GW - 1

REPORTS

YEAR(S):

1986

FINAL CLOSURE PLAN FOR THE API WASTEWATER PONDS, LANDFILL, AND LANDFILL POND AT THE BLOOMFIELD REFINERY

PREAPARED FOR

BLOOMFIELD REFINING COMPANY

Bloomfield, New Mexico

PREPARED BY

ENGINEERING-SCIENCE
AUSTIN, TEXAS 78722 - 512/477-9901

ES

FINAL CLOSURE PLAN FOR THE API WASTEWATER PONDS, LANDFILL, AND LANDFILL POND AT THE BLOOMFIELD REFINERY

Prepared for

BLOOMFIELD REFINERY
Bloomfield, New Mexico

by

Engineering-Science, Inc.
2901 North Interregional
Austin, Texas 78722

July 1986

TABLE OF CONTENTS

FINAL CLOSURE PLAN FOR THE API WASTEWATER PONDS, LANDFILL, AND LANDFILL POND AT THE BLOOMFIELD REFINERY

INTRODUCTION

This final closure plan has been prepared to ensure that the API wastewater ponds, landfill, and landfill pond are closed in a manner consistent with the interest of human health and the environment. This plan provides information that was promised but that was unavailable in the November 22, 1985 closure plan submittal. Consequently, this closure plan supercedes the closure plan submitted to EPA and NMEID on November 22, 1985.

The subjects addressed in the plan include:

(a) general facility information;

(b) sampling and analytical techniques preceding closure activities;

(c) documentation and recordkeeping of sampling and closure activities; and

(d) an estimate of the quantity of waste material to be removed and the closure costs.

GENERAL FACILITY INFORMATION

The Bloomfield refinery, currently owned and operated by Bloomfield Refining Company (BRC), is located in the northwest corner of the State of New Mexico. The Bloomfield refinery was reportedly constructed in the late 1950s and operated approximately 5 years before being sold to Suburban Propane Corporation in the early 1960s. Plateau, Inc., a subsidiary of Suburban Propane, operated the refinery prior to its sale to the current owner in the fall of 1984. The refinery processes a combination of low sulfur crudes and petroleum which are transported to the refinery by pipeline and truck. Major refinery products include gasoline and diesel fuel, although fuel gas, heavy burner fuel, propane, butane, and other petroleum products are produced in smaller quantities.

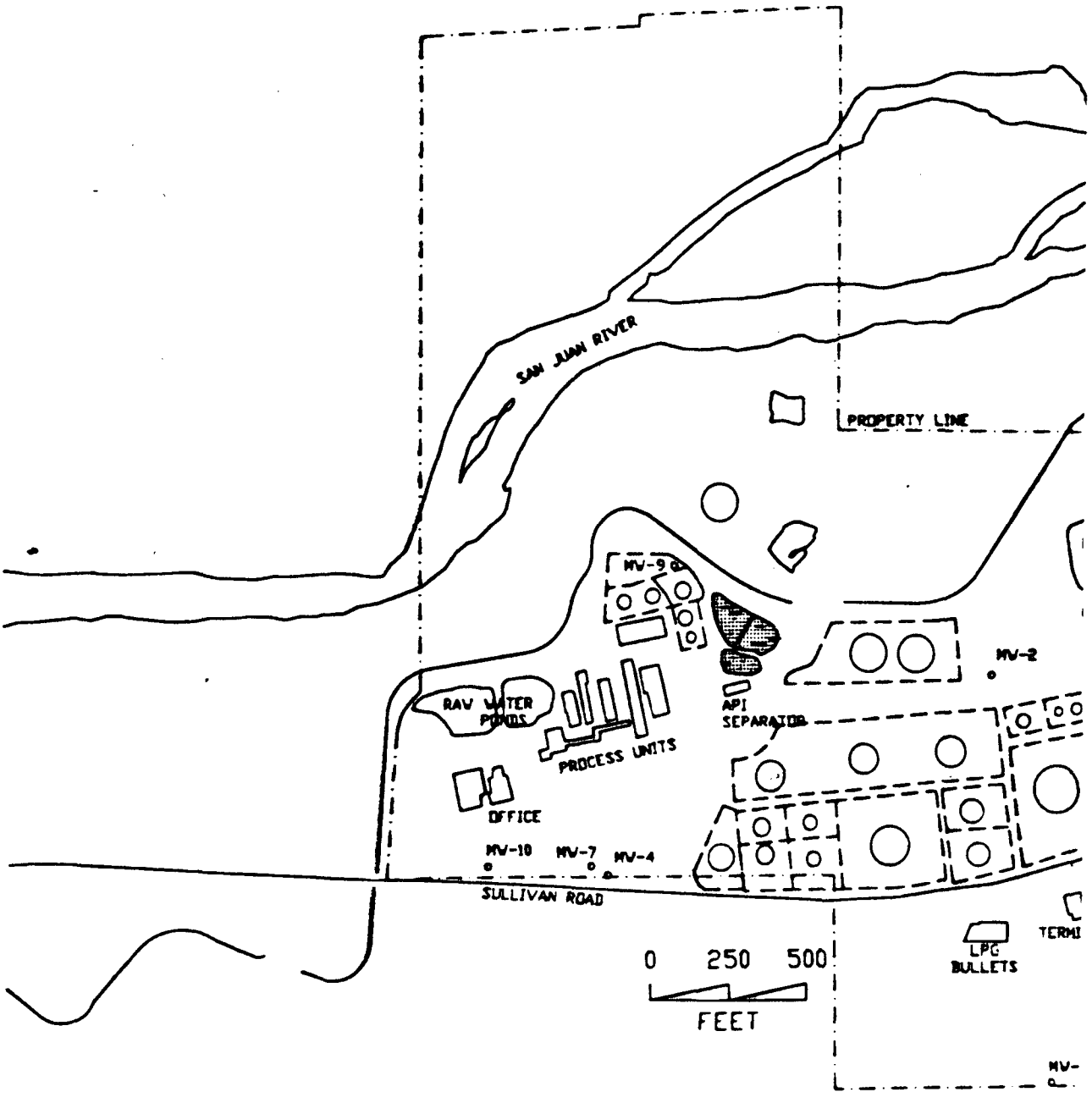
The refinery is situated on a bluff adjacent to the San Juan River, south and slightly east of the town of Bloomfield. Although the refinery owns land on both sides of the San Juan River, all process units and storage areas are located south of the river. Approximate refinery property boundaries are shown on the plot plan presented as Figure 1. The plot plan indicates the locations of the process and tank storage areas, surface waters, and elements of the wastewater treatment system. The areas addressed by the closure plan (API wastewater ponds (designated the NOWP and SOWP by EPA), landfill, and landfill pond) are also indicated. These areas are discussed in the following paragraphs.

Refinery process wastewater is treated for primary oil removal in an API separator located east of the major refinery process units. Following the API separator, wastewater flows to two API wastewater ponds located north of the API separator and south of the Hammond Ditch. The north API wastewater pond is divided by a concrete wall into two sections. In 1983, these ponds were lined with a 100-mil high-density polyethylene liner by Permanent Lining Systems of Odessa, Texas. A french drain collection system consisting of 4-inch PVC perforated pipe also was installed at this time to detect any leakage through the pond liner at a common observation well.

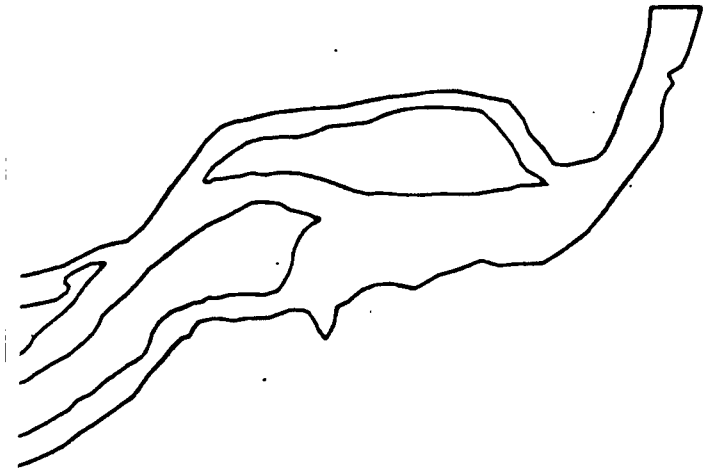
Prior to the installation of the pond liners, residual solids from the API wastewater ponds were removed and tested for the EP-toxicity characteristic based on leachable lead and chromium concentrations. The samples also were tested for total lead and chromium concentrations. The solids were found to be nonhazardous and were disposed of on-site in a depression (designated the "landfill by EPA) located southeast of the solar evaporation ponds and north of the spray irrigation area and Sullivan Road.

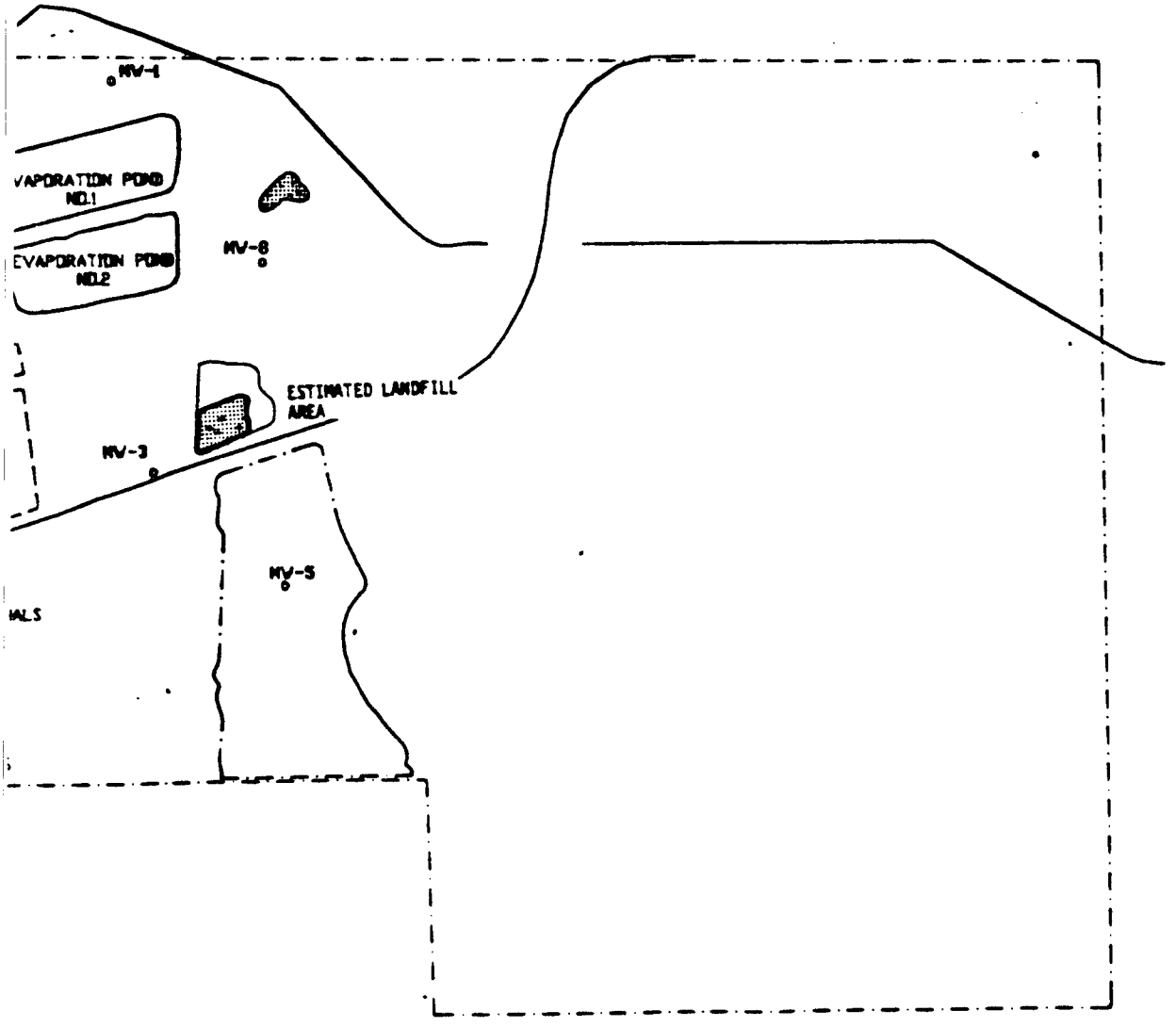
The area designated by EPA as the "landfill pond" is a natural depression resulting from blockage of an existing arroyo during construction of the Hammond Ditch. The landfill pond is located approximately 200 feet due east of the solar evaporation ponds and northeast of the landfill. Water in the landfill pond is believed to originate primarily in the Hammond Ditch, which is located just north and east of the area. The solar evaporation pond may also contribute to the water in the pond.

FIGUR
BLOOMFIELD REFINE



E 1
RY FACILITY MAP





CLOSURE ACTIVITIES

In accordance with the consent agreement with EPA and NMEID Bloomfield Refining Company will close the API wastewater ponds, landfill, and landfill pond. This closure plan outlines the steps which will be undertaken to adequately close these facilities. Following approval of this plan by the New Mexico Environmental Improvement Division (NMEID), Bloomfield Refining Company will initiate closure activites within 30 days and complete closure within a 6-month time frame. Upon completion of closure, Bloomfield Refining Company will submit to the NMEID Director certification that the facilities have been closed out in accordance with this plan.

Pursuant to the Consent Agreement and Final Order dated November 26, 1985, the following provisions are incorporated into this closure plan:

Storage of Hazardous Waste

BRC shall not store any hazardous waste on site, including its transportation terminal, except to the extent that such storage is authorized for up to ninety (90) days pursuant to 40 CFR Part 262 and corresponding New Mexico regulations at HWMR-2. BRC shall not treat or dispose of any hazardous waste on site, including its transportation terminal.

Discharge of Hazardous Waste

BRC shall not introduce any 1,1,1-trichloroethane, or any other hazardous waste listed at 40 CFR Part 261, Subpart D, into its Bloomfield Refinery sewer system.

API Separator Operation

BRC shall insure that API Separator Sludge (Waste Code K051) is not "re-suspended and carried over" from the Bloomfield Refinery API Separator, as described in the Memorandum of the Director, Office of Solid Waste, U.S. EPA, dated December 7, 1984. In order to effect this requirement, BRC shall clean out the facility's API Separator not less frequently than every two years, or whenever the API Separator Sludge level reaches a height of 2.5 feet above the base of the API Separator, whichever occurs first. Any sludge removed from the API Separator will be properly manifested and handled as a hazardous waste. This procedure will be documented in the facility's operating record.

Slop Oil Tank Operation

BRC shall discharge only wastewater from the Slop Oil tank to the API Separator without oily emulsion solids, and shall document its efforts as performed, to insure the same in the facility operating record. Any slop oils in the tank shall be returned to the refinery process and commingled with normal process streams; and any slop oil emulsion solids removed from the tank will be properly handled as hazardous waste, including manifesting if taken off-site.

Spent Caustic Tank

BRC shall promptly repair any leaks that should occur in the caustic tank or caustic tank piping and shall install a containment dike around the base of the caustic tank. When removed from the spent caustic tank, material shall be properly handled as a hazardous waste. This may include transportation off-site for legitimate recycling, provided that the material is properly manifested as a hazardous waste, if required, and all other applicable regulatory requirements are met, including documentation in the facility operating record.

North and South Evaporation Ponds

In the event that materials are removed from the north evaporation pond (NEP), or the south evaporation pond (SEP), at any time, BRC shall analyze such material prior to any removal to determine whether said material is a hazardous waste in accordance with Subpart C of 40 CFR Part 261 and its New Mexico equivalent regulations at HWMR-2, including specifically, with respect to the characteristic of "reactivity", whether such removal, or subsequent handling, may result in the generation of toxic gases in sufficient quantities, to present a danger to human health or the environment. Said reactivity analysis shall be conducted in accordance with the method set forth in the July 12, 1985, memorandum addressed from Eileen Claussen, Director of the Characterization and Assessment Division, U.S. EPA, to Solid Waste Branch Chiefs, Regions I to X, U.S. EPA, entitled: "Interim Thresholds for Toxic Gas Generation Reactivity (261.23(1)(5))". In the event such material would be characterized as hazardous waste following the guidelines of said memo after such analysis, or meet the definition of any other hazardous waste characteristic, BRC shall properly

handle such material as hazardous waste. BRC shall also comply with 40 CFR 262.11 and the equivalent New Mexico regulations at HWMR-2, and other requirements when and where applicable.

API Wastewater Ponds

Although all visible contaminated soil was removed from the API wastewater ponds when the pond liners were installed, EPA and NMEID expressed concern that some residual contamination remained. Therefore, the subsurface soils beneath the pond liners were tested for residual contamination during the week of October 14, 1985, after the removal of all hazardous waste from the ponds. Appendix A includes a closure certification by the sampler, a registered professional engineer. These materials were handled as hazardous wastes.

A total of 12 samples were collected by penetrating the liner at six approximately equally spaced locations in each pond and collecting two samples in each location with a clean split-spoon sampler. Sampling site locations are shown on Figures 2 and 3. The pond liner was penetrated for sampling purposes by cutting a clean hole of sufficient size to admit the split-spoon sampler. Following the collection of samples, the liner was repaired with a high-density polyethylene patch, joined to the existing liner with a hot (approximately 460°F) polyethylene resin weld. The sampling and liner repair was not conducted under wet conditions or inclement weather which could affect the integrity of the analytical results or weld. Each split-spoon sampler was cleaned prior to sampling with a detergent wash, followed by a distilled water rinse, acetone wash, and final distilled water rinse. The two samples in each location were collected at depths of 0-6 inches and 6-12 inches, respectively. Three samples were composited at each depth from pairs of the closest adjacent grab samples. The six total composite samples in each pond (three at each depth) were analyzed for the indicator parameters benzene, toluene, xylene, phenols, total lead, and total chromium. The analytical results for these parameters are included in Appendix B. Although small concentrations of xylenes were detected in a single composite sample in the south API pond, none of these data indicate significant residual BTX or phenolic contamination beneath the pond liners.

FIGURE 2
NORTH API POND

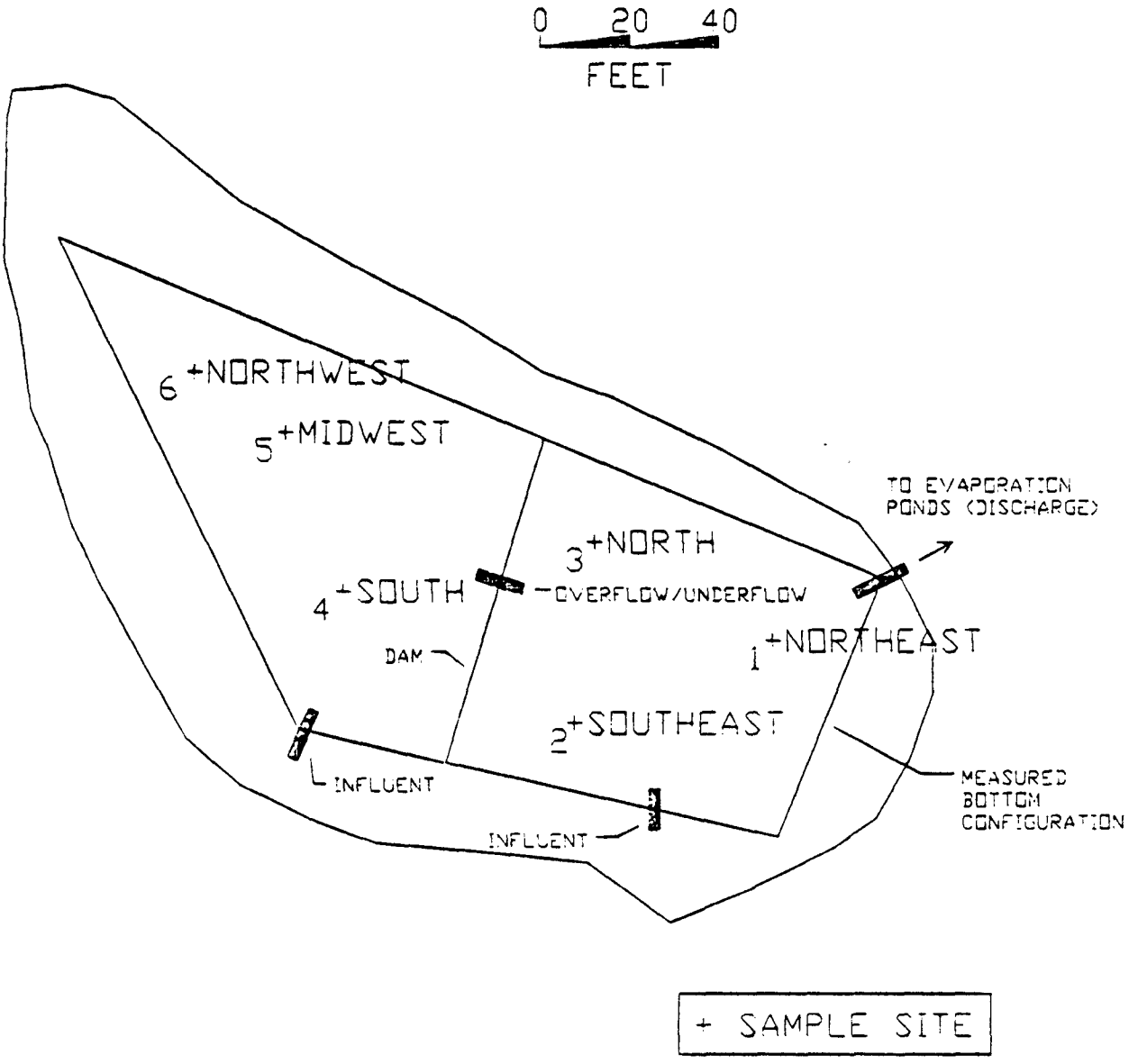
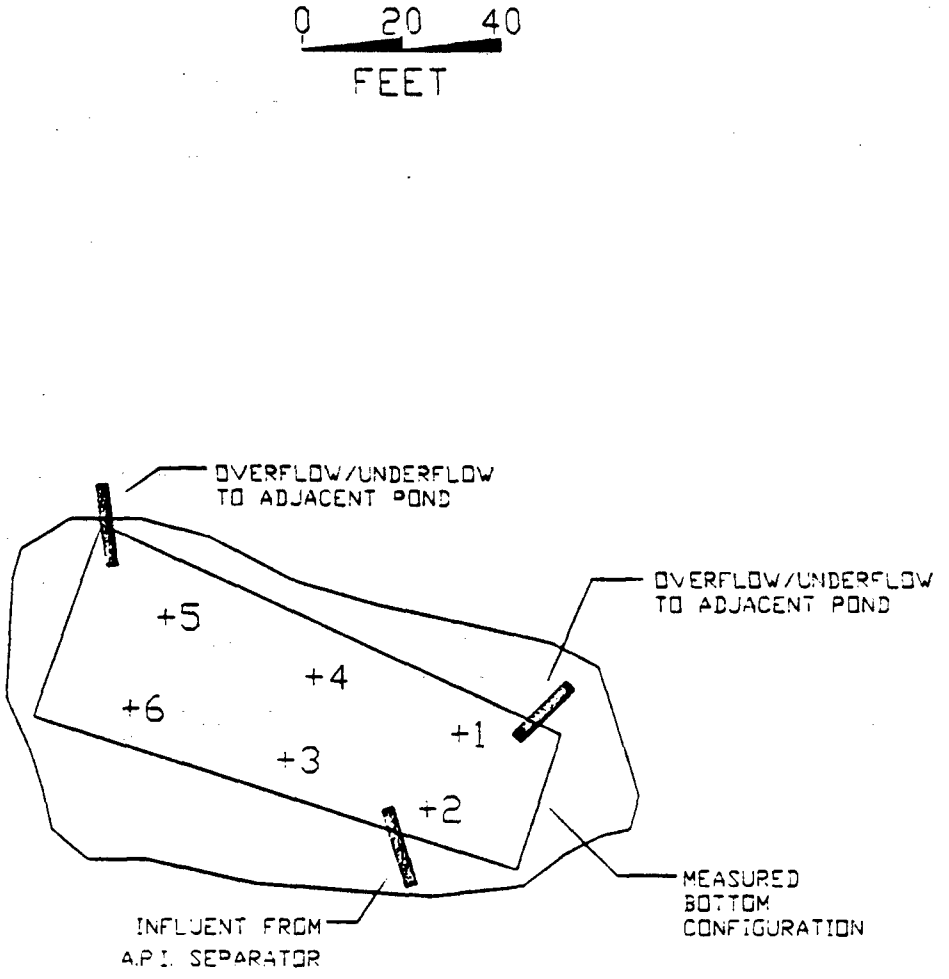


FIGURE 3
SOUTH API POND



In the south API wastewater pond, a single grab sample collected in the top 6 inches near the influent end of the pond was analyzed for the "Skinner List" of compounds expected to be present in petroleum refinery wastes. This list and the analytical methods being used are presented in Table 1. None of the "Skinner List" constituents were present at detectable concentrations in this sample.

The analytical data presented in Appendix B indicates no appreciable residual contamination in the top 12 inches immediately beneath the ponds. Based on this finding, and the removal of material from the ponds as documented in Appendix A, closure of the API wastewater ponds should be deemed complete.

Landfill

The landfill area alleged to have been utilized for disposal of residual solids from the API wastewater ponds was divided into four quadrants for subsequent soil testing. Small excavations were made at two locations in a backhoe trench in each quadrant, that penetrated all visible waste material. Grab samples were collected during the week of October 14 with clean split-spoon samplers at depths of 0-6 and 6-12 inches below this zone and were composited into two composite samples in each quadrant (one at each depth). Prior to sampling, each spilt-spoon sampler was cleaned with a detergent wash, followed by a distilled water rinse, acetone wash, and final distilled water rinse. All eight composite samples were analyzed for the following indicator parameters: phenols, benzene, toluene, xylene, total lead, and total chromium. Data on soil benzene, toluene, xylene, and phenolic concentrations included in Attachment B indicate none of these parameters were detectable in any of the soil samples collected immediately below visible waste material. Therefore, closure activities for this area will consist of removal and disposal of all visible contaminated material.

Sampling and laboratory analyses will be required to determine classification of the material to be disposed. Appropriate guidelines for health and safety precaution will be developed pending receipt of laboratory results. If the material is determined to be hazardous, a site-specific health and safety plan will be produced to address requisite worker attire and necessary decontamination procedures for both workers and equipment. Disposal of the material will be at an approved landfill

TABLE 1

PROPOSED CONSTITUENTS AND ANALYTICAL METHODS
FOR SELECTED SOIL SAMPLES

Skinner List Volatile Organics
Method 8240

Acrolein
Acrylonitrile
Benzene
Carbon Disulfide
Carbon tetrachloride
Chlorobenzene
Chloromethane
1,2 Dibromoethane
Chloroform
Dichloromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
Dichloropropane
Methyl ethyl ketone
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
Toluene
1,2-trans-Dichloroethylene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene

Skinner List Acid Organics
Method 8270

2-Chlorophenol
o-Cresol
m/p-Cresol
2,4-Dimethylphenol
4,6-Dinitro-o-phenol
2,4-Dinitrophenol
2-Nitrophenol
4-Nitrophenol
p-Chloro-m-cresol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol

Indicator Parameters

Benzene - Method 8240
Toluene - Method 8240
Xylene - Method 8240
Phenolics - Method 9065
Lead - Method 3050 followed by ICP
Chromium - Method 3050 followed by ICP

Skinner List Base/Neutral Organics
Method 8270

Anthracene
Benzidine
Benz(c)acridine
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Bis(2-ethylhexyl)phthalate
Butyl Benzyl phthalate
2-Chloronaphthalene
Chrysene
Dibenz(a,h,)acridine
Dibenz(a,j)acridine
7,12-DimethylBenz(a)anthracene
Dibenz(a,h)anthracene
7H Dibenzo(c,g)carbazole
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Diethyl phthalate
Dimethyl phthalate
Di-n-butyl phthalate
1,2-Diphenylhydrazine
Fluoranthene
Indene
Indeno(1,2,3-cd)pyrene
Methyl Benz(c)phenanthrene
3-Methylcholanthrene
Methyl Chrysene
Naphthalene
Nitrobenzene
n-Nitrosodiethylamine
5-Nitrosodiethylamine
Quinoline
Phenanthrene
Pyrene
1,2,4-Trichlorobenzene
Trimethyl Benz(a)anthracene

via standard chain-of-custody manifesting procedures. Likewise, if the material is found to be nonhazardous, no health and safety work plan will be generated and manifesting of the disposal of contaminated material will not be required.

Landfill Pond

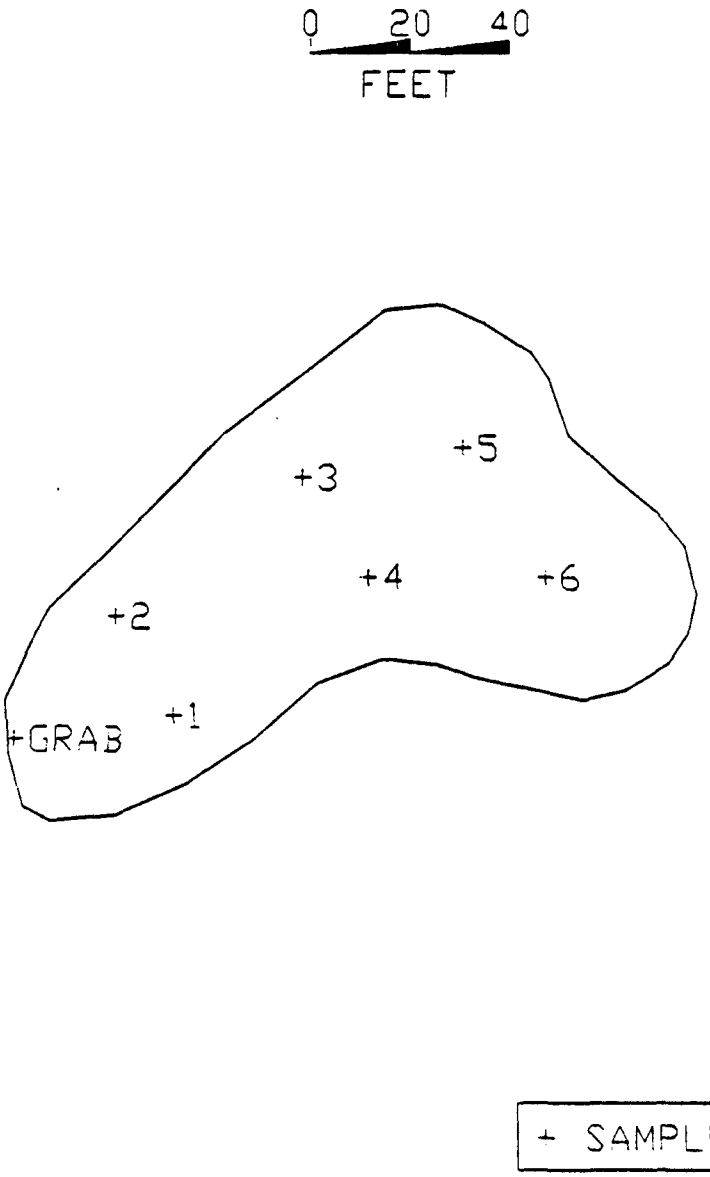
The landfill pond was sampled using a flat-bottom boat. Sample locations are summarized on Figure 4. Sediment samples of the landfill pond were collected at two sediment depths (0-6 and 6-12 inches) with clean split-spoon samplers at six approximately equally spaced locations in the pond. Each spilt-spoon sampler was cleaned prior to sampling with a detergent wash, followed by a distilled water rinse, acetone wash, and final distilled water rinse. Soil samples at each depth were composited into three composite samples of the closest pairs, resulting in six total composite samples. These samples were analyzed for the indicator parameters benzene, toluene, xylene, phenols, total lead, and total chromium. In addition, a single grab sample was collected along the bank at a depth of 0-6 inches in the area of the pond nearest the south evaporation pond and the landfill. This sample was analyzed for the list of compounds shown in Table 1, and no compounds were found at detectable levels. As shown in Appendix B, data on benzene, toluene, xylene, and phenolics in the pond sediments do not indicate significant organic contamination. In only one sample, a composite of the top 6 inches at stations 3 and 4, was an indicator compound found at a detectable concentration. In this sample, benzene was detected at a 1.3 ug/kg concentration, barely above the detection limit. BTX compounds and phenolics were not found in any other landfill pond sediment samples.

Based on the analytical results of sediment samples collected in the landfill pond, there is no significant residual contamination in the top 12 inches of sediments. Therefore, closure of the landfill pond should be deemed complete.

Chain of Custody Procedures

All samples were preserved on ice and delivered to the laboratory in an insulated cooler. The chain of custody record was maintained to document that no unauthorized handling of the samples occurred enroute to

FIGURE 4
LANDFILL POND



the laboratory. It also contains a record of parameters requested for analysis. The form was signed and dated by the individual who actually collected the sample.

CLOSURE COST ESTIMATES

Based on the size of the areas addressed, assumed depth of contamination, and the mobility of the compounds believed to be present, a total closure cost of $290,950, including contingencies, was estimated. A detailed breakdown of these estimated costs is presented in Table 2. The major costs are associated with the disposal of waste material from the landfill. Removal and disposal of an estimated 2,500 cubic yards of material from the landfill area was assumed. Actual amounts could be higher or lower, depending on the areal extent of the visually contaminated material.

CLOSURE SCHEDULE

Implementation of this closure plan will be initiated within 30 days of final approval by NMEID. Specific closure activities have been identified below with respect to estimated time for completion:

	Item	Time
(1)	Contractor bidding/contract negotiation, excavation	4 weeks
(2)	Landfill sampling and laboratory analyses	2 weeks
(3)	Contractor mobilization	1 week
(4)	Material disposal	2 weeks
(5)	Contractor demobilization	1 week
(6)	Contingencies	2 weeks
	Total time	12 weeks

The 12-week period should be sufficient to complete all closure activities. However, this timeframe is exclusive of any time that may be required for regulatory input.

DOCUMENTATION AND RECORDKEEPING

The Facility Coordinator will maintain records of all closure activities, including the dates and nature of all work conducted during the

TABLE 2

ITEMIZED ESTIMATED CLOSURE COSTS

Activity	Estimated Cost
API Wastewater Pond Closure	
Soil sampling and analysis	$ 3,500
Landfill Closure	
Soil sampling and analysis	2,000
Contaminated soil removal and disposal (as necessary)	250,000
Backfilling and grading (as necessary)	5,000
Landfill Pond Closure	
Soil sampling and analysis	2,000
Miscellaneous Costs	
Closure Certification	2,000
Contingencies (10 percent)	26,450
Total Estimated Closure Costs	$290,950

closure process. All manifests or other documentation of off-site shipment of waste material or contaminated soil will be maintained.

Following the successful completion of on-site closure activities, both Bloomfield Refining Company and an independent registered professional engineer will certify that the facilities have been closed in accordance with the approved closure plan. This documentation will be maintained by the Facility Coordinator, and a copy of the closure certification will be provided to NMEID.

APPENDIX A

I hereby certify that all liquid and sludge material was removed from both the north and south API wastewater ponds prior to sampling in accordance with 40 CFR ¶265.111, and that sample collection was conducted in accordance with the document submitted to EPA in 1985 entitled "A Sampling and Closure Proposal for the API Wastewater Ponds, Landfill, and Landfill Pond at the Bloomfield Refinery".

James E. Rumbo

James E. Rumbo, P.E.
Texas Registration Number 57048

James E. Rumbo

APPENDIX B