhaust At mixer and bagging unit.	Special NA
-------------	---	---------------

Protective Gloves As specified by plant safety procedures.	Eye Protection As specified by plant safety procedures.
---	--

Other Protective Clothing or Equipment

When required by unusual dust or humidity conditions or as specified by plant training and safety programs.

Work/Hygienic Practices

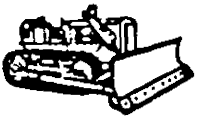
Wash after handling.

NA = Not Applicable

NIA - No Information Available

Material Certifications for West Bank Dike Extension

Materials used in the construction of the West Bank Dike Extension were obtained from the same sources as Canonie Environmental. The materials from these sources were tested by Canonie Environmental and accepted by the Construction Manager. Attached are the letters from the suppliers certifying the source and the materials.



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802

SUBJECT: SINCLAIR REFINERY SITE, WELLSVILLE, NY
MATERIAL CERTIFICATION

This is to certify that the Clay supplied to OH Materials for the construction of the West Bank Dike Extension is obtained from the same source and manufactured with the same production methods as the material supplied to Canonie Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonie are valid and applicable to material supplied to OH Materials.

Charles S. Belu



THE GENERAL CRUSHED STONE COMPANY

A Subsidiary of KOPPERS COMPANY, INC.

EASTON, PENNSYLVANIA 18042-0231

P.O. Box 151
Honeoye Falls, New York 14472
Telephone (716) 624-3800

December 5, 1990

~~Rec'd~~

REF: Sinclair Refinery Site, Wellsville, N.Y.

Dear Sirs;

This letter is to certify that The General Crushed Stone Company has supplied OH Materials for the construction of the West Bank Dike Extension with the same source and manufactured with the same production methods as the material supplied to Canonic Environmental for the Partial River Channelization Project at the Sinclair Refinery Site in Wellsville, N.Y. The results of all tests previously performed for Canonic are valid and applicable to the material presently being supplied to OH Materials.

If I can be of further assistance, please give me a call.

Sincerely,
The General Crushed Stone Company

A handwritten signature in dark ink, appearing to read "Joseph P. Murphy".

Joseph P. Murphy
Sales Representative

Alfred Atlas Gravel & Sand Corporation

Box 1195

Alfred Station, New York 14803

R.M. CAMPBELL, PRES.
D.E. RASE, VICE PRES.
G.R. MOORE, MGR.

AREA CODE 607
PLANT 587-9494
OFFICE 587-8686

SUBJECT: Sinclair Refinery Site, Wellsville NY
Material Certification

This is to certify that the Bedding Stone 2-3" supplied to
OH Materials for the construction of the West Bank Dike
Extension is obtained from the same source and manufactured
with the same production methods as the material supplied
to Canonic Environmental for the Partial River Channelization
Project for the Sinclair Refinery Site in Wellsville,
New York. and results of all tests previously performed
for Canonic are valid and applicable to material supplied
to O H Materials.


G R Moore

Alfred Atlas Gravel & Sand Corporation

Box 1195

Alfred Station, New York 14803

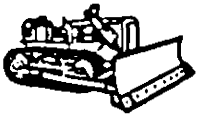
R.M. CAMPBELL, PRES.
D.E. RASE, VICE PRES.
G.R. MOORE, MGR.

AREA CODE 607
PLANT 587-9494
OFFICE 587-8686

SUBJECT: Sinclair Refinery Site, Wellsville NY
Material Certification

This is to certify that the Roadstone Item #4 supplied to
OH Materials for the construction of the West Bank Dike
Extension is obtained from the same source and manufactured
with the same production methods as the material supplied
to Canonic Environmental for the Partial River Channelization
Project for the Sinclair Refinery Site in Wellsville,
New York. and results of all tests previously performed
for Canonic are valid and applicable to material supplied
to O H Materials.


G R Moore



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802



SUBJECT: SINCLAIR REFINERY SITE, WELLSVILLE, NY
MATERIAL CERTIFICATION

This is to certify that the Common Fill supplied to OH Materials for the construction of the West Bank Dike Extension is obtained from the same source and manufactured with the same production methods as the material supplied to Canonic Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonic are valid and applicable to material supplied to OH Materials.

Charles S. Baker



FORM SERVICES, INC.

CONCRETE FORMING EQUIPMENT & ACCESSORIES
"TECHNICAL SUPPORT BEHIND EVERY PRODUCT"

P.O. BOX 60
LINTHICUM HEIGHTS, MD 21090
(301) 789-5900
OUT OF STATE (800) 638-3395
IN MARYLAND (800) 492-2165

December 12, 1990

Mr. John Hoff
OHM Corporation
16406 U.S. Route 224 East
P.O. Box 551
Findlay, Ohio 45839-0551

Reference: Job 9800 Wellsville, N.Y.

Gentlemen:

The purpose of this letter is to certify that the ST 80 as supplied by Spartan Technologies to Canonic Environmental for the Partial River Channelization Project for the Sinclair Refinery in Wellsville, New York, is the same material supplied to OHM Corporation for the construction of the West Bank Dike Extension. It should be noted that all of this material supplied to both companies was supplied in 1990.

In addition, please see the attached letter from Spartan Technologies that specifically relates to the manufacturing process.

Please contact me if I can be of further service to you.

Very truly yours,

FORM SERVICES, INC.

A handwritten signature in cursive script that reads "Fred Kelley". The signature is written in dark ink and is positioned above the printed name.

Fred Kelley

FK/ib



A Subsidiary of
SPARTAN MILLS

SPARTAN TECHNOLOGIES

December 6, 1990

FSI
14 Thomas Ave
Baltimore, MD 21225

Attn: Gary Stanton

Fax: 301-636-8182

Gary:

To confirm our phone conversation today, Spartan Technologies has produced ST80 by the same manufacturing process thru 1990. This product is a 100% PP needle punch fabric composed of staple fibers.

If you require additional data, please feel free to contact me.

Sincerely,

Chris Lawrence
National Sales Manager/Geotextiles

CL/ajc



MANUFACTURERS OF QUALITY NONWOVEN FABRICS
P.O. BOX 1658 / SPARTANBURG / SOUTH CAROLINA 29304

Tel. (803) 576-2353
Fax. (803) 574-2244

Material Certification for SLA Backfill and North End Dike Extension

Materials used in the construction of the North End Dike Extension and backfilling the South Landfill Area were obtained from the same sources as Canonie Environmental. The materials from these sources were tested by Canonie Environmental and accepted by the Construction Manager. Attached are the letters from the suppliers certifying the source and the materials.



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802



TO: O H MATERIALS
RE: MATERIAL CERTIFICATION
AT: SINCALIR REFINERY SITE, WELLSVILLE NEW YORK

This is to certify that the Topsoil supplied to O H Materials for the construction of the Dyke is obtained from the same source and manufactured with the same production methods as the material supplied to Canonic Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonic Environmental are valid and applicable to material supplied to O H Materials.

Charles S. Baker

Sec. Treas.

10 - 1 - 91



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802

TO: O H MATERIALS
RE: MATERIAL CERTIFICATION
AT: SINICALIR REFINERY SITE, WELLSVILLE NEW YORK

This is to certify that the Clay supplied to O H Materials for the construction of the Dyke is obtained from the same source and manufactured with the same production methods as the material supplied to Canonie Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonie Environmental are valid and applicable to material supplied to O H Materials.

Charles S. Baker

See True

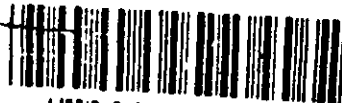
10-1-91



Spartan Technologies
SPARTANBURG, SOUTH CAROLINA

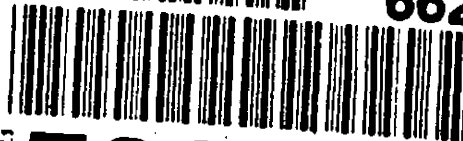
ST 80

S180 86037	
300 FEET	
15 FEET	
500 SQ. YARDS	
YARDS	DATE
GROSS WT.	NET WT.



PRODUCER ID

662035



56268385



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802



TO: O H MATERIALS
RE: MATERIAL CERTIFICATION
AT: SINICALIR REFINERY SITE, WELLSVILLE NEW YORK

This is to certify that the Clay supplied to O H Materials for the construction of the SLA is obtained from the same source and manufactured with the same production methods as the material supplied to Canonic Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonic Environmental are valid and applicable to material supplied to O H Materials.

Charles S. Baker

See to a

10-1-91



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802



TO: O H MATERIALS
RE: MATERIAL CERTIFICATION
AT: SINCLAIR REFINERY SITE, WELLSVILLE NEW YORK

This is to certify that the Common Fill supplied to O H Materials for the construction of the SLA is obtained from the same source and manufactured with the same production methods as the material supplied to Canonic Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonic Environmental are valid and applicable to material supplied to O H Materials.

Charles S. Baker
See to it
10-1-91



TELEPHONE:
607-587-9191



Box 852
ALFRED, NEW YORK 14802



TO: O H MATERIALS
RE: MATERIAL CERTIFICATION
AT: SINICALIR REFINERY SITE, WELLSVILLE NEW YORK

This is to certify that the Topsoil supplied to O H Materials for the construction of the SLA is obtained from the same source and manufactured with the same production methods as the material supplied to Canonic Environmental for the Partial River Channelization Project for the Sinclair Refinery Site in Wellsville, New York, and results of all tests previously performed for Canonic Environmental are valid and applicable to material supplied to O H Materials.

Charles S. Baker

Sec. Treas.

10-1-91

5-11496

THE GENERAL CRUSHED STONE CO.
A Member of THE BEAZER GROUP
GENERAL OFFICE, EASTON, PA. 18042



Do # 329-897

TICKET NO. 290107

ROCHESTER
P.O. BOX 151
HONEYE FALLS #6 ROAD
HONEYE FALLS, NY 14
716-624-1220

028

WEIGHMASTER SIGNATURE AND LICENSE NUMBER

SOLD TO:

[Signature] Rip Rip

O.H.M. REMEDIATION CORP.
JOB 4328 WELLSVILLE JOB

LOCATION:

CUST. NO. 064857	SALES ORDER NUMBER 080409	S/W NO. 27
DATE 09/25/91	TIME 10:48	T. NO. 290107
GROSS LBS. 76620	REBIRD	695/R270
TARE LBS. 27020	TONS TODAY	TONS TO DATE
NET LBS. 49600	TONS	52.65
	TYPE/NAME	4328
45000000	CASH SALE ONLY	LOAD# 002
EMIAL	PER TON	
TAX	PER TON	
HAUL	PER TON	
TOTAL	PRODUCT DESCRIPTION	

TRUCKER SIGNATURE *[Signature]* MED STONE FILL
GROSS WEIGHT ACKNOWLEDGED

AN EQUAL OPPORTUNITY EMPLOYER M/F

THE GENERAL CRUSHED STONE CO.

A Member of THE BEAZER GROUP
GENERAL OFFICE, EASTON, PA. 18042



ROCHESTER
P.O. BOX 151
HONEYE FALLS #6 ROAD
HONEYE FALLS, NY 14
716-624-1220

028

TICKET NO. 290046

WEIGHMASTER SIGNATURE AND LICENSE NUMBER

SOLD TO:

O.H.M. REMEDIATION CORP.
JOB 4328 WELLSVILLE JOB

LOCATION:

CUST. NO. 064857	SALES ORDER NUMBER 080409	S/W NO. 27
DATE 09/25/91	TIME 08:41	T. NO. 290046
GROSS LBS. 82720	HAULER REDBIRD	TRUCK NO. 695/R270
TARE LBS. 27020	TONS TODAY 27.85	TONS TO DATE 27.85
NET LBS. 55700	TONS 27.85	TYPE/NAME 4328
45000000	CASH SALE ONLY	LOAD# 001

MATERIAL	PER TON
TAX	
HAUL	PER TON
TOTAL	PRODUCT DESCRIPTION MED STONE FILL

TRUCKER SIGNATURE *[Signature]* GROSS WEIGHT ACKNOWLEDGED

AN EQUAL OPPORTUNITY EMPLOYER M/F

ALFRED ATLAS GRAVEL and SAND CORPORATION
PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TICKET 4463

PO BOX 143
ALFRED STATION ID 6 CHARGED ON 09/24/91
NEW YORK 14603 OVER 30 DAYS
PHONE CROSTHER O-H-M (AREA 607)

ALFRED STATION
NEW YORK
PHONE 587-9494

Name Do # 329-898

Date

19

Address Product 2 GRAVEL

Job

WEIGHT

Haul Road Stone

GROSS 79100 LB	
K TARE 28100 LB	
NET 50700 LB	
WEIGHT-IN 79100 LB	
Concrete	
Asphalt	
Received by	
OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB	
NET 25.05 TON	

\$132.91

J-11496

FRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

ORDER 4486

BOX 145

STATION 116

NEW YORK 14803

CUSTOMER G-H-M

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS.

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

Date _____ 19__

PO # 329-898

PRODUCT	WEIGHT
Access Road stone	
GROSS 74540 LB	
NET 51140 LB	
WEIGHT-IN 23400 LB	

J-11496

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

ORDER 4444

P.O. BOX 145

ALFRED STATION 116

NEW YORK 14803

CUSTOMER G-H-M

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS.

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

Date _____ 19__

Name _____ PO # 329-898

PRODUCT	WEIGHT
Dike, Geo Tec Bedding	
GROSS 82020 LB	
NET 51140 LB	
WEIGHT-IN 23400 LB	

7-1476

ALFRED ATLAS GRAVEL and SAND CORPORATION
PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TICKET 4305

P.O. BOX 145

ALFRED STATION NY 14803

NEW YORK 14803

CUSTOMER O-H-M

1 1/2% INTEREST WILL BE

CHARGED ON ALL INVOICES

OVER 30 DAYS

(AREA 607)

PLANT

ALFRED STATION

NEW YORK

PHONE 587-9494

Date

PO# 329-898

Name

Address

PRODUCT 2 GRAVEL

Job

WEIGHT

2825 Ton

GROSS 56540 LB

K TARE 23200 LB

NET 33340 LB

WEIGHT 56540 LB

Concrete

Asphalt

Received by

AH-DEL

WINT

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

NFT

15.87 TON

Access
Road
Stone

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TICKET 4492

PLANT

P.O. BOX 145

1 1/2% INTEREST WILL BE

ALFRED STATION

ALFRED STATION, ID 6

CHARGED ON 25 SEP 51

NEW YORK

NEW YORK 14803

OVER 30 DAYS

PHONE 587-9494

PHONE 1-311-11496

CUSTOMER O-H-M

(AREA 607)

Date PO # 329-898 1951

Name J-11496

Address PRODUCT CRUSHED ITEM 1 Job Jeffersonville

	WEIGHT
GROSS	82280 LB
TARE	28460 LB
NET	53820 LB
WEIGH-IN	82280 LB
Concrete	
Asphalt	

Received by J-11496

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

NET 26.91 TON

DEPT. OF TRANSPORTATION, ALFRED STATION NY 14803 201778-21

Dike
Road Agg.

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

OFFICE
PO BOX 145
ALFRED STATION,
NEW YORK 14803
PHONE: 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS
(AREA 607)

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M

Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT BLEND	WEIGHT
24 3	
John W. Hoff Supv/2759	
CRUSH 8200 LB	
1" TAPL 28 30 LB	
Concrete	28.95 Ton
Asphalt	

Received by _____

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

DEPT. PRESS. ALFRED STATION, NEW YORK 14803

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

OFFICE
PO BOX 145
ALFRED STATION,
NEW YORK 14803
PHONE: 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS
(AREA 607)

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M

Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT BLEND	WEIGHT
24 3	
John W. Hoff Supv/2759	
CRUSH 8200 LB	
1" TAPL 28 30 LB	
Concrete	27.91 Ton
Asphalt	

Received by _____

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

DEPT. PRESS. ALFRED STATION, NEW YORK 14803



Spartan Technologies

SPARTANBURG, SOUTH CAROLINA

ST 80

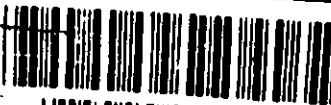
6110 80037

300 FEET

15 FEET

500 SQ. YARDS

YARDS	DATE
GROSS WT.	NET WT.



PRODUCER ID

662035



56268385

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

OFFICE
TEL: 4755
P.O. BOX 145
ALFRED STATION,
NEW YORK 14031
PHONE: 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS
(AREA 607)

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M

Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT BLEND	WEIGHT
24 3	
John W. Hoff Supv/2759	
CRUSH 86220 LB	
1" TAPE 28400 LB	
NET 57220 LB	28.95 Ton
Concrete WEIGH-IN 57220 LB	
Asphalt	

Received by J. D. L. L.R.

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

DEPOT PRESS ALFRED STATION NY 14031 201720 B1

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

OFFICE
TEL: 4755
P.O. BOX 145
ALFRED STATION,
NEW YORK 14031
PHONE: 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS
(AREA 607)

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M

Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT BLEND	WEIGHT
24 5	
John W. Hoff Supv/2759	
CRUSH 84220 LB	27.91 Ton
1" TAPE 28400 LB	
NET 55220 LB	
Concrete WEIGH-IN 55220 LB	
Asphalt	

Received by J. D. L. J.L.

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

DEPOT PRESS ALFRED STATION NY 14031 201720 B1

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TICKET 1492

P.O. BOX 143

ALFRED STATION NY 14803

NEW YORK 14803

PHONE CUSTOMER O-H-H

1 1/2% INTEREST WILL BE

CHARGED ON 26th SEP 59

OVER 30 DAYS

(AREA 607)

BLANK

ALFRED STATION

NEW YORK

PHONE 587-9494

Date PO # 329-898

Name J-11496

Address PRODUCT CRUSHED ITEM 1 Job De Haulle

	WEIGHT
CROSS	82280 LB
TARE	28460 LB
NET	53820 LB
Concrete	WEIGH-IN 82280 LB
Asphalt	

Received by J-11496

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

NET

26.94 TON

Dike
Road Agg.

7-11476

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TICKET 4305

RD. BOX 145

ALFRED STATION NY 14803

1% INTEREST WILL BE

CHARGED ON ALL ACCOUNTS OVER 30 DAYS

PLANT

ALFRED STATION

NEW YORK

PHONE 587-9494

CUSTOMER O-H-M

(AREA 007)

Date

PO# 329-898

Name

Address

PRODUCT 2 GRAVEL

Job

WEIGHT

28²³ Ton

GROSS

56540 LB

TARE

23200 LB

NET

33340 LB

Concrete

WEIGHT

56540 LB

Asphalt

Received by

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

WET

16.87 TON

Access
Road
Stone

J-11496

FRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TERMINAL 14803

BOX 145

STATION ID 6

NEW YORK 14803

CUSTOMER G-H-M

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

Date _____ 19 ____

PO # 329-898

PRODUCT	Job	WEIGHT
Access Road stone		
GROSS	24540 LB	
NET	20100 LB	
HEIGHT-IN	24540 LB	

J-11496

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TERMINAL 14803

BOX 145

STATION ID 6

NEW YORK 14803

CUSTOMER G-H-M

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

Date _____ 19 ____

Name PO # 329-898

Address	Job	WEIGHT
PRODUCT BLEND		
Dike, Geo Tec Bedding		
GROSS	60020 LB	
NET	20100 LB	
HEIGHT-IN	60020 LB	
Concrete		
Asphalt		

J-11446

THE GENERAL CRUSHED STONE CO. 1

A Member of THE BEAZER GROUP
GENERAL OFFICE, EASTON, PA. 18042

Do # 329-897

TICKET NO.
290107

ROCHESTER

028

P.O. BOX 151
HONEYE FALLS #6 ROAD
HONEYE FALLS, NY 14
716-624-1220

WEIGHMASTER SIGNATURE AND LICENSE NUMBER

SOLD TO:

O.H.M. REMEDIATION CORP.
JOB 4328 WELLSVILLE JOB

LOCATION:

CURT. NO. 064857 SALES ORDER NUMBER 080409 T. NO. 27
DATE 09/25/91 TIME 10:48 T. NO. 290107

GROSS LBS. 76620 REDBIRD 695/R270 TRUCK NO.

TARE LBS. 27020 TONS TODAY 52.65 TONS TO DATE 52.65

NET LBS. 49600 TONS 24.80 TYPE/NAME 4328

CASH SALE ONLY LOAD# 002

TAX

HAUL

TOTAL

MED STONE FILL

TRUCKER SIGNATURE AND WEIGHT ACKNOWLEDGED

AN EQUAL OPPORTUNITY EMPLOYER M/F

THE GENERAL CRUSHED STONE CO.

A Member of THE BEAZER GROUP
GENERAL OFFICE, EASTON, PA. 18042ROCHESTER
P.O. BOX 151
HONEYE FALLS #6 ROAD
HONEYE FALLS, NY 14
716-624-1220TICKET NO.
290046

028

WEIGHMASTER SIGNATURE AND LICENSE NUMBER

SOLD TO:

O.H.M. REMEDIATION CORP.
JOB 4328 WELLSVILLE JOB

LOCATION:

CURT. NO. 064857 SALES ORDER NUMBER 080409 T. NO. 27
DATE 09/25/91 TIME 06:41 T. NO. 290046

GROSS LBS.	HAULER	TRUCK NO.
82720	REDBIRD	695/R270
TARE LBS.	TONS TODAY	TONS TO DATE
27020	27.85	27.85
NET LBS.	TONS	TYPE/NAME
55700	27.85	4328

CASH SALE ONLY LOAD# 001

MATERIAL	PER TON
TAX	
HAUL	
TOTAL	PRODUCT DESCRIPTION
	MED STONE FILL

TRUCKER SIGNATURE AND WEIGHT ACKNOWLEDGED

8-02-91 NEW 500

AN EQUAL OPPORTUNITY EMPLOYER M/F

ALFRED ATLAS GRAVEL AND SAND

CORPORATION

PRODUCERS OF

WASHED and SCREENED GRAVEL and SAND

TICKET 4463

P.O. BOX 143
ALFRED STATION ID 6 CHARGED ON 09/25/91
NEW YORK 14803 OVER 30 DAYS
PHONE 516-791-4463 (AREA 516)PAIL
ALFRED STATION
NEW YORK
PHONE 516-791-4463

Date 19__

Name Do # 329-898

Address: 1100 E. 11th St.

Job

WEIGHT

Haul Road Stone

GROSS 79100 LB

K TARE 20100 LB

NET 59000 LB

WEIGH IN 79100 LB

\$132.91

Asphalt

Received by

OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB

NET 25.05 TON

WASHED and SCREENED GRAVEL and SAND

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

Date _____ 19 _____

Name _____

Address: _____ Job: _____

WEIGHT

Concrete

Asphalt

Received by _____

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

DEPT PRESS ALFRED STATION NY 14803 201779 BJ

WASHED and SCREENED GRAVEL and SAND

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

Date _____ 19 ____

Name _____

Address _____	Job _____
---------------	-----------

WEIGHT .

Concrete

Asphalt

Received by _____

"OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB"

DEPT PRESS ALFRED STATION NY 14803 201779 BU

FORM SERVICES, INC.

DEPT: 00

P.O. BOX 80
LINTHICUM, MD 21090
(301) 789-5900
FAX (301) 636-8178

68

"TECHNICAL SUPPORT BEHIND EVERY PRODUCT"

CUSTOMER NO. 1

O.H.H. CORPORATION
4 RESEARCH WAY
PRINCETON NJ. 08540
716-593-7232

SITE NO. 1

CASH SALE
O.H.M CORPORATION
JUST NORTH OF EXIT 8A ON NEW
JERSEY TRPK-RED VEHICLE

ORDER NUMBER

155105

ORDER DATE

PAGE

1 OF

~~SECRET~~
 INU. #1

CUSTOMER P.O. NO.

ORDERED BY

ROUTE

SALESMAN

SHIP VIA

JOHN

01

XX

FBI DELIVERY

ITEM NUMBER

DESCRIPTION

UM

QTY. ORDERED

QTY SHIPPED

QTY. BACK ORDER

DESCRIPTION	QTY	CITY ORDERED	CITY SHIPPED
FSI DRIVER TO MEET OHM DRIVER	JUST	NORTH OF	NEW JERSEY TRKPK

AT 7:00 AM

IF00565

ST 80 (80Z. GEOTEXTILE) XTH EA
15'X300' CLASS C

1

~~415.00~~

PAID IN FULL	444.05
OK # 702221	

DRIVING INSTRUCTIONS

MESSAGES

MISCELLANEOUS:	0.00
FREIGHT:	0.00

MERCHANDISE SUB:	415
7% NJ SALESTAX	29
TOTAL:	444

RECEIVED BY

PRINT NAME

DATE _____

SIGNATURE

THIS DOCUMENT IS SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF
WASHED and SCREENED GRAVEL and SAND

OFFICE
PO BOX 145
ALFRED STATION
NEW YORK 14803
PHONE 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M
Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT	WEIGHT
PRODUCT CRUSHED ITEM 4	
Gravel	
Concrete	
Asphalt	

Received by _____

OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF
WASHED and SCREENED GRAVEL and SAND

OFFICE
PO BOX 145
ALFRED STATION
NEW YORK 14803
PHONE 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M
Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT	WEIGHT
PRODUCT CRUSHED ITEM 4	
Gravel	
Concrete	
Asphalt	

Received by _____

OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB

009995

ALFRED ATLAS GRAVEL and SAND CORPORATION

PRODUCERS OF
WASHED and SCREENED GRAVEL and SAND

OFFICE
PO BOX 145
ALFRED STATION
NEW YORK 14803
PHONE 587-8686

1 1/2% INTEREST WILL BE
CHARGED ON ALL BALANCES
OVER 30 DAYS

PLANT
ALFRED STATION
NEW YORK
PHONE 587-9494

CUSTOMER O-H-M
Date _____ 19__

Name _____

Address _____ Job _____

PRODUCT	WEIGHT
PRODUCT CRUSHED ITEM 4	
Gravel	
Concrete	
Asphalt	

Received by _____

OUR TRUCKING RESPONSIBILITY ENDS AT THE CURB

SEEDS AGWAY FARM SUPPLY. AS IS
SAME AS SUPPLIED TO CANONIC ENVIRONMENTAL

KENTUCKY 31 TALL FESCUE

LOT # T-82802

99.52 % PURE SEED
.22 % OTHER CROP SEED
.02 % WEED SEED
.24 % INERT MATTER

GERMINATION: 90%

ORIGIN: OREGON

TESTED JAN. 1990

NET WEIGHT: 50 LBS.

10-2-91

"Agway, Inc. warrants to the original Purchaser that seed sold in the container has been labeled as required under state and federal seed laws, and that it conforms to the label description. In the event of defective seed, the Warrantor will replace the product or refund the purchase price at the option of the Purchaser, subject to a duty to return the defective seed to the Warrantor at the location purchased, together with evidence of sale."

"No claim or liability shall be asserted, unless the Purchaser reports such claim or liability within (30) days after discovery. The Warrantor's liability is limited in amount to the purchase price of the seed, whether arising from contract, negligence, warranty or any other cause."

"IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED AND EXCLUDED. WARRANTOR SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES."

"The Warrantor is Agway Inc., P.O. Box 4741, Syracuse New York 13221."

S321-34W

KENTUCKY 31 TALL FESCUE

LOT # T-82802

99.52 % PURE SEED
.22 % OTHER CROP SEED
.02 % WEED SEED
.24 % INERT MATTER

GERMINATION: 90%

ORIGIN: OREGON

TESTED JAN. 1990

NET WEIGHT: 50 LBS.

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CERTIFIED SEED



OREGON STATE UNIVERSITY
CORVALLIS, OREGON 97331

KENTUCKY 31
TALL FESCUE

B5-8-KER2

LIMITATIONS OF LIABILITY
APPLICABLE: CALL (503) 754-4513

B- 442690

MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

AGWAY
\$15.00

PERENNIAL RYEGRASS

VARIETY NOT STATED

LOT # T-05615

98.19 % PURE SEED

GERMINATION: 90%

1.01 % OTHER CROP SEED

.02 % WEED SEED

ORIGIN: OREGON

.78 % INERT MATTER

TEST DATE: 4-91

NET WEIGHT: 50 LBS.

Agway Inc. warrants to the original Purchaser that seed sold in this container has been labeled as required under state and federal seed laws, and that it conforms to the label description. In the event of defective seed, the Warrantor will replace the product or refund the purchase price at the option of the Purchaser, subject to a duty to return the defective seed to the Warrantor at the location purchased, together with evidence of sale.

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S356-R3AW