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ON SCENE COORDINATOR'S REPORT

CERCLA IMMEDIATE REMOVAL PROJECT

NO. 6894-05-050

U.S. SCRAP

CHICAGO, ILLINOIS

BRIAND C. WU, ON-SCENE COORDINATOR

Region V
Waste Management Division
Emergency Response Section

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SEPTEMBER 1986

EXECUTIVE SUMMARY

On August 16, 1985, the United States Environmental Protection Agency (U.S. EPA) initiated an immediate removal action at the U.S. Scrap site in Chicago, Illinois to extinguish an underground fire. The U.S. Scrap site was an abandoned drum recycling facility. The site is contaminated with polychlorniated biphenyls (PCBs), pesticides, and numerous organic solvents. This immediate removal action addressed only the underground fire and the railroad embankment where shock-sensitive chemical were allegedly buried. Over 120 cubic yards of soil contaminatd with sulfides and organic solvents, 60 cubic yards of crushed drums and debris, one 55-gallon drum of flammable solids, one 55-gallon drum of PCBs, three 55-galllon drums of cyanide waste, and 76 55-gallon drums of organics were removed and properly disposed of. The fire was extinguished by capping with clay, and the railraod embankment was excavated. The cost for these activities was $722,880.53 of which $534,338.13 was for extramural contractor cost. The removal was completed on July 25, 1986. The On-Scene Coordinator was Briand C. Wu.

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1.0 BACKGROUND

1.1 Location

The U.S. Scrap site is located at lattitude 41° 40' 30" and longitude 87° 36' 39". The address is 12300 South Cottage Grove Avenue, Chicago, Illinois (Figure 1). The immediate area around the facility is mainly industrial; however, there are residential areas located approximately one-half mile to the west and one mile to both the north and south of the site.

The Little Calumet River is approximately 1.5 miles south of the site. The Little Calumet River flows eastward into Lake Calumet and Lake Michigan which are approximately 1.5 miles and 5 miles northeast of the site, respectively.

The site covers approximately three acres, and is bordered: to the north by Keywell Industries (metal scrap facility); to the east by Keywell Industries and the Metropolitan Sanitary District of Greater Chicago (MSD) sewage treatment plant; to the south by the MSD plant; and to the west by the embankment of the Chicago and Western Indiana Railroad.

The site geology of U.S. Scrap consists of 10-15 feet of surface fill material, and Niagaran dolomite of the Silurian system overlain by approximately 65 feet of silty-clayed glacial till.

1.2 Initial Situation

From the late 1960's to 1975, Mr. Steve Martell conducted drum reclamation activities at the U.S. Scrap site. Nonreclaimable drums and wastes from reclaimable drums were emptied into on-site pits. Waste received at U.S. Scrap for on-site incineration was allegedly dumped on site. Prior to these activities by Mr. Martell, a malting plant operated on the site.

During its period of operation as a waste disposal facility, the site was inspected by the MSD and the City of Chicago's Environmental Control Division. The MSD's concern over run-off from the U.S. Scrap site entering into adjacent MSD property resulted in a cooperative agreement to improve drainage at the U.S. Scrap site. The cooperative agreement involved the Illinois Attorney General (IAG), the Illinois Environmental Protection Agency (IEPA), the City of Chicago, and Mr. Martell.

Inspection of the U.S. Scrap site in 1980 by the IEPA revealed: approximately 400 55-gallon drums of waste scattered about the surface of the site; liquid wastes stored in eight concrete silos; scattered surficial deposits of waste; several lagoons of waste; and sludge within on-site drainage swales.

Under an agreement with the United States Environmental Protection Agency (U.S. EPA), IEPA, and the City of Chicago, Mr. Martell removed the surface drums, the liquids within the silos, and approximately 10,000 gallons of sludge from the draninage swales.

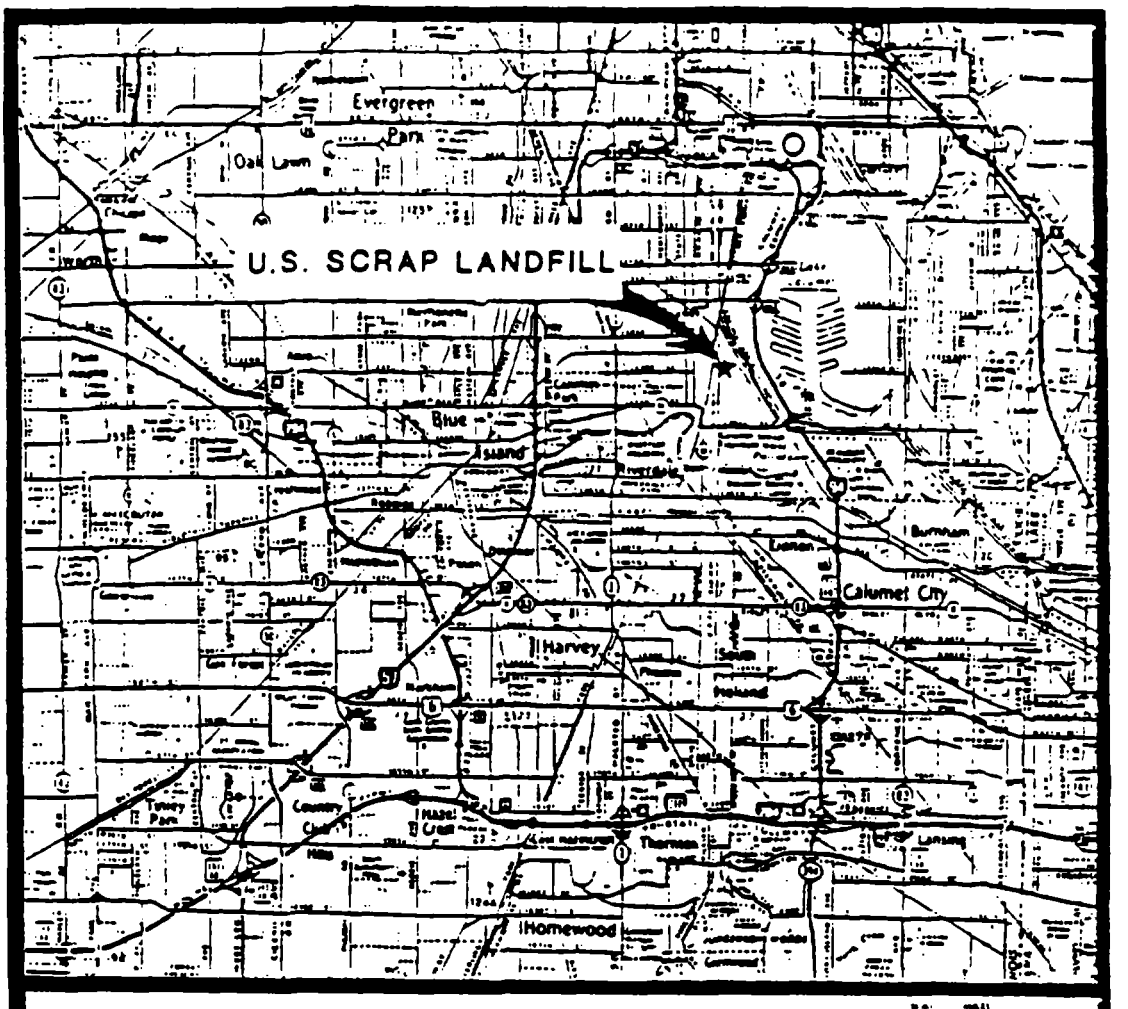


FIGURE 1 SITE LOCATION MAP
U.S. SCRAP LANDFILL
CHICAGO, IL.

The IAG filed suit against Mr. Martell in 1980, citing him for illegal open dumping and refuse disposal without a permit. The suit restricted further waste disposal at the site, and requested Mr. Martell to remove the surface wastes from the site. The IAG also requested that Mr. Martell take appropriate remedial actions to manage the wastes buried at the site, but this had not resulted in responsible party corrective action. In 1981, the IAG contracted STS Consultants to conduct an extent-of-contamination survey.

The abandoned site was brought to the attention of the U.S. EPA on August 16, 1985, when MSD officals reported a landfill fire on the site to the IEPA. Due to the potential threats to human health and the environment posed by the site, the U.S. EPA upon the request of the IEPA responded to the fire and subsequently initiated an immediate removal action. The immediate removal action ultimately addressed both the landfill fire and the allegedly buried shock sensitive materials on the railroad embankment.

1.3 Threats to Human Health and the Environment

The landfill fire produced a threat of inhalation of volatile organic gases and various gaseous combustion products (documented by air monitoring during the fire). Left unattended, the landfill fire could have intensified and emitted higher volumes and concentrations of organic gases, thus increasing the inhalation threat. There was also a threat of explosion of wastes ignited by the fire. These threats to the workers (on adjacent properties) and residents near the site demanded the extinguishment of the landfill fire.

Observation of drums protruding from the embankment along the railroad tracks on the western border of the site (Figure 2) and information from a former employee of U.S. Scrap, identified a significant threat to human health and the environment. The estimated 300-400 drums allegedly contained pesticides, shock-sensitive ethers, lab-packs, and hospital wastes. The hospital wastes could include radiated biological research wastes, radioactive scintillation cocktails, blood specimens, and tissue samples.

There is a large volume of containerized and noncontainerized hazardous waste buried in the central landfill areas of the site which pose a threat to human health and the environment. Since these wastes are buried at depths estimated up to 40 feet below the surface, the landfilled material did not present an immediate threat and, therefore, was not addressed in the immediate removal action. Surface and subsurface soil sampling on-site by the Technical Assistance Team (TAT) and previously by the IEPA revealed contamination with organic compounds (including polychlorniated biphenyls [PCBs]).

Threats from the drums buried in the embankment included: fire/explosion of shock-sensitive ether waste in the embankment; potential direct contact with toxic chemical, biological, and radioactive materials buried, or as the result of potential leaks and/or explosion of drums in the embankment; inhalation of volatile organic gas from the potential disturbance of the buried drums in the embankment; and bioaccumlation of PCBs in organisms exposed to the contaminated material.

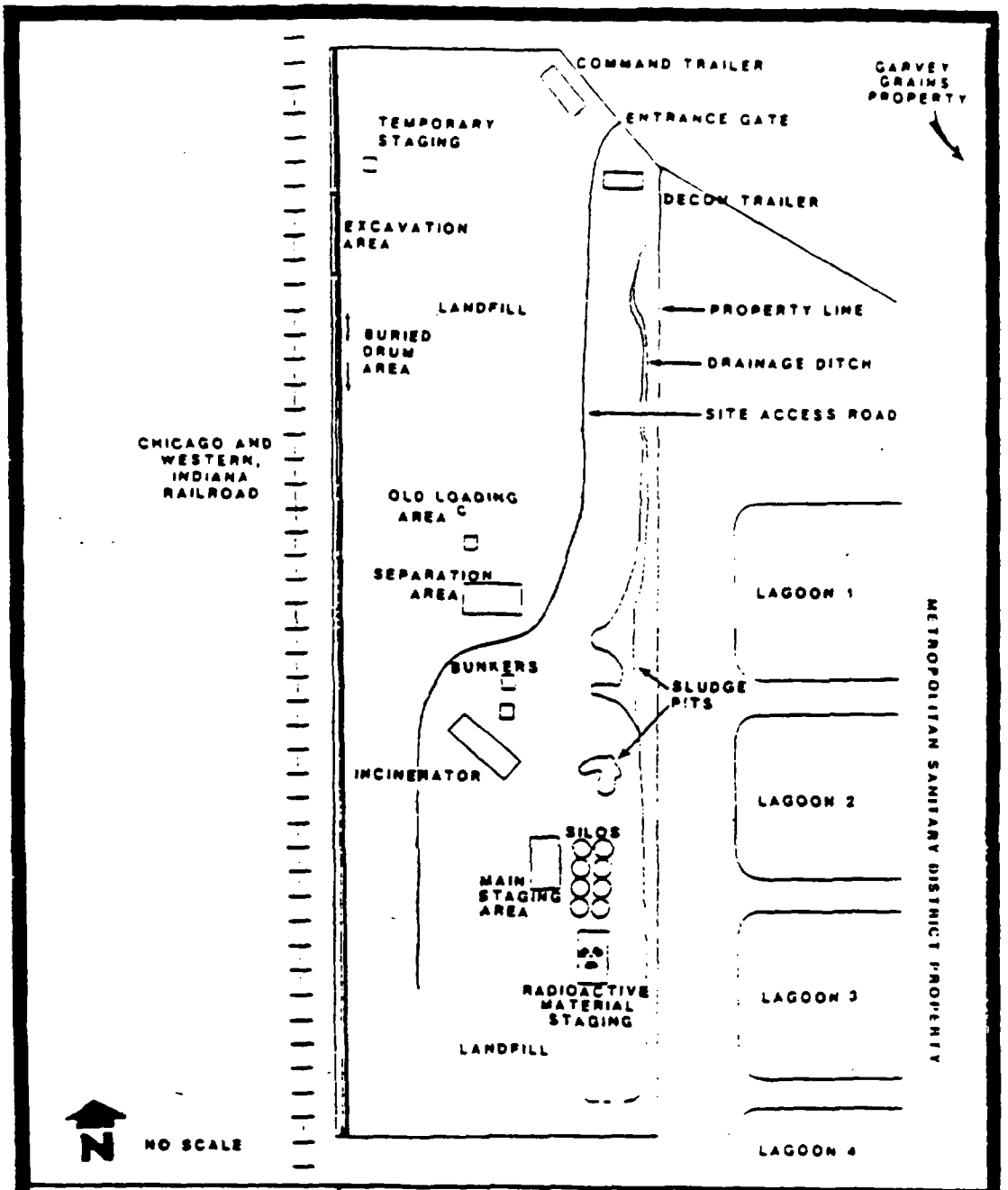


FIGURE 2

SITE LAYOUT

U.S SCRAP LANDFILL

CHICAGO, IL

2.0 SUMMARY OF EVENTS

2.1 Federal Cleanup Action

The cleanup was conducted by Zone 3 of the Emergency Response Cleanup Services (ERCS) contractor, PEI Associates, Inc. The contract was awarded to Mid-America Environmental Service of Riverdale, Illinios and O.H. Materials of Findlay, Ohio. An initial allocation of $100,000 was approved by the Regional Administrator for the response to the landfill fire. An additional allocation of $600,000 was approved for the excavation, sampling, and disposal of drums in the railroad embankment to raise the final project ceiling to $700,000. Each of the following subsections corresponds to the 10 major phases of the removal action. The phases are presented on a timeline (Table 1) that illustrates the sequence of tasks and when they were initiated and completed.

2.2 Response to Landfill Fire

MSD reported smoke emminating from U.S. Scrap landfill to the IEPA on August 14, 1985. IEPA responded to the landfill fire. After initial inspection of the site, the IEPA requested assistance from the U.S. EPA. Representatives from the U.S. EPA, the TAT, the IEPA, the Chicago Fire Department (CFD) and Emergency Response Contract Service's subcontractors (Mid-America and O.H. Materials) respond to the landfill fire on August 16, 1985. Services of a consultant from Blow-Outs, Inc., specialists in oil well fires, were procurred by O.H. Materials (OHM).

The underground fire which initially existed at two locations at the site (central and southern, see Figure 3) was believed to have been ignited by a surface brush fire.

Landfill fire response activities included:

1. Application of a water-based foam to the landfill surface by the CFD to control burning; this measure was ineffective in smothering the underground fire.

2. Placement of a clay cap, between August 16, 1985, and September 9, 1985, on the landfill to control burning.

3. On-site air monitoring downwind of the landfill fire was performed by the TAT with:

   a. HNU photoelectric ionization detector (10-80 ppm relative to 60 ppm benzene);
   b. Organic Vapor Analyzer (OVA) flame ionization detector;
   c. Draeger tubes (positive identification: HCN, acetone, aniline, CCl_4, HCl, benzene, methylene chloride, mercaptan, ethyl benzene);
   d. Gilian air pumps with charcoal tubes;
   e. Oxygen meters (16% O_2); and an
   f. Explosimeter (6% LEL).

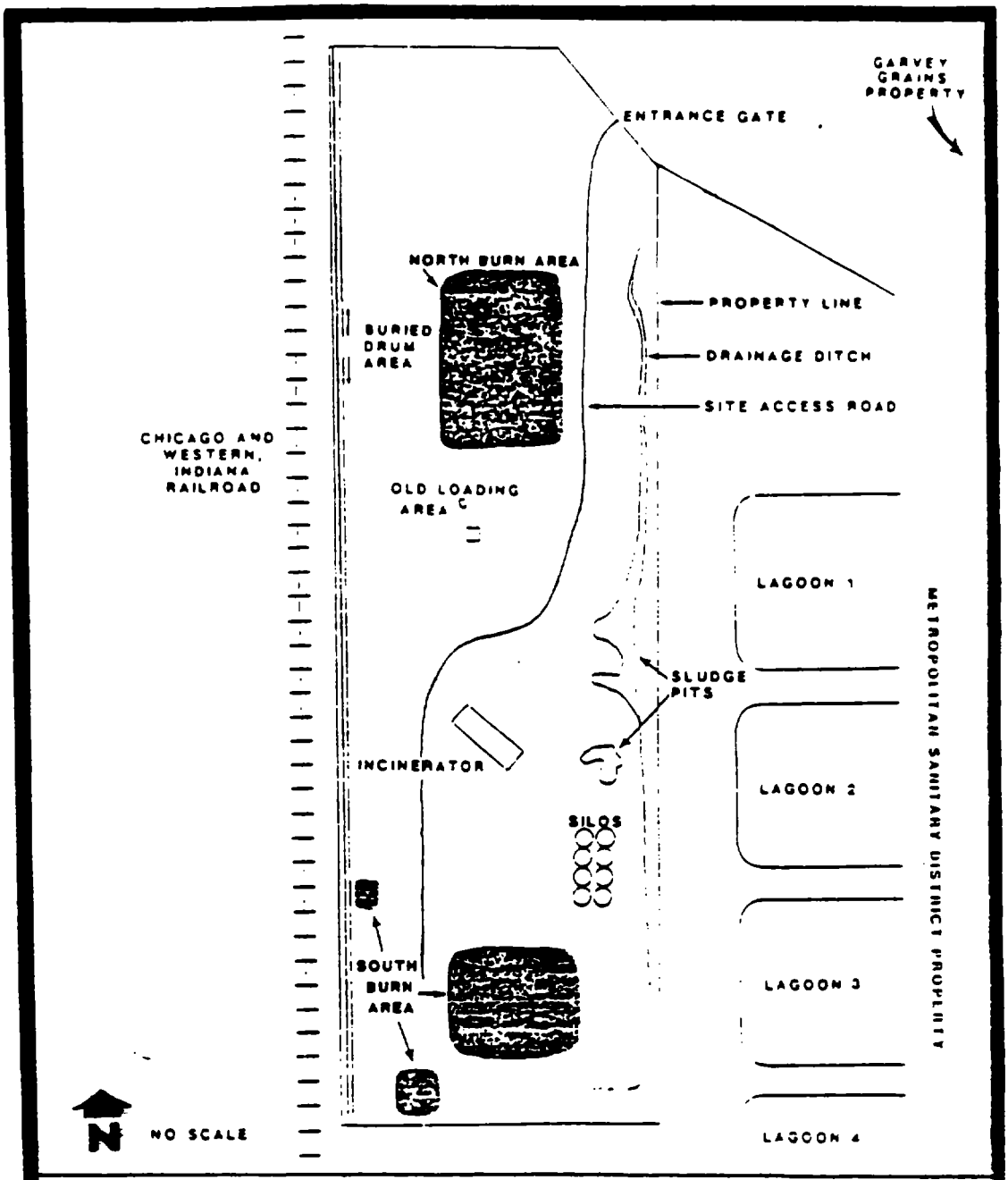


FIGURE 3
LANDFILL FIRE LOCATIONS
U.S. SCRAP LANDFILL
CHICAGO, IL

4. Off-site air monitoring at eight locations (Figure 4) to allay public concern in the surrounding neighborhoods was performed by Mid-America with:

   a. HNU photoelectric ionization detector;
   b. Draeger tubes (HCN, benzene);
   c. Gilian air pumps with charcoal tubes; and,
   d. Oxygen meter.

   Monitoring from August 16, 1985, through September 30, 1985, two to three times daily, indicated no off-site migration of airborne contaminants.

5. Surface soil samples collected by the TAT on August 17, 1985, at the north and south burn areas and the east boundary drainage ditch revealed contamination with organic compounds, including PCBs (up to 149 mg/kg or parts per million [ppm]).

6. Soil/gas sampling and on-site analysis with a portable gas chromatograph was conducted at 36 locations on the site by the U.S. EPA's Environmental Response Team (ERT) on September 4-5, 1985, to help identify the buried wastes.

7. Sub-surface temperature monitoring was conducted from September 10, 1985, through November 20, 1985, after the fire areas were capped with clay. Digital temperature readings from thermocouple probes located approximately three feet below the ground surface were used to monitor the intensity and horizontal migration of the underground fire. The subsurface temperature monitoring was terminated when the temperature readings remained at ambient levels for several weeks.

8. Six aerial infra-red photometry overflights were conducted betweeen August 21, 1985, and December 3, 1985.

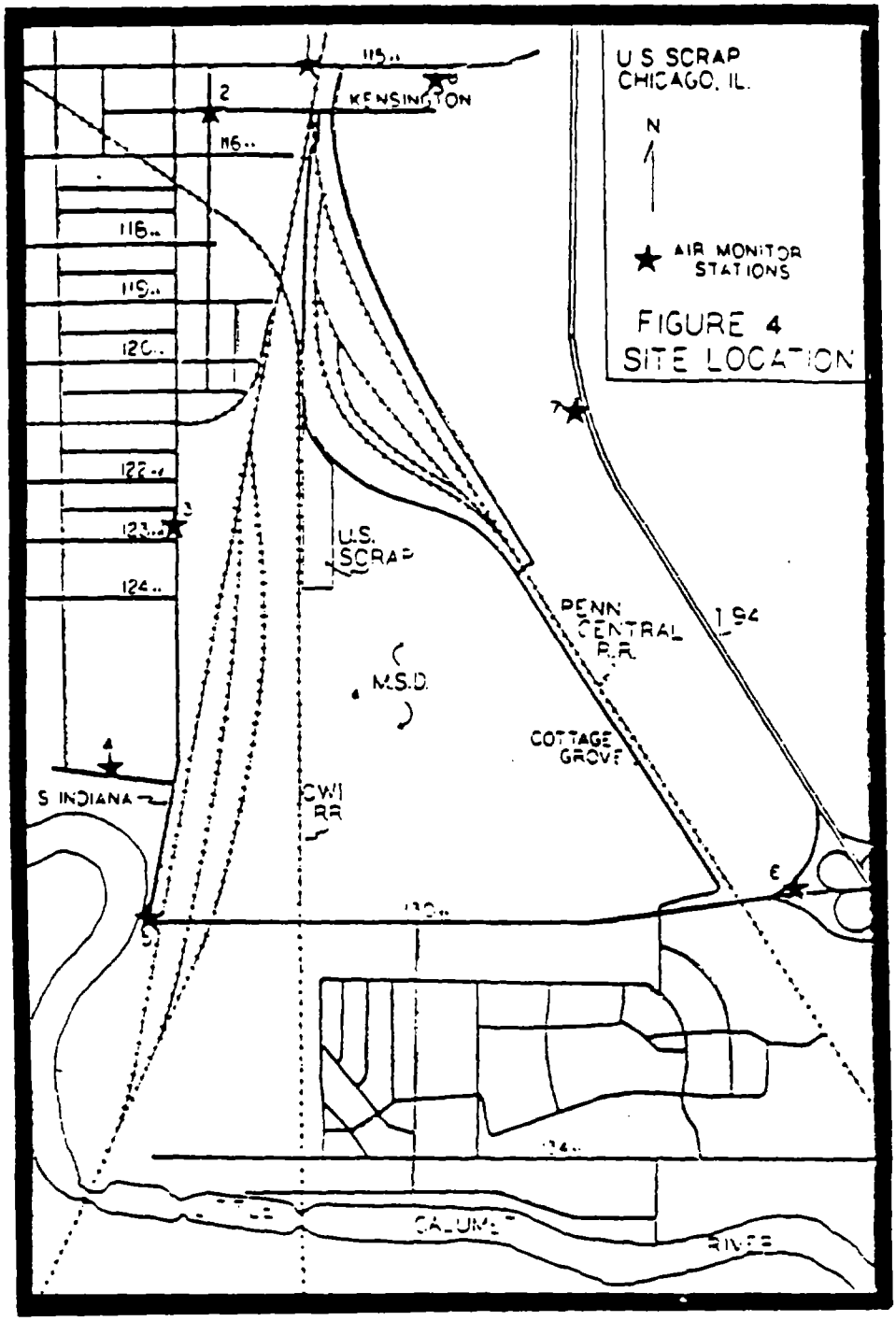
9. CFD water trucks were on stand-by for fire extinguishment during initial excavation activities.

2.3 Drum Excavation Along Railroad Embankment

2.3.1 Removal Planning

Prior to the on-site removal action concerning the buried drums in the embankment, a comprehensive sampling/site characterization plan was developed to address the drums allegedly buried in the railroad embankment.

The following removal activities were performed to alleviate the threat from the alleged drums buried in the railroad embankment: site preparation, safety, and security; air monitoring; drum excavation; drum staging and sampling; rebuild railroad embankment; and, disposal of excavated wastes, including on-site crushing of unknown lab-pack bottles and on-site detonation of shock-sensitive waste.


U S SCRAP
CHICAGO, IL.
N
AIR MONITOR STATIONS
FIGURE 4
SITE LOCATION
KENSINGTON
U.S. SCRAP
PENN CENTRAL R.R.
I 94
M.S.D.
COTTAGE GROVE
S INDIANA
CWI RR
CALUMET
RIVER

2.3.2 Site Preparation

Office and decon trailer and other equipment were mobilized between August 28, 1985 and October 9, 1985. Security fencing was installed around the perimeter of the site on August 30, 1985, to limit public access to the site, thus reducing the potential exposure to humans. The fence was paid for by Mr. Martell. Contingency and safety plans were established with mobilization of O.H. Materials work crew on October 8, 1985. Staging and radiation pad and crushing and detonation bunkers were constructed on site on October 14, 1985. A portable building was erected in the hot zone for lab-pack separation. The Chicago and Western Indiana Railroad Company was contacted to establish a communication system regarding site activities, especially during possible detonation of shock-sensitive waste. Two 10,000 gallon pools were constructed on site and filled with water to aid in extinguishing potential on-site fires during drum handling activities.

2.3.3 Geophysical Survey I

A geophysical survey was conducted prior to embankment excavation to locate areas of potential drum burial along the embankment. A transect line was established near the top of the east side of the railroad embankment, with 10 foot intervals between markers. On August 31, 1985, TAT and Weston Geoscience Group conducted a geophysical survey on the established transect line using an electromagnetometer and a flux-gate magnetometer. The survey suggested that the entire length of the embankment had a high potential for buried ferromagnetic materials, most notably at the base of the embankment.

2.3.4 Drum Excavation

Fire breaks were excavated every 300 feet along the embankment to minimize potential chain-reaction fire/explosions. TAT performed on-site and off-site air monitoring with the HNU (twice a day), Gilian air pumps (daily) and high volume air samplers (twice during excavation and staging operations). U.S. EPA conducted a radiation survey along the embankment on October 17, 1985, which revealed no readings above the ambient range. Approximately 77 drums were excavated from the entire length of the embankment between October 15-20, 1985. The drums contained mercaptans and paint residues and resins; many of the drums were crushed and leaking. The embankment excavation did not expose the shock-sensitive and other hospital waste lab packs that were expected. After further discussions with the former employee of the U.S. Scrap, it was estimated that approximately 20 feet of fill had been placed on the land adjacent to the embankment after the alleged drums were buried in the original base of the embankment.

Several test pits were dug to a maximum of 18 feet below the present land surface down to the original base of the embankment. Water contaminated with organic compounds, and oil was encountered at 3 feet below the land surface, and the alleged labpacks were not found. The pits were covered with clean fill and capped with clay. The grossly contaminated soil from the pits was stored in lined roll-off boxes on site and was disposed of.

2.3.5 Drum Staging

Drums removed from the embankment were sampled to determine chemical compatibility for bulking and disposal, overpacked, and staged on diked clay pads lined with visqueen. Severely leaking drums that were compatible (mostly paint wastes) were consolidated in a clay mixing pit and solidified with "oil dry." The mixture was then placed in overpack drums.

2.3.6 Waste Disposal

A total of 76 drums of waste cotaminated with organic compounds, 3 drums of cyanide waste, 1 drum of PCB waste, 1 drum of flammable solids, 120 cubic yards of soil contaminated with sulfides and organic compounds, and 60 cubic yards of crushed drums were disposed at Emmelle, Alabama during the period between July 17-30, 1986.

2.3.7 Embankment Reconstruction

The material removed from the embankment was returned to the embankment after the entire length had been excavated. Approximately 1,830 cubic yards of clean fill was purchased and placed on the embankment between November 4-7, 1985, to replace the exhumed drums and other inert debris (e.g. concrete, steel rods, etc.) which were removed from the slope.

2.3.8 Geophysical Survey II

A second geophysical survey was conducted after the embankment was reconstructed to check for buried drums still remaining in the embankment or immediately east of the embankment. Three transect lines were established 15, 30, and 45 feet east of the original transect line, corresponding to the middle and base of the east side of the embankment. North/south stations were spaced at 10 foot intervals. On November 11, 1985, the TAT conducted a geophysical survey on the transect lines described above using an electromagnetometer and a flux-gate magnetometer.

2.3.9 Soil and Water Sampling

Five soil samples were collected from the west side of the railroad embankment on October 3, 1985, to determine off-site surface contamination. Migration of contaminants was suspected through and beneath the embankment, as well as through a storm-water pipe, which apparently hydraulically connected the site with the marsh west of the embankment. The samples were analyzed for priority pollutants; all analytical results can be found in Appendices WW and XX.

Four water samples were collected and analyzed from the test pit on October 22, 1985. Soil samples were also taken from the test pits for disposal considerations. These test pit samples were taken to identify contaminants in the soil at depth (0-18 feet) and in the shallow (perched) ground water. Soil samples were collected of the freshly excavated embankment surface at 150 feet intervals on October 23-24, 1985, to determine the extent of contamination in the embankment. The samples were analyzed for priority pollutants. Five grab

surface soil samples were collected at various locations in the hot zone on October 25, 1985, for pesticides analyses. This random sampling verified the absence of wide-spread surface pesticide contamination. Two grab surface soil samples were collected from near the incinerator in the hot zone on October 29, 1985, for dioxin analyses. Composite samples of water were collected in a 10 inch well located in the center of the site on November 12, 1985, at depths of 0-30 feet below land surface. These liquid samples were taken to identify contaminants in the water to help assess the nature of the buried wastes at the site.

2.3.10 Air Monitoring

Twice daily during the entire drum excavation project, HNU photoionization air monitoring for volatile organics was performed at 15 points on and off-site. Monitoring points were based on the varying positions of site activities and on wind direction. HNU readings were generally 0-2 ppm (relative to 60 ppm benzene) above background (ambient) readings. During the test pit excavation, downwind readings were 10-16 ppm above background.

Gilian air pumps (total of 5 to 9) with charcoal tubes were used for eight hours per day during the entire drum excavation project. Pumps were placed on and off site based on the varying positions of site activities and on wind direction. The transect air sampling technique was implemented to determine the configuration of the pumps (Figure 5). The tubes were subject to an organic scan and consistently showed less than 1 ppm total organic carbon.

High-volume air samplers were used on two days to sample for inorganics up- and downwind of the detonation/crushing bunkers and staging area. Analysis of the filters revealed no constituents significantly above ambient concentrations.

2.4 Other Federal, State and Local Activities

In 1982, the U.S. Scrap site received a score of 1.92 using the Hazard Ranking System (HRS) for possible inclusion on the National Priorities List. Surface water samples were the only samples utilized in this initial scoring. Air emissions were subsequently monitored in October 1985, with Gilian pumps fitted with charcoal tubes and by grab air bag samples. The air monitoring showed insignificant airborne contaminants resulting in an insignificant change in the HRS score.

The ERT performed a soil/gas survey at 36 locations on site following the landfill fire response activities to help identify the buried wastes.

The U.S. EPA's Technical Support Unit provided video tapes of on-site activities for the news media.

The U.S. EPA's Air and Radiation Branch provided guidance and equipment for radioactive material identification and performed a radiation survey of the railroad embankment prior to excavation activities.

The CFD responded to the landfill fire and subsequently participated in major portions of the contingency plan by providing standby fire protection. The Chicago Police Department participated in major portions of the contingency plan, provided site security during the initial stage of the response, and provided routine patrols around the site during nonworking periods.

2.5 Cost Summary

Mid-America Environmental Services and O.H. Materials, Inc. were the ERCS subcontractors and performed all the removal activities. Site activity was initiated on August 16, 1985, and was completed on December 10, 1985. Final disposal was completed on July 25, 1986. Total expenditures for this project are listed below:

ERCS Contractor Costs	$ 534,338.13
TAT Costs	$ 93,374.24
U.S. EPA Costs	$ 26,861.66
U.S. EPA Indirect Cost	$ 68,306.50
TOTAL PROJECT COST	$ 722,880.53

2.6 Community Relations

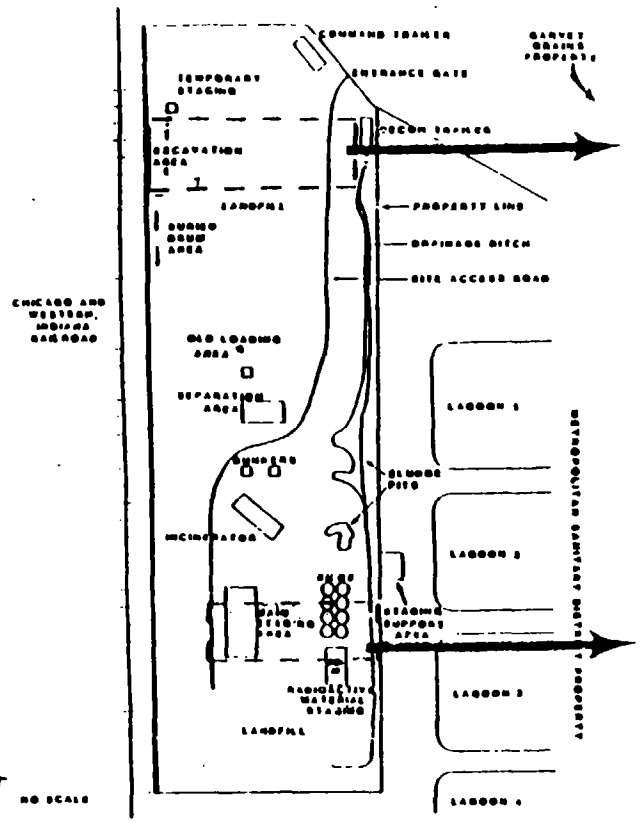
Due to the intense public interest, the U.S. EPA initiated an aggressive community relations program at the U.S. Scrap site. During the first two weeks of the landfill fire, the U.S. EPA's Office of Public Affairs (OPA) responded to media requests for information and met with local community groups. There was a press release for the site on October 7, 1985. A fact sheet was disturbuted on October 9, 1985, at a local community meeting. The fact sheet was updated on October 23 and November 26, 1985. Television interviews were given by the OSC on site on October 16, 1985. The OSC also briefed MSD officials and employees at the neighboring MSD facility on that day.

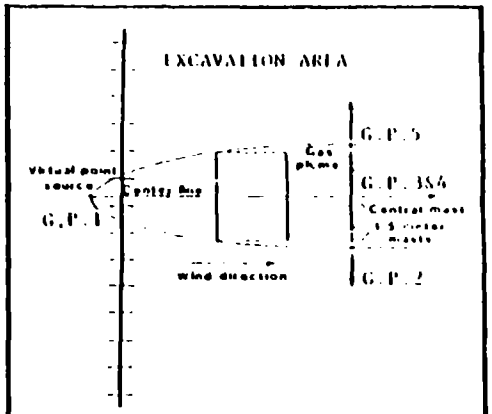
Concerned community leaders met with the OPA at the U.S. EPA's office on October 22, 1985. Concerned community leaders were given perimeter site tours by the OSC on October 31, 1985, and again on November 1, 1985.

3.0 PROBLEMS ENCOUNTERED

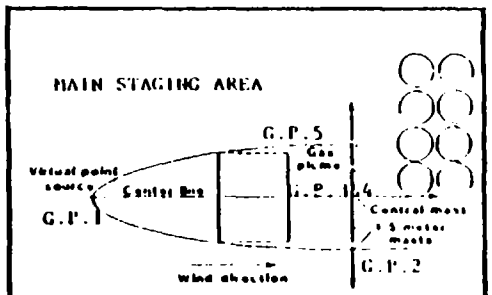
3.1 Location of Drums in the Embankment

Due to poor information received from the former employee of U.S. Scrap and a change in site topography, the drums allegedly buried in the embankment were not located during this removal action. They are now thought to be located below the present grade in the original base of the embankment. Such wastes do not pose an immediate threat and removing them was beyond the scope of this removal action.





EXAMPLE OF TRANSECT TECHNIQUE SAMPLING



EXAMPLE OF TRANSECT TECHNIQUE SAMPLING

FIGURE 5

U.S. SCRAP CHICAGO, IL.

TRANSECT AIR SAMPLING TECHNIQUE

3.2 On-Site Flooding

Site activities involving heavy equipment movement were slowed or halted by heavy rains and muddy conditions.

4.0 OSC's RECOMMENDATIONS

None.

TABLE 1 ACTIVITY LOG FOR THE U.S. SCRAP SITE, CHICAGO, ILLINOIS

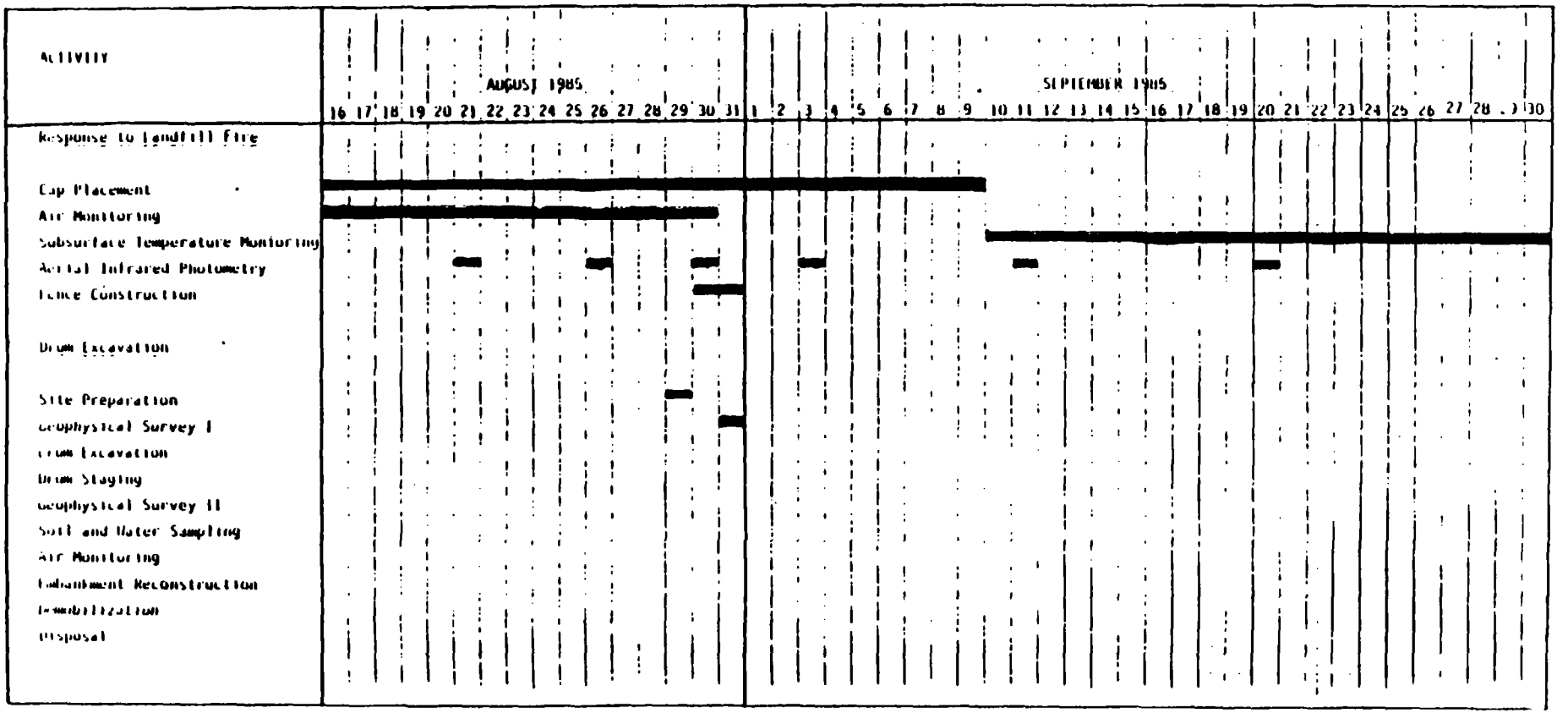


TABLE 1 (Conti.) **ACTIVITY LOG FOR THE U.S. SCRAP SITE, CHICAGO, ILLINOIS**

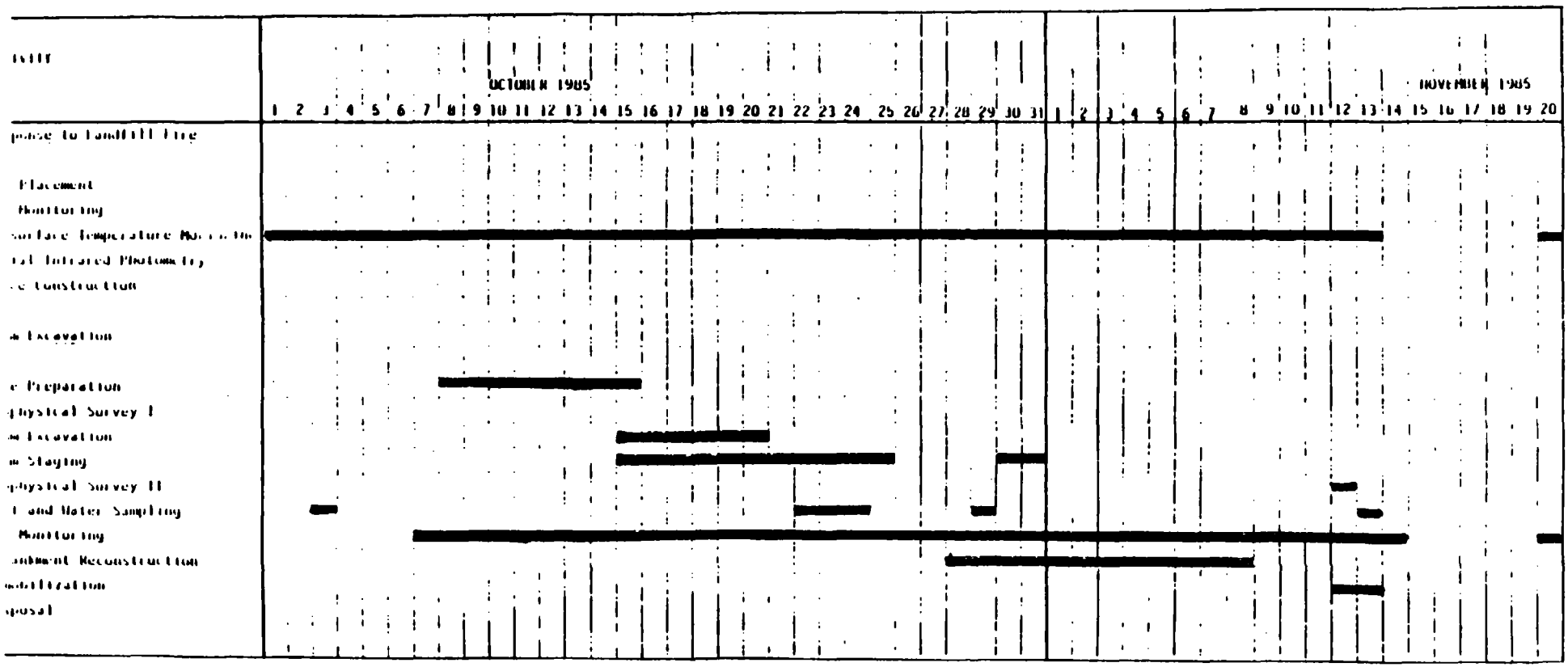
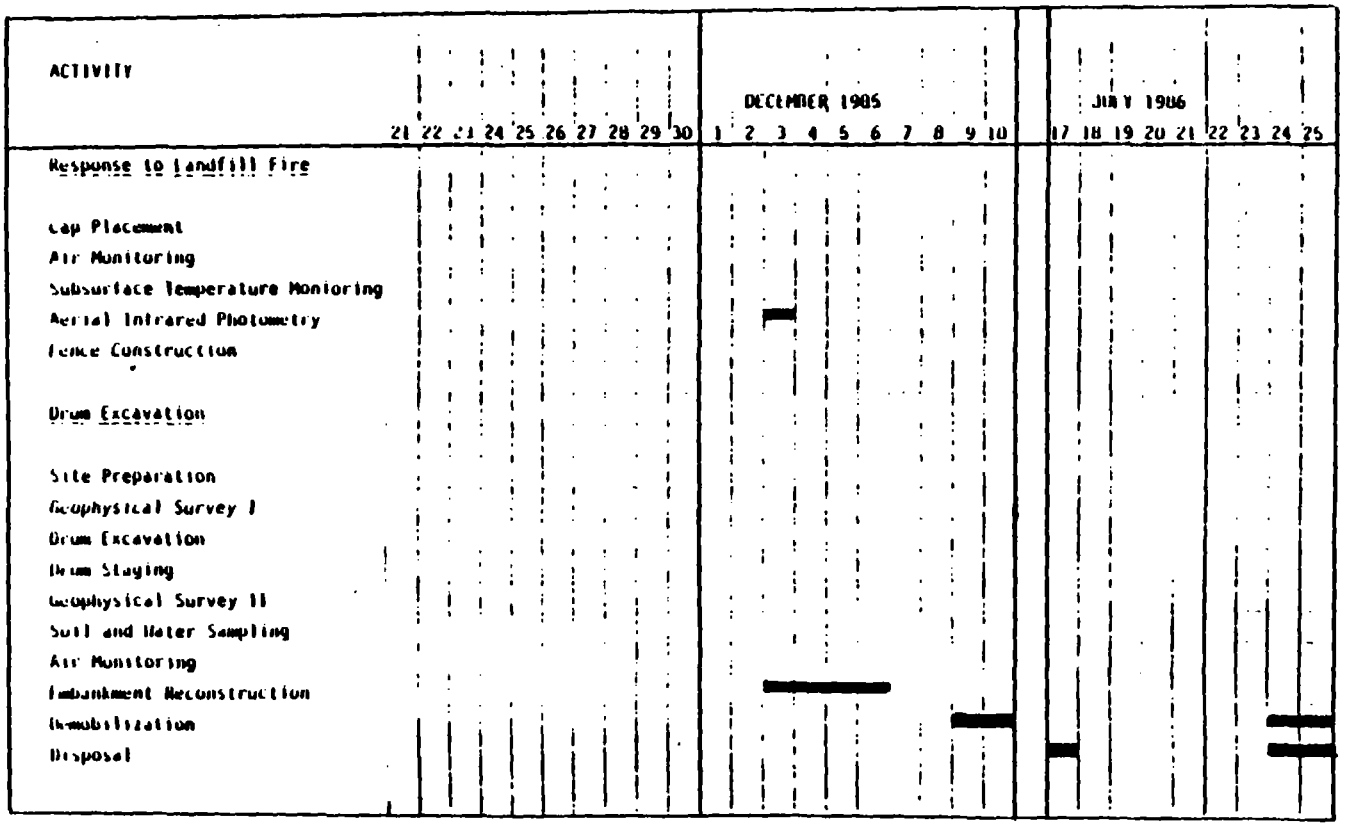



TABLE 1 (Conti.) ACTIVITY LOG FOR THE U.S. SCRAP SITE, CHICAGO, ILLINOIS