A SAMPLING AND CLOSURE PROPOSAL FOR THE API WASTEWATER PONDS, LANDFILL, AND LANDFILL POND AT THE BLOOMFIELD REFINERY

Prepared for

BLOOMFIELD REFINING COMPANY

by

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INTRODUCTION

This sampling and closure proposal has been prepared to ensure that sampling of the API wastewater ponds, landfill, and landfill pond will be conducted in a manner which will ensure representative samples of the areas are collected to provide the information necessary to develop adequate closure criteria.

The subjects addressed in the proposal include:

(a) general facility information, including an estimate of the quantity of waste material involved;

(b) sampling and analytical techniques preceding closure activities;

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

(d) an estimate of closure costs.

No detailed closure or post-closure provisions are included in this proposal since these will be developed following an evaluation of the analytical results.

GENERAL FACILITY INFORMATION

The Bloomfield refinery, currently owned and operated by Bloomfield Refining Company, 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 sampling and closure proposal (API wastewater ponds, landfill, and landfill pond) are also indicated. These areas are discussed in the following paragraphs.

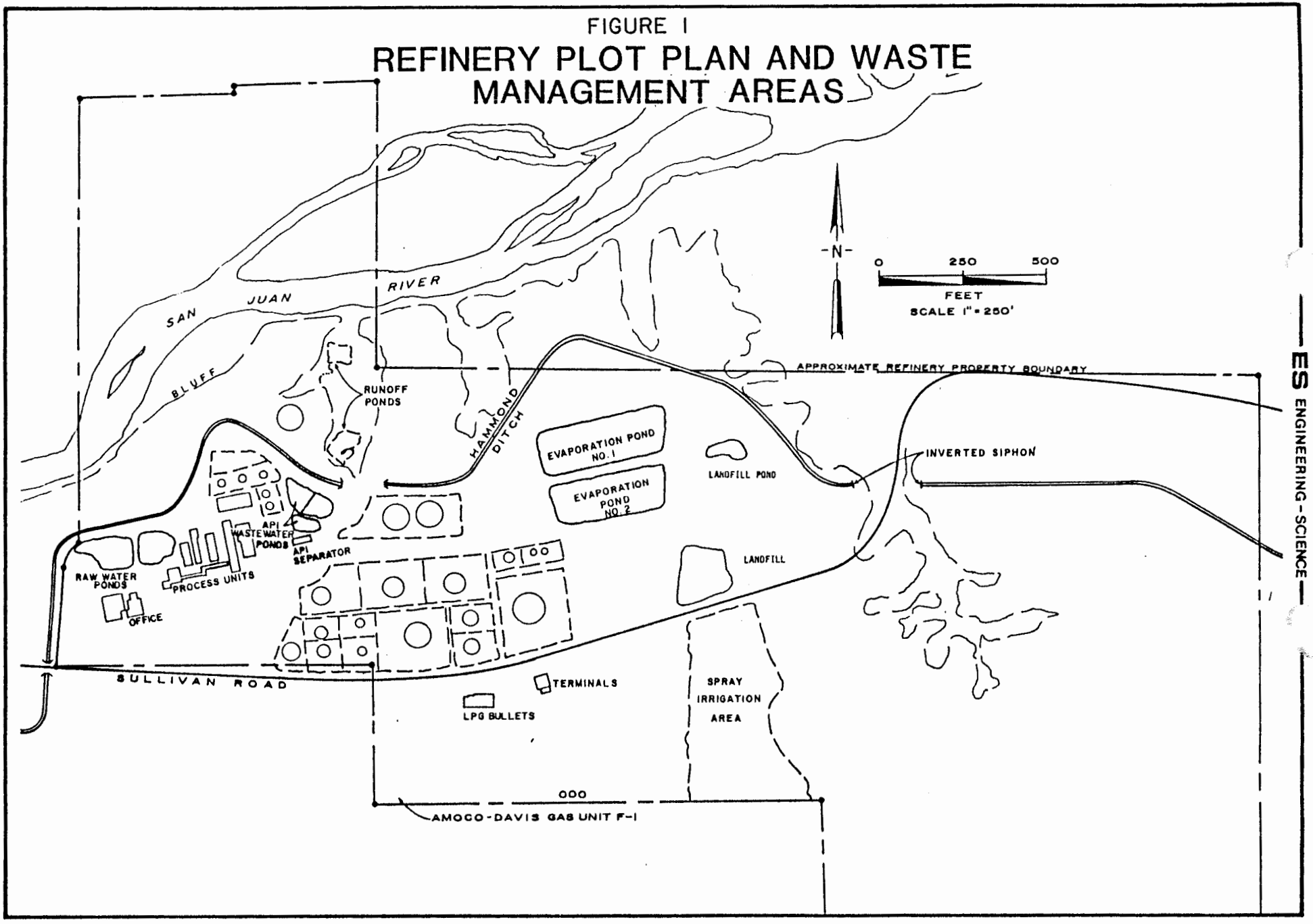
Refinery process wastewater is treated for primary oil removal in an API separator located east of the major refinery process units. Following the API separator, wastewater flows to two API wastewater ponds located north of the API separator and south of the Hammond Ditch. The north API wastewater pond is divided by a berm 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 collect any leakage through the pond liner in a common observation well or sump.

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 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.

FIGURE 1

REFINERY PLOT PLAN AND WASTE MANAGEMENT AREAS



CLOSURE ACTIVITIES

Bloomfield Refining Company is considering closure of the API wastewater ponds, landfill, and landfill pond to eliminate areas which could represent potential sources adding to existing subsurface contamination at the refinery. This sampling and closure proposal will provide information necessary to develop the detailed closure plan after analytical results are evaluated. Following review and approval of the detailed closure plan by the New Mexico Environmental Improvement Division (NMEID), Bloomfield Refining Company proposes to 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 the approved plan.

API Wastewater Ponds

Although all visible contaminated soil was removed from the API wastewater ponds when the pond liners were installed, there is a possibility that some residual contamination remains. Therefore, the subsurface soils beneath the pond liners will be tested for residual contamination. A total of 12 samples will be collected by penetrating the liner at six approximately equally spaced locations in each pond and collecting two samples in each location with a clean tube or split spoon sampler. The two samples in each location will be collected at depths of 0-6 inches and 6-12 inches, respectively. Three samples will be composited at each depth from pairs of the closest adjacent grab samples. The six total composite samples in each pond (three at each depth) will be analyzed for the indicator parameters benzene, toluene, xylene, phenols, total lead, and total chromium. In the south API wastewater pond, a single grab sample collected in the top 6 inches near the influent end of the pond will be analyzed for the "Skinner List" of compounds expected to be present in petroleum refinery wastes. This list and proposed analytical methods are presented in Table 1.

Following the testing of soil samples, closure criteria will be developed with the input of NMEID and EPA. Any contaminated soil will be removed as required, the excavation will be backfilled as appropriate and the pond liner will be replaced or repaired. If the excavation damages the leachate collection system, it also will be replaced or repaired.

TABLE 1

PROPOSED CONSTITUENTS AND ANALYTICAL METHODS
FOR SELECTED SOIL SAMPLES

Acetonitrile
2-Propenal
Acrylonitrile
Acryline
Antimony
Arsenic
Barium
Benz(c)acridine
Benz(a)anthracene
Benzene
Benzenethiol
Benzidine
Benzo(b)fluoranthene
Benzo(j)fluoranthene
Benzo(a)pyrene
Benzyl chloride
Beryllium
Bis(2-chloroethyl) ether
Bis(2-ethylhexyl)phthalate butyl benzyl phthalate
Cadmium
Carbon disulfide
Chloro-m-cresol
Chlorobenzene
Chloroform
Chloromethane
Chloronaphthalene
Chlorophenol
Chromium
Chrysene
Cresols
Crotonaldehyde
Cyanide
Dibenz(a,h)acridine
Dibenz(a,j)acridine
Dibenz(a,h)anthracene
Dibenzo(c,g)carbazole
Dibenzo(a,e)pyrene
Dibenzo(a,h)pyrene
Dibenzo(a,i)pyrene
2-Dibromoethane
di-n-butyl phthalate
chlorobenzenes
2-Dichloroethane
trans-1,2-Dichloroethane
1-Dichloroethylene

TABLE 1 (continued)

PROPOSED CONSTITUENTS AND ANALYTICAL METHODS
FOR SELECTED SOIL SAMPLES

Dichloromethane
Dichloropropane
Dichloropropanol
Diethyl phthalate
7,12-Dimethyl-benz(a)anthracene
2,4-Dimethylphenol
2,4-Dinitrotoluene
Di-n-octyl phthalate
1,4-dioxanet
1,2-Diphenylhydrazine
Ethyleneimine
Ethylene oxide
Fluoranthene
Formaldehyde
Hydrogen sulfide
Indeno(1,2,3-cd)pyrene
Lead
Mercury
Methanethiol
3-Methylcholanthrene
Naphthalene
Nickel
p-Nitroaniline
Nitrobenzene
4-Nitrophenol
Pentachlorophenol
Phenol
Pyridine
Selenium
Tetrachloroethanes
Tetrachloroethylene
Toluene
Trichlorobenzenes
Trichloroethanes
Trichloroethene
Trichlorophenols
Vanadium

All analyses will be done in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, "SW-846, Second Edition, July 1982, using Method 3050 for metals analyses, Method 8240 for volatile organics, Method 9010 for cyanide, , Method 8250 or 8270 for semivolatile organics.

The pond liner will be penetrated by cutting a clean hole of sufficient size to admit the necessary sampling equipment. Following the collection of samples, the liner will be repaired with a high-density polyethylene patch. The patch will be joined to the existing liner with a hot (approximately 460°F) polyethylene resin weld. No sampling or liner repair work will be conducted under wet conditions or inclement weather which could affect the integrity of the weld.

Landfill

Prior to developing closure criteria for the landfill, the landfill area will be divided into four approximately equal areas for subsequent soil testing. Small excavations will be made at two locations in each quadrant, penetrating all visible waste material and obviously contaminated soil. Grab samples will be collected with clean tube or split-spoon samplers at depths of 0-6 and 6-12 inches below this zone and will be composited into two composite samples in each quadrant (one at each depth). All eight composite samples will be analyzed for the following indicator parameters: phenols, benzene, toluene, xylene, total lead, and total chromium. Criteria for landfill closure will be developed following evaluation of the analytical results of the soil samples, in conjunction with NMEID and EPA.

Landfill Pond

Sampling of the landfill pond will be conducted in the zone immediately beneath all visibly contaminated material for the purpose of developing closure criteria. As with the landfill, small excavations will be made to the bottom of any visibly contaminated zones. Soil samples will be collected at two depths (0-6 inches and 6-12 inches) with clean tube or split-spoon samplers at six approximately equally spaced locations in the pond. Soil samples at each depth will be composited into three composite samples of the closest pairs, resulting in six total composite samples. These samples will be analyzed for the indicator parameters benzene, toluene, xylene, phenols, total lead, and total chromium. In addition, a single grab sample will be collected at a depth of 0-6 inches in the area of the pond nearest the south evaporation pond and the landfill. This sample will be analyzed for the list of compounds shown in Table 1. Analytical results

for these proposed samples will be utilized to develop closure criteria for the landfill pond.

Chain of Custody Procedures

All samples will be preserved appropriately and delivered to the laboratory within EPA-recommended holding times. Normally, the samples will be iced and placed in an insulated cooler for shipment. The chain of custody record will serve to document that no unauthorized handling of the samples occurred enroute to the laboratory. It also contains a record of parameters requested for analysis. Relevant information about each sample container will be written on the form. Preservation methods also will be indicated. The form will be signed and dated by the individual who actually collected the sample. The names of any commercial delivery services used also will appear on the chain of custody record.

CLOSURE COST ESTIMATES

Although it is not possible to determine closure costs accurately prior to the sampling and analysis proposed in this plan and the development of closure criteria, an educated estimate can be made on the basis of the size of the areas addressed, probable depth of contamination, if present, and the mobility of the compounds believed to be present. Based on these variables, a total closure cost of $388,300, including contingencies, was estimated. A detailed breakdown of these estimated costs is presented in Table 2. The major costs are associated with the possible disposal of contaminated soil or waste material. For the API wastewater ponds and landfill pond, it was assumed for purposes of estimating closure costs that removal and disposal of approximately 1 foot of contaminated soil would be required. Removal and disposal of an estimated 2,500 cubic yards of material from the landfill area also was assumed. Actual amounts could be higher or lower, depending on the closure criteria for these areas and the degree of contamination of the remaining soil.

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
Contaminated soil removal and disposal (as necessary)	50,000
Backfilling, grading, and liner replacement (as necessary)	10,000
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
Contaminated soil removal and disposal (as necessary)	18,000
Backfilling and Grading (as necessary)	10,000
Miscellaneous Costs	
Closure Certification	2,000
Contingencies (10 percent)	35,300
Total Estimated Closure Costs	$388,300

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.