VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

December 22, 1983

CERTIFIED MAIL

Mr. Charles Estes, P.E.
Hazardous Waste Section
Mississippi Department of Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209

RE: RCRA Part B for MSD990714081
Additional and/or Clarified Information

Dear Mr. Estes:

Attached are three copies of the information required by your review of our application as specified in your letter of November 1, 1983.

We believe we have been responsive to all the items, nevertheless, many items are open to interpretation. After you and others at the Bureau of Pollution Control have had an opportunity to review this, Bob Maraman and I would be glad to meet with you and review any detail

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: R. J. Maraman

(a) (1) General Description

B-1

This section provides a general description of the Vicksburg facility with emphasis on those hazardous waste management aspects of the facility which are pertinent to this permit application. This description will provide the permit writer with an overview of the facility.

The Vicksburg facility of Vertac Chemical Corporation is located in Warren County, Mississippi along the Mississippi River immediately on the south limits of the City of Vicksburg. The address is:

Vertac Chemical Corporation, Vicksburg Facility
P. O. Box 3
Rifle Range Road
Vicksburg, Mississippi 39180

The facility is a manufacturer of chemicals. The plant site is divided physically and functionally into a "north plant" and a "south plant". The north plant is primarily a manufacturer of potassium nitrate and additionally manufactures by-products chlorine and nitrogen tetroxide. Hazardous wastes are not generated in the north plant. The south plant is primarily a manufacturer of pesticides, but additionally manufactures nitric acid, which is used entirely as a raw material in the north plant.

The south plant contains these manufacturing operations:

1. Atrazine
2. Toxaphene
3. Dinitrobutyl phenol (Dinoseb)
4. MSMA

The Atrazine and Toxaphene plants are shut down and there is no reasonable anticipation that production of those products will resume. The dinitrobutyl phenol and MSMA plants are operational. None of the activity of the MSMA plant is pertinent to this application.

The dinitrobutyl phenol plant produces manufacturing process wastewater that is hazardous by virtue of characteristic (D002). The waste is pumped to 1 - 3 day storage and is transported by a hazardous waste transporter to off-site disposal by hazardous waste deep well injection. Any D002 spills from the storage or loading area flow to the effluent collection system and to a 3 million gallon surface impoundment. At times the manufacturing process wastewater is neutralized with ammonia and pumped to a 1.6 million gallon storage tank. The water is not a hazardous waste at this time; it is pumped through activated carbon and

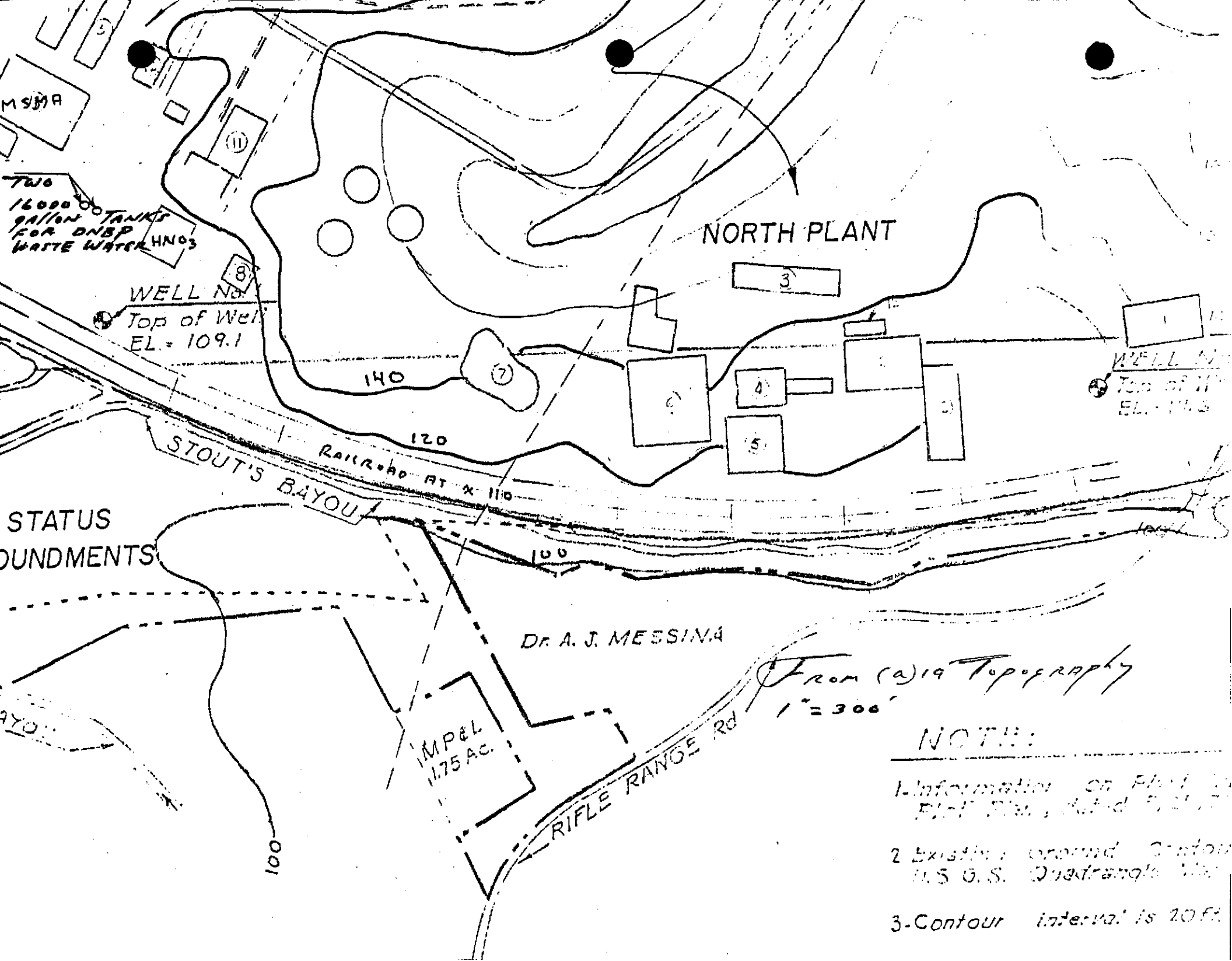
discharged to the 3 million gallon surface impoundment. Spills and leaks from the process area or product storage area or water from clean up of such a spill fall within P020 of RCRA paragraph 261.33. Such spills flow to the 3 million gallon surface impoundment.

Soil within plant boundaries will additionally flow as sediment particles during rain. The sediment particles will settle within the 3 million gallon suface impoundment. It is possible that some of the soil may have been contaminated by operations in the past and be categorized by P020 (dinoseb) or P123 (toxaphene).

a(19) Topographic Map (additional information)

B-2

Sketch a(19) V is a topography-site map with a 1" = 300' scale. The 16,000 gallon tanks are at elevation 120'. The 100 year floodplain elevation is 109'. The tanks are therefore not within the floodplain.


MSMA
TWO 16000 GALLON TANKS FOR DNBP WASTE WATER
HNO3
WELL No.
Top of Well
EL. = 109.1
NORTH PLANT
140
120
100
STOUT'S BAYOU
RAILROAD AT ± 110
STATUS
OUNDMENTS
Dr. A. J. MESSINA
IMP&L
1.75 AC.
RIFLE RANGE Rd
From (a)19 Topography
1" = 300'
NOTE:
1-Information on Plant
2 Existing ground Contour
U.S.G.S. Quadrangle
3-Contour interval is 20 ft.

a(7) Contingency Plan - Additional Information

G-2 Emergency Coordinator

The following is a list of predesignated emergency coordinators for the Vicksburg facility. The coordinators have the necessary and appropriate authority and knowledge to assess the hazards and implement the plan. They will, as situations dictate, obtain the advice of others. All are employed by the facility. The phone number of the facility is 601/636-1231.

R. F. Maraman 207 Buena Vista	636-7711
S. Keen Redwood	636-0777
B. J. Gunn 201 Willow Run	636-5604
G. D. Madsen 905 Chocktaw Drive	638-2847
F. Ahlers 13 Lakewood Road	636-6786

(b)(2) Tank Storage (i, ii, iii, iv, v and vi)

D-2

Additional Information - two 16,000 gallon storage tanks

Complete turn over of a tank in three residence times is a standard design rule-of-thumb. (See attached figure 19-24 for verification)

The unloading procedure now includes a step to completely drain each tank empty once during every 89 days. The 16,000 gallon tanks therefore need not be considered in this permit application.

Additional Information - tank V-3

The DNBP wastewater is always neutralized first prior to being pumped to V-3. The neutralization is with ammonia; the reaction takes place in the dinitrobutylphenol production equipment. Tank V-3 would corrode rapidly if the pH of the contents were low, therefore, prior neutralization is mandatory. The tank V-3,therefore, need not be considered in this permit application.

Figure 19-24 shows the effect of the number of stages n. The more stages used in a continuous-flow system, the nearer the approach to a uniform residence time for all particles. It is usually desirable to set a limit on the minimum and maximum residence times in the system and then determine the volume for various numbers of stages.

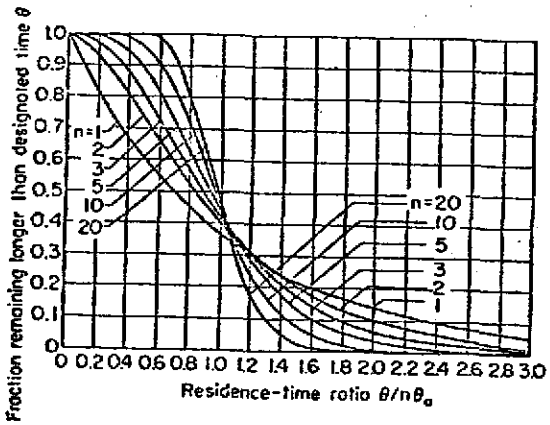


FIG. 19-24. Residence-time distribution in continuous-flow mixing tanks, assuming complete mixing in each tank. θ = designated time. $n\theta_a$ = total residence time (average). n = number of tanks. [From MacMullin and Weber, Chem. & Met. Eng., 42 (5), 254 (1935), by permission.]

Plug flow is rarely achieved in a mixed tank because the impellers always tend to produce a variety of residence times.

3. *Provision for smoothing out cyclic fluctuations.* When the tank is completely mixed, and the feed is dispersed instantaneously throughout the vessel, the differential equation relating the input and output of the tank is

$$\frac{dc}{d\theta} = \frac{(c_i - c)F}{V_m} \qquad (19\text{-}6)$$

where c is the concentration in the tank at the time θ; c_i is the input concentration; F is the feed rate; and V_m is the volume of the completely mixed zone, which may or may not be the entire tank volume. The incoming concentration c_i may be constant, vary on a regular cycle, or fluctuate in a random fashion. Equation (19-6) has been integrated for the cases where c_i varies on a sinusoidal cycle, a square-wave cycle, or a single pulse. The results are given by Gutoff [*Ind. Eng. Chem.*, 48, 1817 (1956)] and Cholette and Clouthier [*Can. J. Chem. Eng.*, 37, 105 (1959)]. Figure 19-25 shows Gutoff's solution for a sinusoidal input to a single tank.

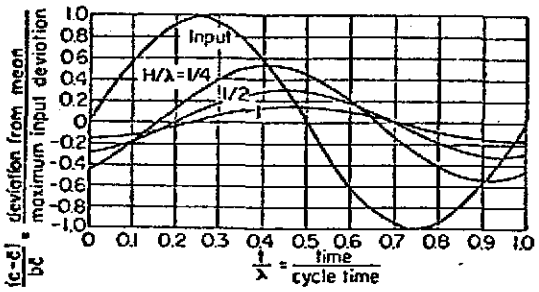


FIG. 19-25. Time variation in outflow concentrations from a completely mixed tank, assuming sinusoidal variations in input concentrations. H = hold-up time in tank; λ = cycle time. [From Gutoff, Ind. Eng. Chem., 48, 1817 (1956), by permission.]

A single tank is more effective than multiple tanks of the same total volume for small degrees of damping. If a large amount of damping is desired, the use of multiple stages becomes advantageous. In a multistage system the reagents may be admitted to the first stage and control points provided in subsequent stages to control the rate of addition.

If the tank is not perfectly mixed, it is still possible to predict what is likely to happen in the system. Gutoff [*Am. Inst. Chem. Engrs. J.*, 6, 347 (1960)] assumes a flat velocity profile and a circulating flow pattern within the vessel. From an input varying sinusoidally he predicts the output from the tank and points out that, if the circulating time within the vessel is similar to the cycle fluctuation time, very little damping will result. If circulating time is very short compared with the fluctuation time, the fluctuations will be strongly damped.

4. *Maintenance of a Pumpable Slurry.* Often the only function of the mixer is to maintain the tank contents in a pumpable condition. For this, only enough motion in the fluid may be provided to ensure there is not a hard dense volume of packed solids, with no attempt to intermingle particles. It may also be desired to produce a flow pattern in which particles do not remain for days or weeks, but with no necessity for uniformity throughout the vessel.

Physical Dispersion and Mass-transfer Operations. In analyzing the performance and design of a mixer it is important to recognize the true function of the mixer in the process. In some processes physical dispersion is important; in others mass transfer dictates the mixer design. One type of dispersion operation is solid suspension, in which the performance criterion is the concentration of solids at various points in the tank. This may be studied by measuring the solid concentrations by multiple sampling. Another physical-dispersion operation is size reduction of particles or agglomerates. The measures of process performance are particle size and particle-size distribution.

In processes which depend on mass transfer, the mixer provides a fluid regime which promotes transfer between phases. Examples are dissolving, crystallization, and leaching. Some degree of solid suspension or size reduction may also be required, in which case both criteria are applied in analyzing mixer performance.

Solids Suspension. One characteristic of the solids encountered in liquid-solids operations is their settling velocity. Light materials such as filter aid, starch, activated sludge, and paper stock may have settling velocities as low as 1 ft./min. or less. Particles of these materials tend to follow the flow pattern of the fluid, and the slurry behaves as a relatively uniform material. Such slurries are often non-Newtonian.

The other extremes of settling velocities are found with such dense materials as nickel ore, uranium ore, or other metallic ores. Here the settling velocity is a function of the particle size, shape, and density as well as fluid viscosity and fluid density. The settling velocity of these particles in free settling usually ranges from 1 to 10 ft./min. and may go as high as 30 to 40 ft./min. In the middle range of 1 to 10 ft./min. it is possible to achieve a relatively uniform slurry in the tank. If the settling velocity is above 10 ft/min. it is difficult for an impeller to provide uniformity throughout the mixing vessel.

The settling velocity of the solids in the free state is important, but particles settle freely only in certain low ranges of weight or volume per cent solids. The volume per cent solids is often as important as weight per cent solids. Up to about 30 per cent by volume of solids, the particles are usually free-settling and settle rapidly once the mixer is turned off, provided they have a free

From "Chemical Engineers' Handbook" by Perry
Edition 4

(a)(4) Security Procedures

F - 1a

The security of the production areas and the hazardous waste portions of the facility is provided by fences, combination of fences and natural barriers and controlled roadways.

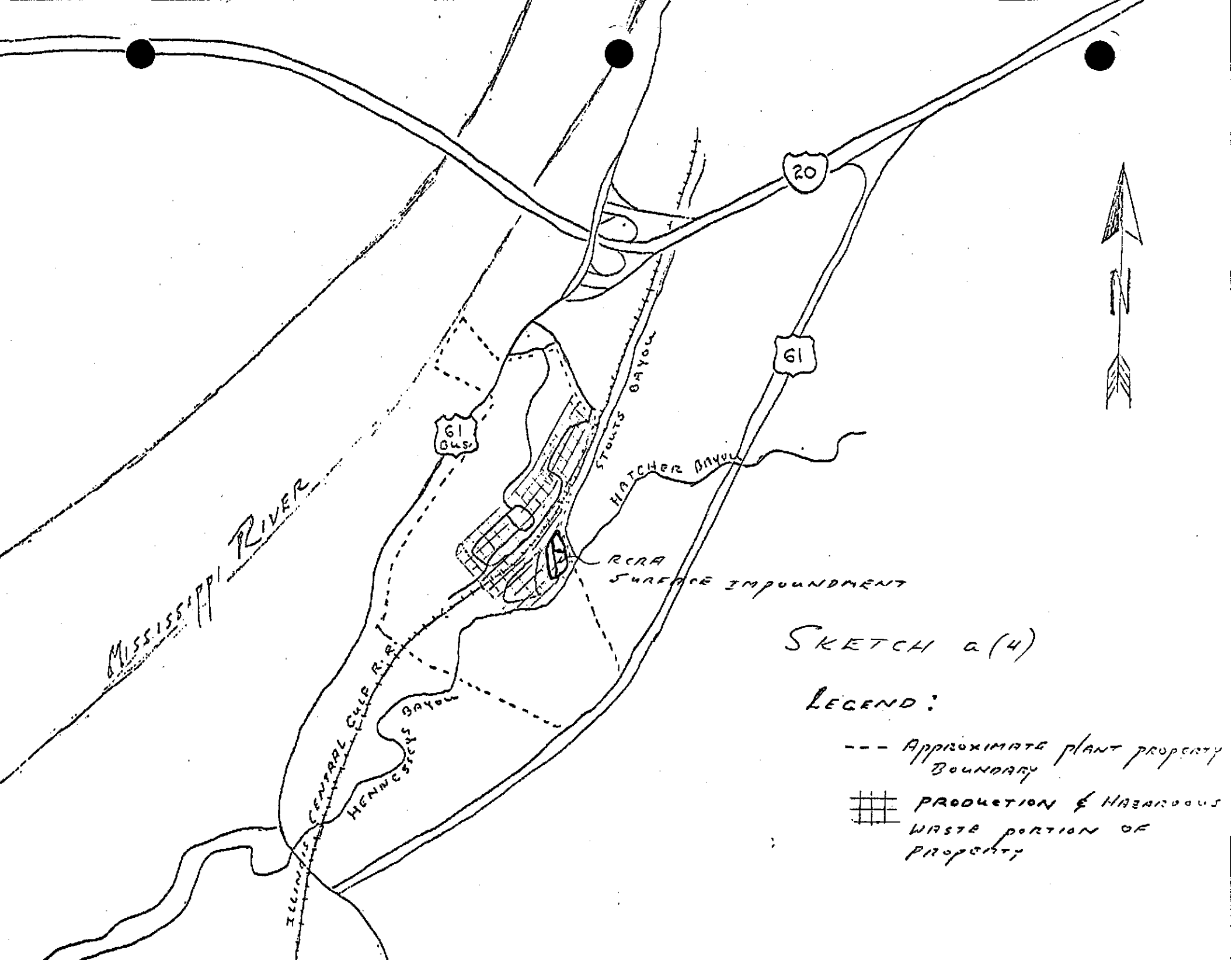
Refer to the attached sketch a-4. The neighboring area is generally bounded by State highways 61 and 61-Business and Interstate 20. The production and hazardous waste portions of the Vertac property are located within a valley, the surrounding highways are on the overlooking peaks. Access to the production and hazardous waste portion of Vertac property is secured as follows:

1. Access on the eastern one-half is secured by the presence of Hennessey's Bayou, Hatcher Bayou, and Stouts Bayou. Banks of the streams are steep and 10 to 15 feet in depth, stream widths are similarly 10 to 15 feet.

2. Access on the western one-half is secured by the presence of bluffs that drop steeply approximately 40 feet into the valley.

3. There are two roadways into the facility, one roadway into the north plant and one roadway into the south plant (see attached site plan). Both roadways are controlled by locked gates and area fences. The fences and gates are 6 foot high chain link of steel construction. The gate at the north plant is kept locked. A guard is stationed at the gate in the south plant during the day shift to admit traffic and approved plant visitors. During off shifts the gate at the south plant is kept locked. Access during off shifts is provided by using a phone at the gate to reach the shift supervisor who will then open the gate to approved traffic.

4. Signs with the legend "Danger - Unauthorized Pesonnel Keep Out" are posed atop the closed our inactive landfill, atop the berms of the surface impoundment, and alongside the railroad right-of-way. The signs are legible from a distance of 25 feet.



SKETCH a(4)

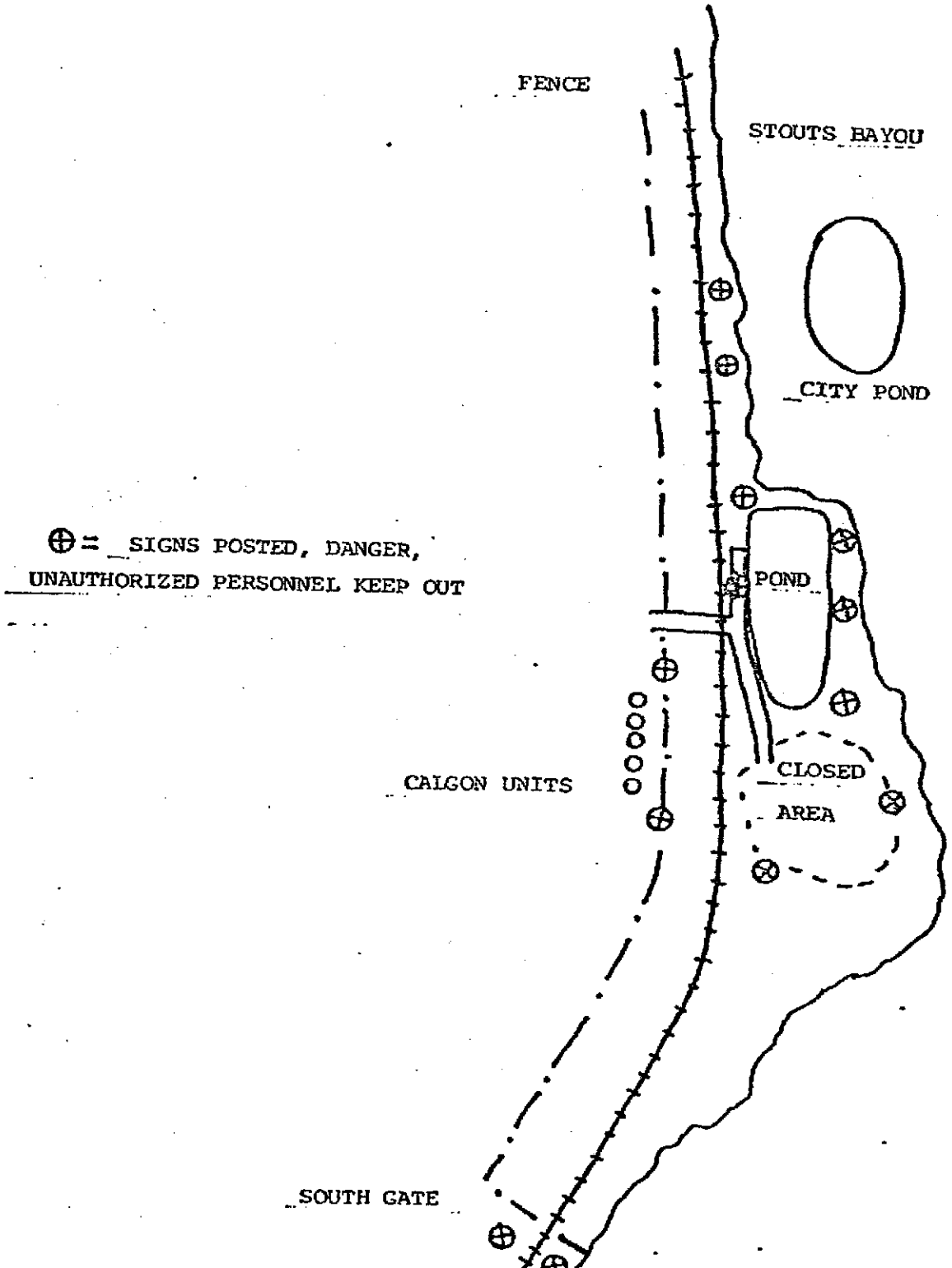
LEGEND:

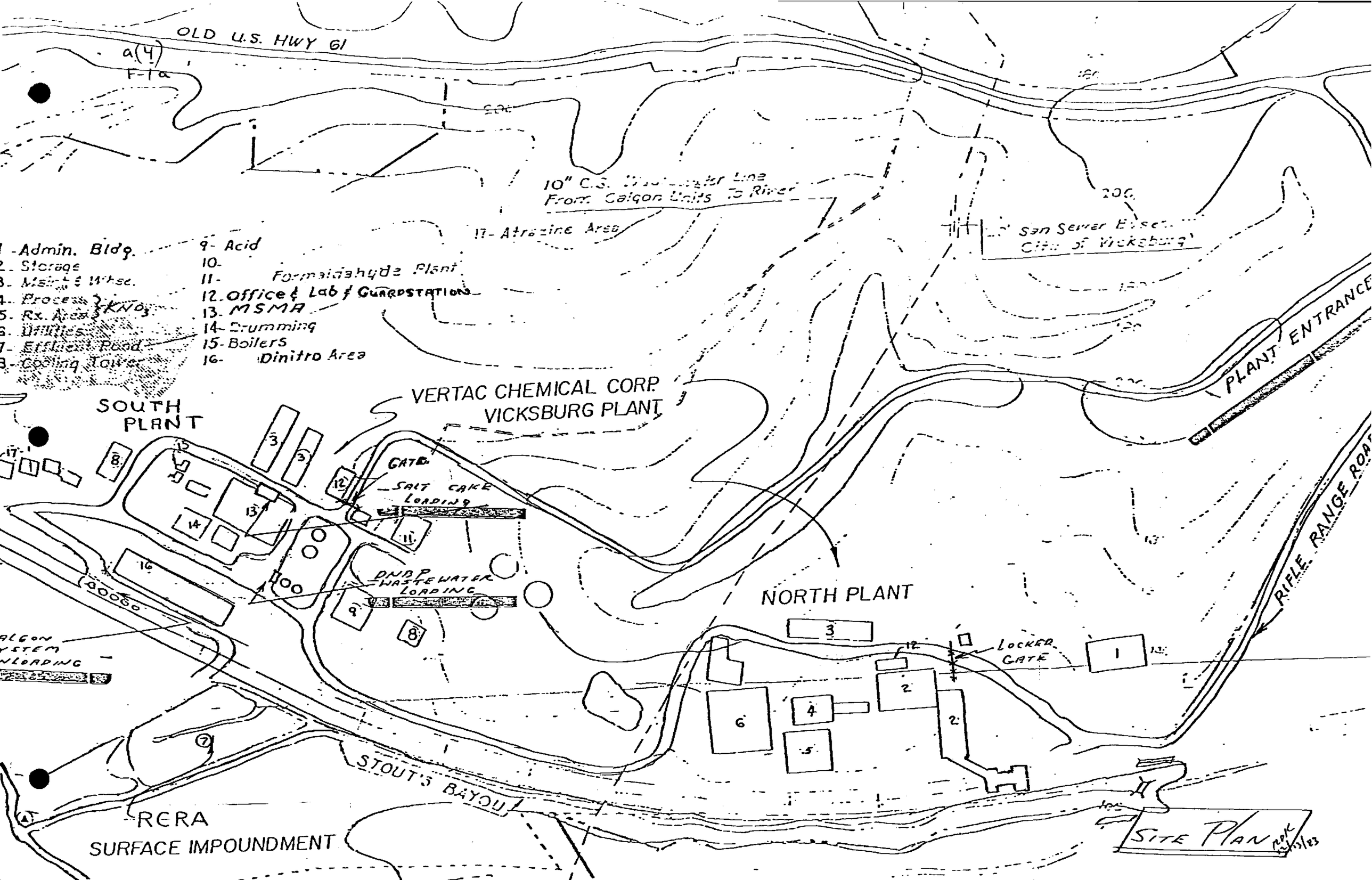
--- Approximate plant property boundary

PRODUCTION & HAZARDOUS WASTE PORTION OF PROPERTY

a(4)

LOCATION OF WARNING SIGNS




OLD U.S. HWY 61
a(4)
F-1a
10" C.S. Wastewater Line
From Calgon Units To River
17- Atrazine Area
San Sewer Elsewhere
City of Vicksburg
1 -Admin. Bldg.
2 - Storage
3 - Maint & Whse.
4 - Process
5 - Rx. Area
6 - Utilities
7 - Effluent Pond
8 - Cooling Tower
9- Acid
10-
11- Formaldehyde Plant
12. Office & Lab & GUARDSTATION
13. MSMA
14- Drumming
15- Boilers
16- Dinitro Area
VERTAC CHEMICAL CORP.
VICKSBURG PLANT
PLANT ENTRANCE
SOUTH PLANT
GATE
SALT CAKE LOADING
DNBP WASTEWATER LOADING
CALGON SYSTEM UNLOADING
NORTH PLANT
LOCKED GATE
RIFLE RANGE ROAD
STOUT'S BAYOU
RERA
SURFACE IMPOUNDMENT
SITE PLAN

(a) 5 Hazardous Waste Facility Inspection Schedule

F - 2

The Objective is to perform inspections on a schedule sufficient to detect and correct problems which may cause a release of hazardous waste to the environment. Inspections and their results must be detailed in an inspection log which must be retained for a period of three years.

Hazardous waste drums will be dated and labeled when generated. Storage will not exceed 90 days. Hazardous waste drums will accumulate until there is sufficient number of drums to fill one truck (75 drums) or until approximately but less than 90 days has passed, whichever occurs first. Hazardous waste drums will be transported to off-site hazardous waste disposal. Therefore, the hazardous drum inspection is not a part of the RCRA routine and formal records need not be made and retained.

Tanks containing hazardous waste have rapid turn over; significantly less than 90 days. Any spills from the tank area, whether minor or catastrophic flow immediately to the plant process drainage system. The plant process drainage system flows to the hazardous waste surface impoundment. The tanks are in routine daily use and as such are routinely inspected; however, the inspection is not a part of the RCRA routine and formal records need not be made and retained.

The surface impoundment is a part of the formal RCRA inspection system. There is a daily check that a minimum freeboard level of two feet exists. A hazardous waste inspection sheet is filled out for each week and retained. Within the weekly sheet is a daily record of surface impoundment levels. (A copy of the inspection sheet is attached as Sheet a(5)).

An additional RCRA consideration of the surface impoundment is a weekly inspection for structural and functional integrity. A study dated June 11, 1983 commissioned by Vertac and performed by MCI Consulting Engineers, Inc. established need for remedial measures on the embankment. Those remedial measures were completed in mid-November, 1983. The weekly inspection now serves not only to prevent uncontrolled wastewater release from the impoundment but also to protect the capital investment that the impoundment represents.

There are two observations that must be made to prevent uncontrolled release of water from the impoundment area:

1. <u>Prevention of Leaks in the Dike</u>

   Observation for small holes should be made while walking the

dike during the weekly dike inspection. They may be caused from digging by small animals, accumulated trash, erosion, and surface cracks due to drying.

If a leak is observed the inspector will report the fact to his supervisor immediately, and then increase the pumping rate to maximum in order to reduce the pond level as rapidly as possible. The supervisor will determine if the leak can be plugged or slowed by adding dirt. If so, he will have payloader or suitable vehicle obtain dirt from the West bank behind the Atrazine Plant and use it to plug the leak.

A leak should be assumed if there is a sudden loss of level in the pond. If this is detected in the daily level inspection, the inspector will immediately find the leak then make sure all pumps are at maximum rate, then find his supervisor and prepare to direct the payloader or other vehicles to the area. The supervisor will immediately dispatch a payloader or suitable vehicle to the West hill behind the Atrazine Plant to obtain dirt and start repairing the rupture.

The supervisor will report his actions to R. F. Maraman, B. J. Gunn, and F. X. Bleyer in that order. These three will assemble at the plant to determine further action.

Further action may consist of continuing to pump the pond down, sealing off sections of the pond to isolate the leak for repair, continuing to fill with dirt.

Whatever the course of action the immediate priorities are: stopping the leak if that has not been completed, preventing additional leakage, completing permanent repair of the leak.

2. <u>Prevention of Flow Over the Dike</u>

Flow over the dike is prevented by keeping the pond level a minimum of two (2) feet below the top of the dike. The pond level is reported by the inspector on the Surface Impoundment Inspection Sheet.

A sustained heavy rain or heavy thunderstorms will alert the inspector to the possibility of exceeding the two foot free board and he will increase the pumps to maximum.

If there is difficulty in maintaining the freeboard at a one foot level, he will notify R. F. Maraman, B. J. Gunn and F. X. Bleyer, in that order. These three will assemble at the plant and direct operations.

a(5)

F - 2

Surface Impoundment
Inspection Checklist

Week of:

	Day/Signature							Remarks (continue on back)
	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	
	Check the following DAILY and record discrepencies & maintenance							
Impoundment: Inspect and record level to ensure water level does not exceed 2 feet								
Pumps: Observe valve and pipefittings for leaks								
Check pump suction for accumulated trash								
Check for excessive noise or vibration								
	Check the following WEEKLY and record discrepencies & maintenance							
Examine the dikes for signs of erosion, cracking, wet spots, or other signs of leaking.								
Check creek for for accumulated debris.								
	Check the following MONTHLY and record discrepencies & Maintenance							
Examine downhill berm for signs of erosion.								

a(7) Contingency Plan - Additional Information

F-3a(1) Internal Communications - Emergency Horn

Signal:	Instruction*:
One long blast	Operational emergency
Two short blasts three times	Fire
Three short blasts two times	All clear

* more detailed plant instructions are attached

TO: ALL KNO3/C12 PLANT PERSONNEL

FROM: SAFETY DEPARTMENT

CC:

SUBJECT: EMERGENCY PROCEDURES

This correspondence is to inform all department personnel of the basic procedures to be followed during a plant safety or operational emergency condition.

Any employee detecting a possible safety or operational emergency possibility or condition should immediately notify the Control Room Operator of condition and what the condition is. The Control Room Operator will sound the Emergency Horn. One blast will be for operational emergency, such as chlorine leak, plant shut down, escaped gas, etc.; two blast on the Emergency Horn will indicate a fire. In all cases, the operators will report to the Control Room immediately or call the Control Room for instructions. If it is an operational emergency, all other plant personnel will observe the wind direction when the Emergency Horn is sounded, and cautiously proceed to an Emergenct Station for head count and further assignments from his supervisor. The reactor stack is a good wind direction indicator. After the head count, the Maintenance Supervisor will call the Control Room for instructions and assignments. The Emergency Stations will be the Maintenance Shop Area when the wind direction permits or directly up wind and out of the plant process area. Always visually scan the plant area for vapors, then move cautiously crosswind and away from affected area; then go up wind to the Emergency Station.

If the Emergency Horn sounds two short blast three times, this means there is a fire. In this case, all maintenance personnel will report to the Maintenance Shop Area. Here the Maintenance Volunteer Brigade will find the Shift Supervisor for their instructions. If any additional help is needed from maintenance, the Fire Chief or Maintenance Brigade Chief will get necessary volunteers and issue assignments.

All operators are to report to their regular assigned brigade areas after reporting to the Control Room. The North Shipping Department will man the fire cabinet just across from the bagging building. When the Maintenance Supervisor calls up the head count, he needs to leave a number where he can be reached. We need to respond to the alarm and meet at the head count area as soon as possible but in a safe manner. After all is secure and all clear signal will be sounded. The signal will be three short blast, two times. After the all clear signal you may return to your work area.

The basic purpose of this correspondence is to safely and effectively issue emergency assignments that will eliminate confusion and congestion of personnel during emergency conditions.

Roger Holdiness

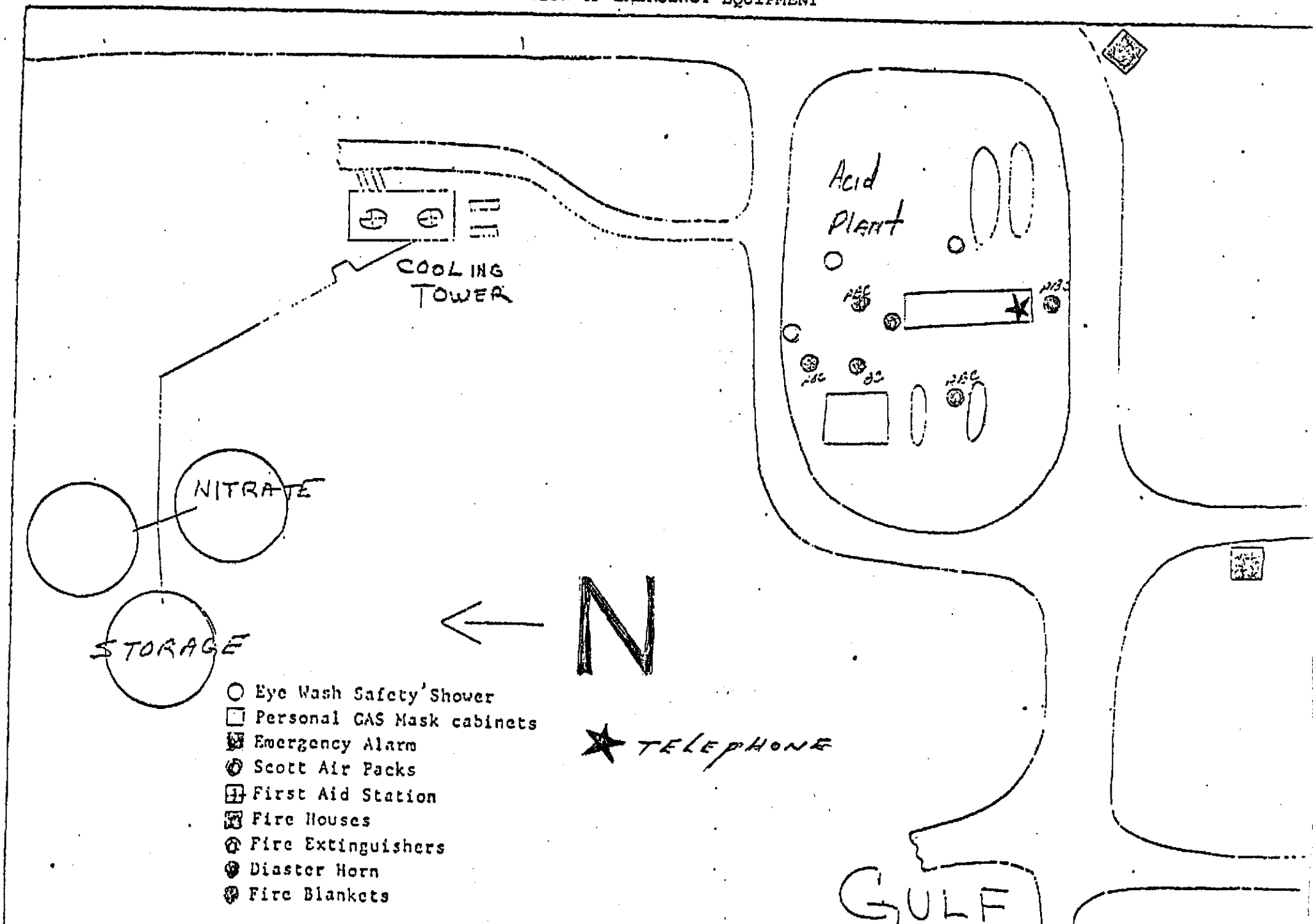
ROGER HOLDINESS
SAFETY DEPARTMENT

a(7) Contingency Plan - Additional Information

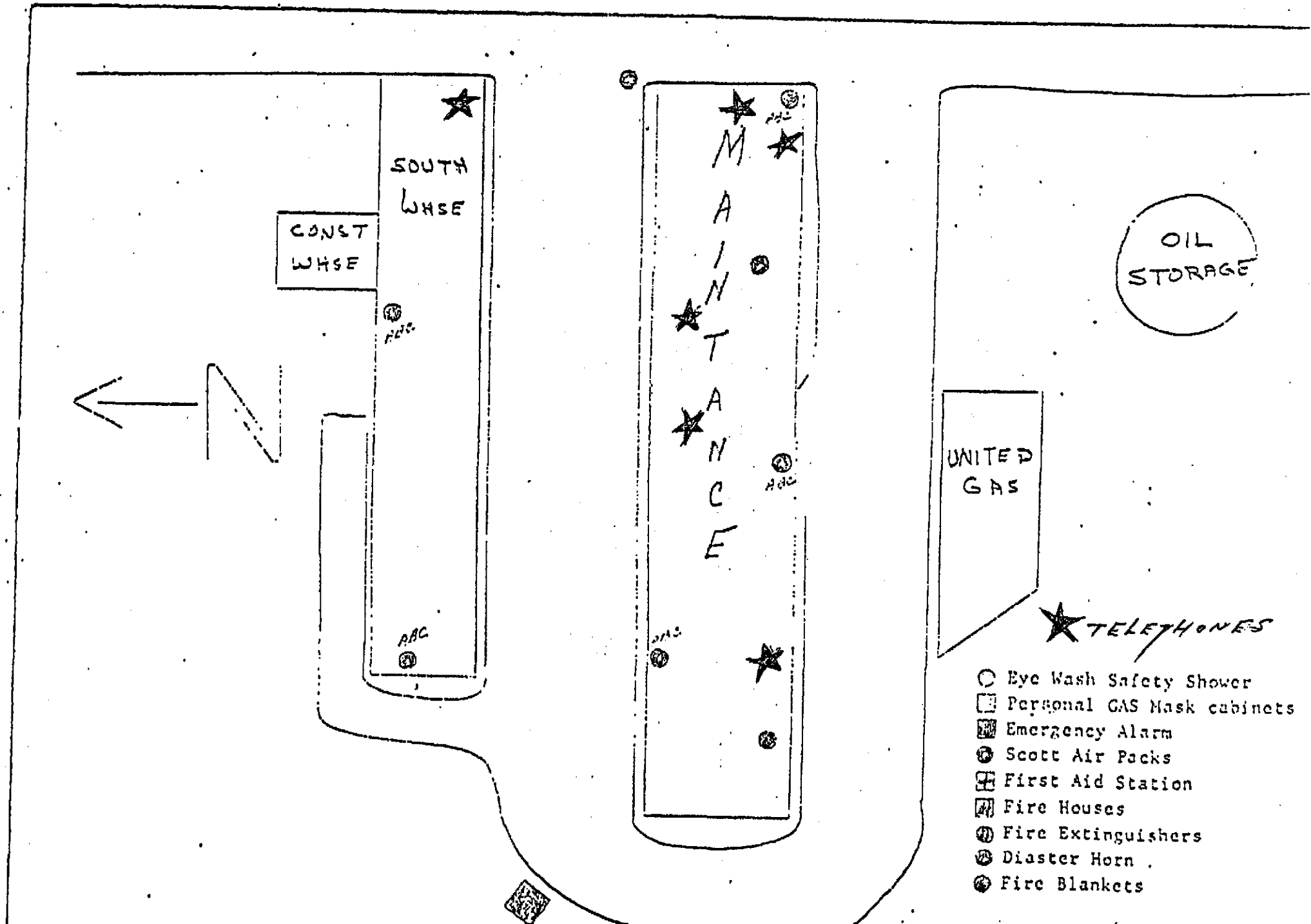
F-3a(2) External Communications

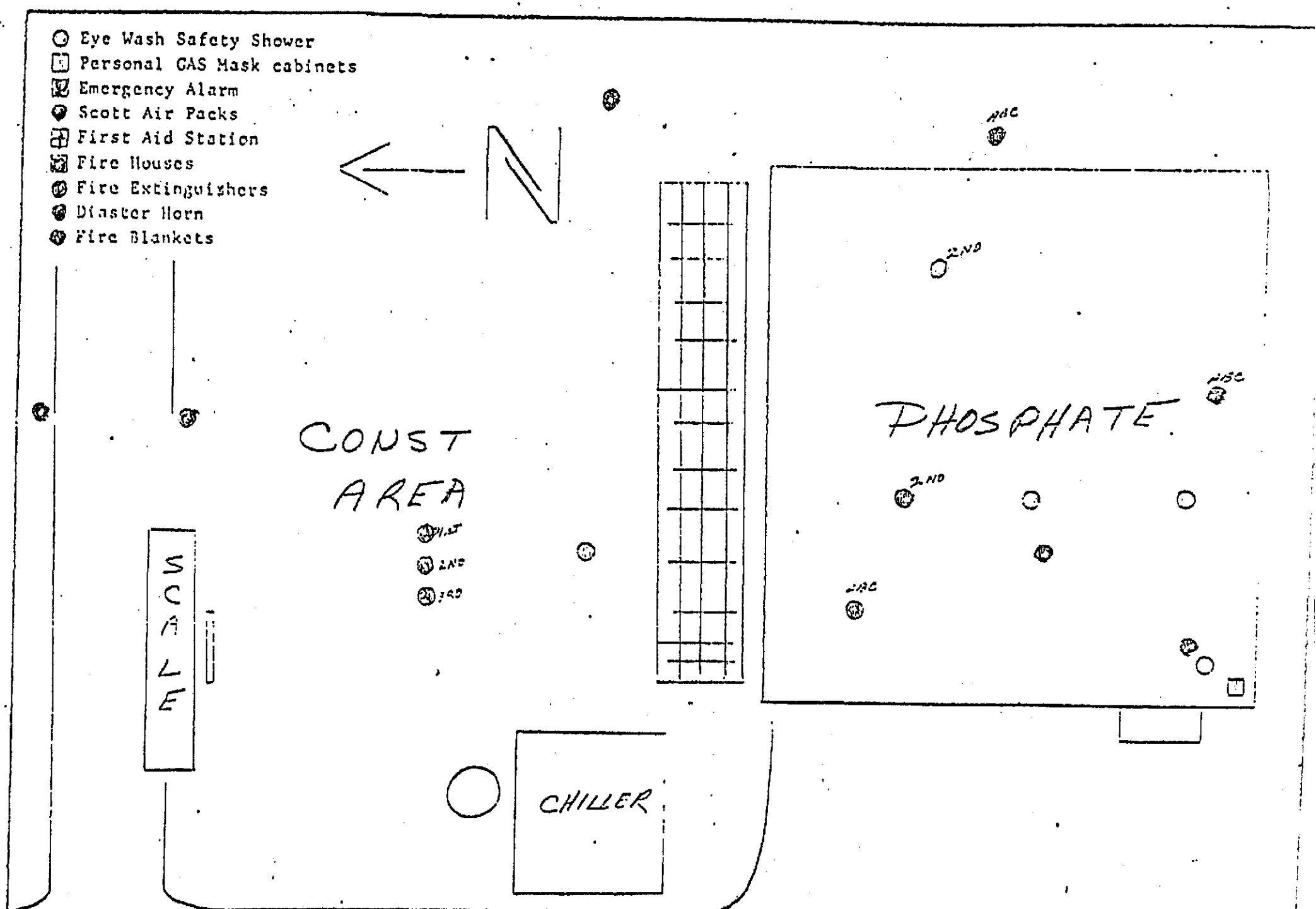
Locations of phones are now included on the emergency equipment maps, copies of which are attached.

LOCATION OF EMERGENCY EQUIPMENT



- Eye Wash Safety Shower
- Personal GAS Mask cabinets
- Emergency Alarm
- Scott Air Packs
- First Aid Station
- Fire Houses
- Fire Extinguishers
- Diaster Horn
- Fire Blankets


SOUTH WHSE
CONST WHSE
MAINTANCE
OIL STORAGE
UNITED GAS
TELEPHONES
Eye Wash Safety Shower
Personal GAS Mask cabinets
Emergency Alarm
Scott Air Packs
First Aid Station
Fire Houses
Fire Extinguishers
Diaster Horn
Fire Blankets


Eye Wash Safety Shower
Personal GAS Mask cabinets
Emergency Alarm
Scott Air Packs
First Aid Station
Fire Houses
Fire Extinguishers
Diaster Horn
Fire Blankets
N
CONST AREA
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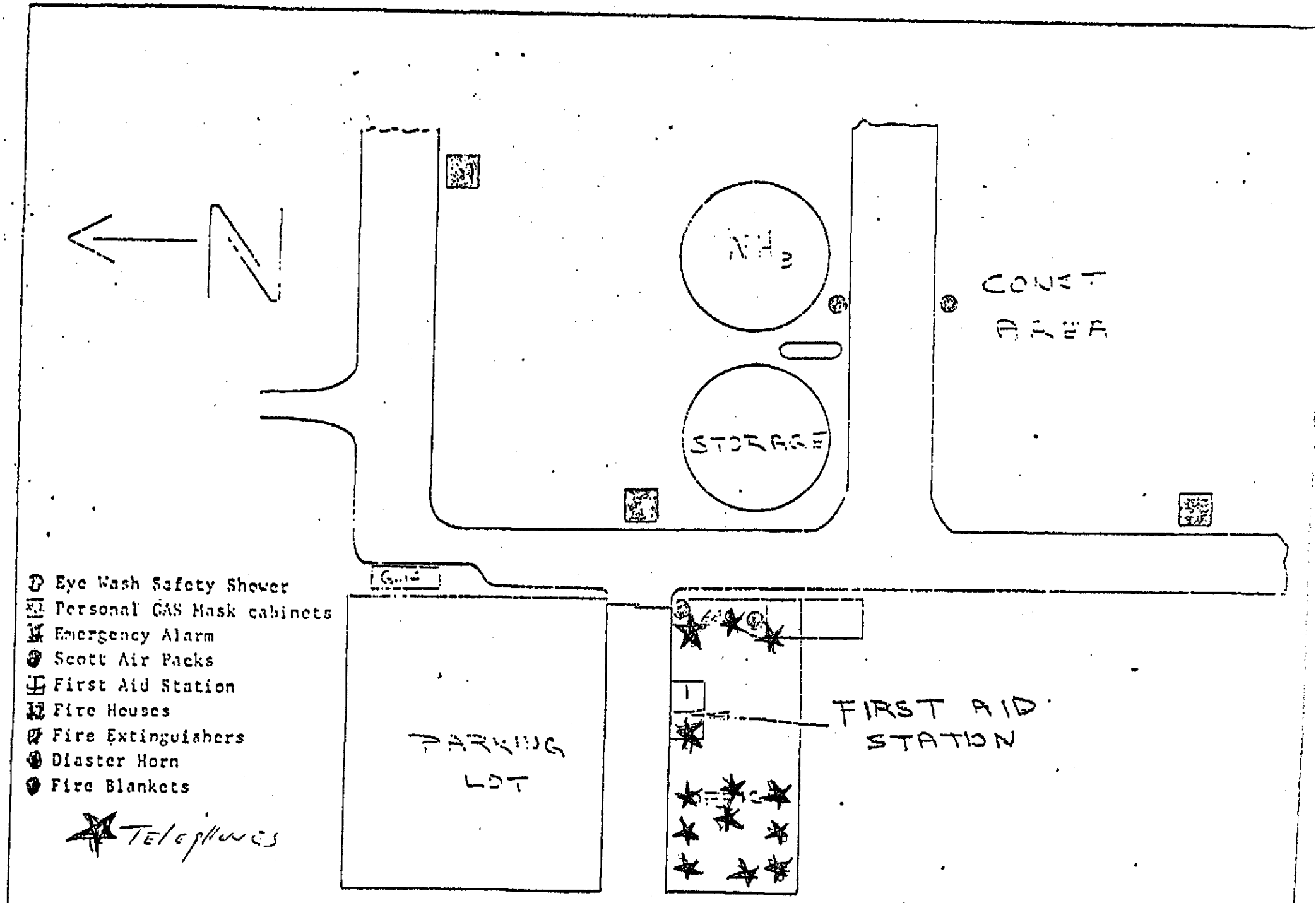
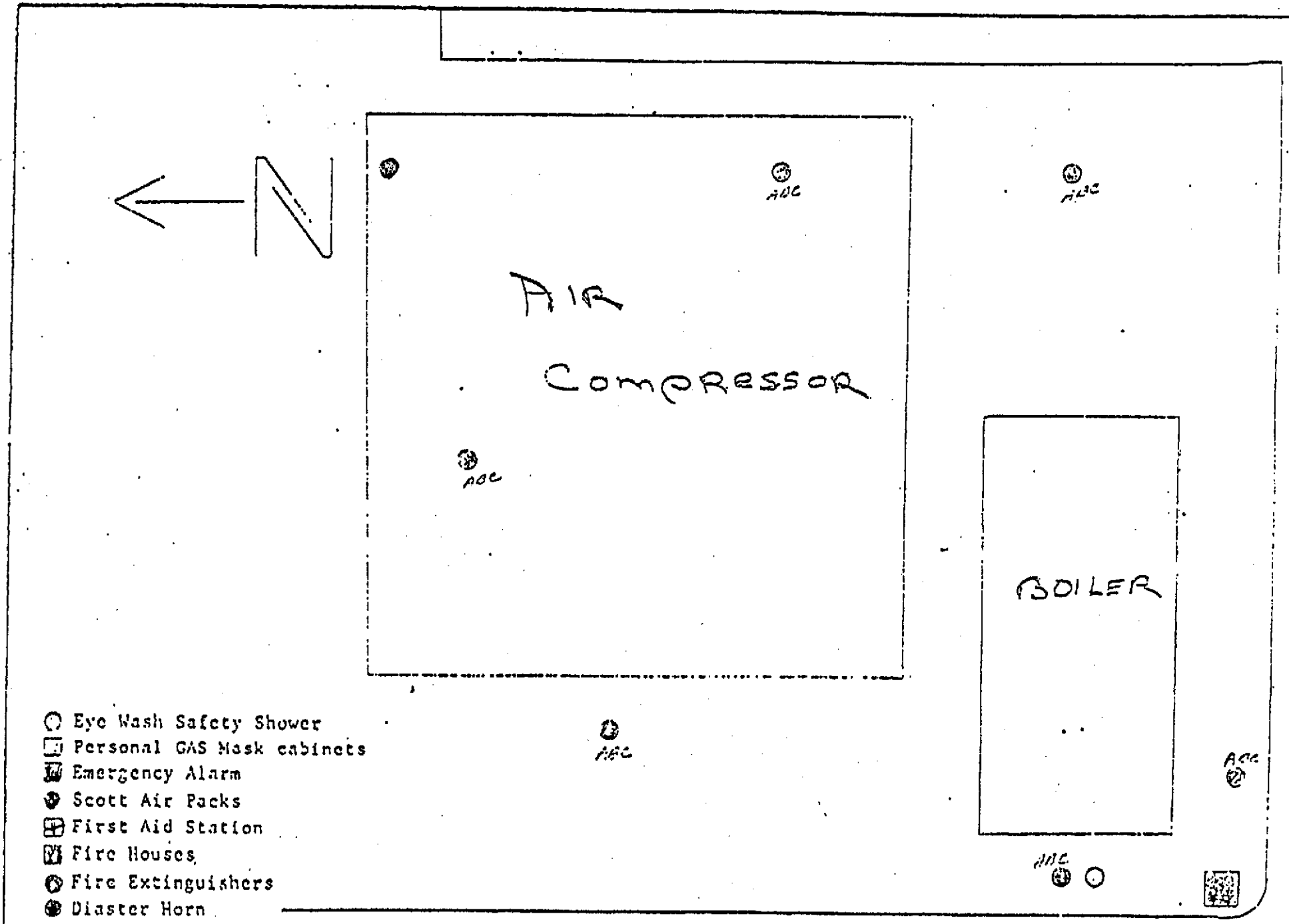
PHOSPHATE
2ND
2ND
2ND


N
NH_3
STORAGE
CONST AREA
PARKING LOT
FIRST AID STATION
Eye Wash Safety Shower
Personal GAS Mask cabinets
Emergency Alarm
Scott Air Packs
First Aid Station
Fire Houses
Fire Extinguishers
Diaster Horn
Fire Blankets
Telephones


N
AIR
COMPRESSOR
BOILER
ADC
ADC
ADC
ADC
ADC
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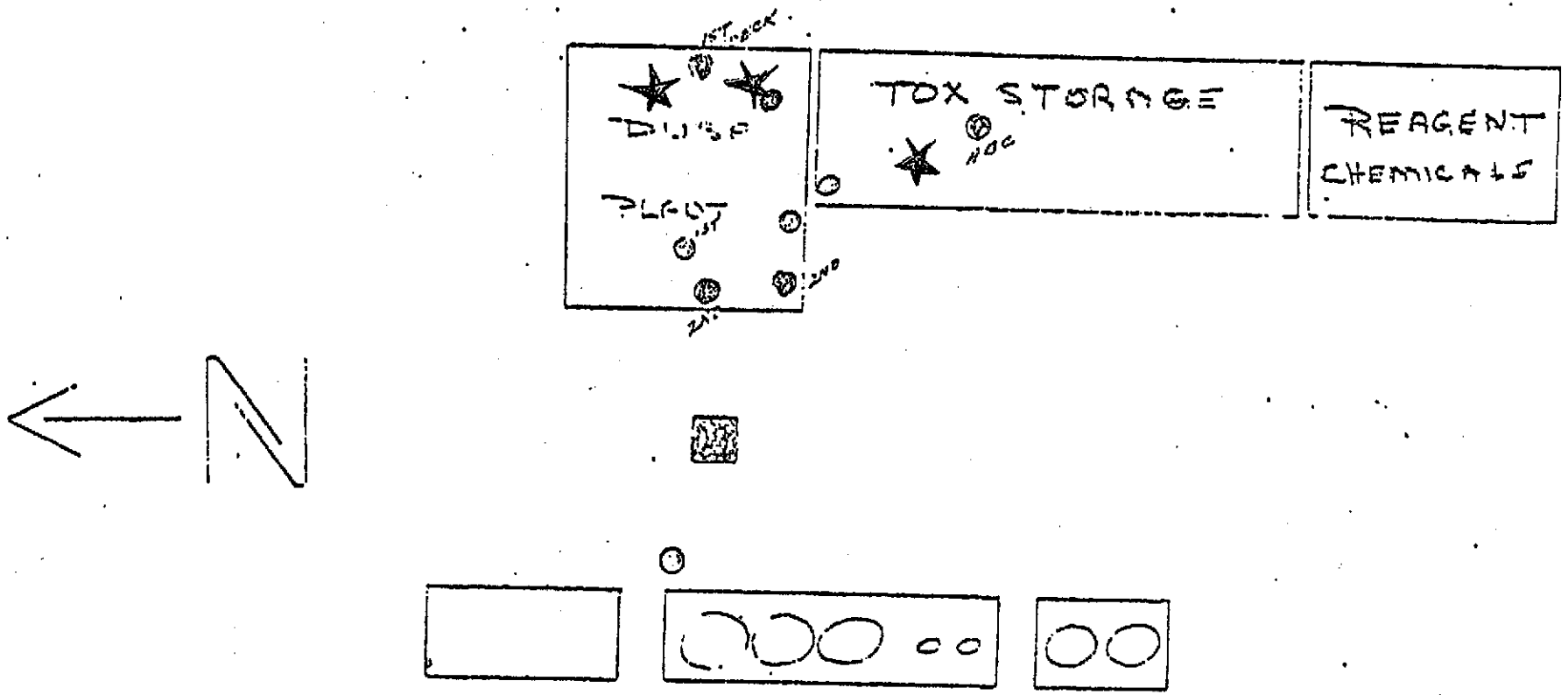
Eye Wash Safety Shower
Personal GAS Mask cabinets
Emergency Alarm
Scott Air Packs
First Aid Station
Fire Houses
Fire Extinguishers
Diaster Horn



- Eye Wash Safety Shower
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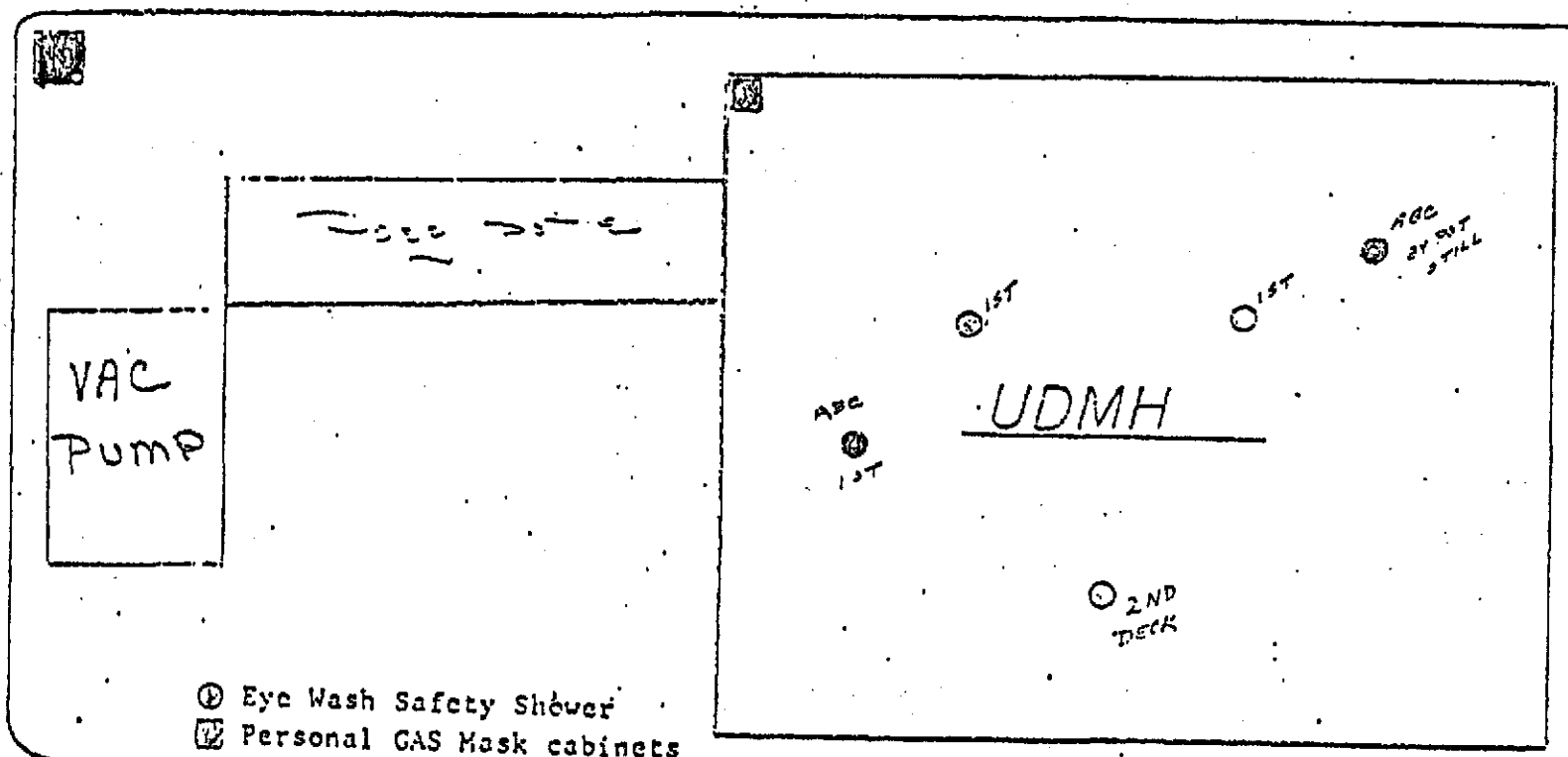

- Eye Wash Safety Shower
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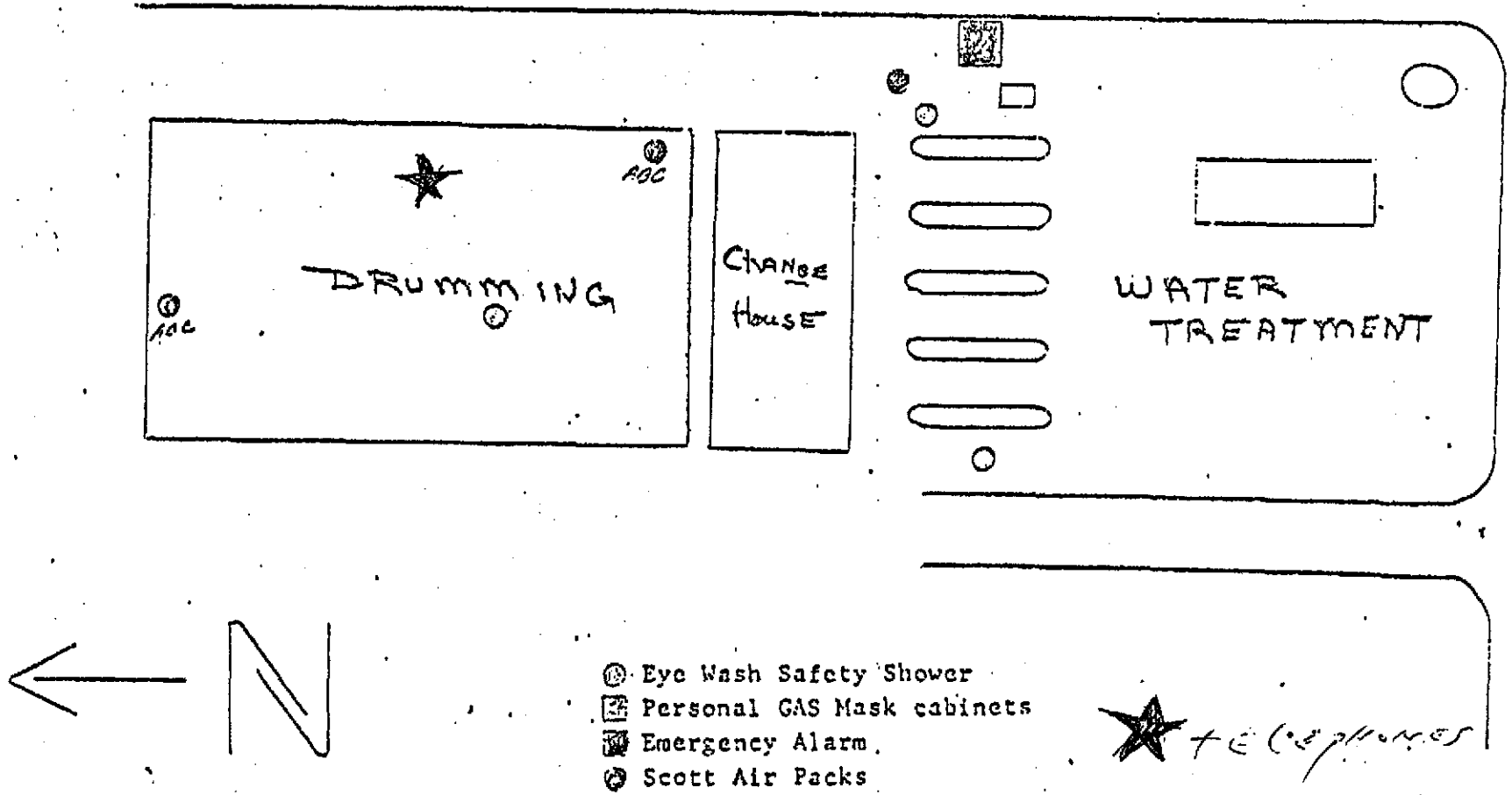
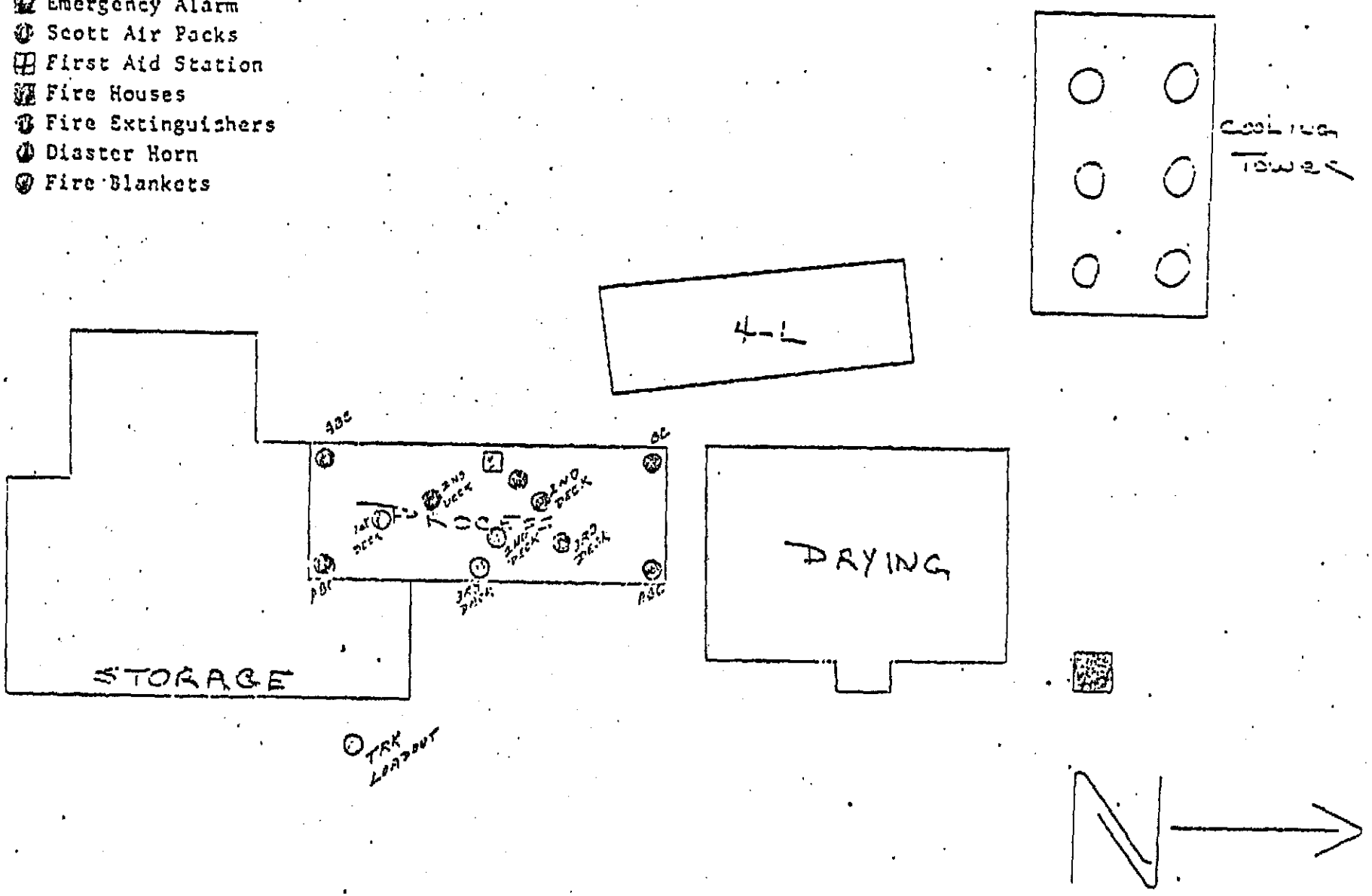
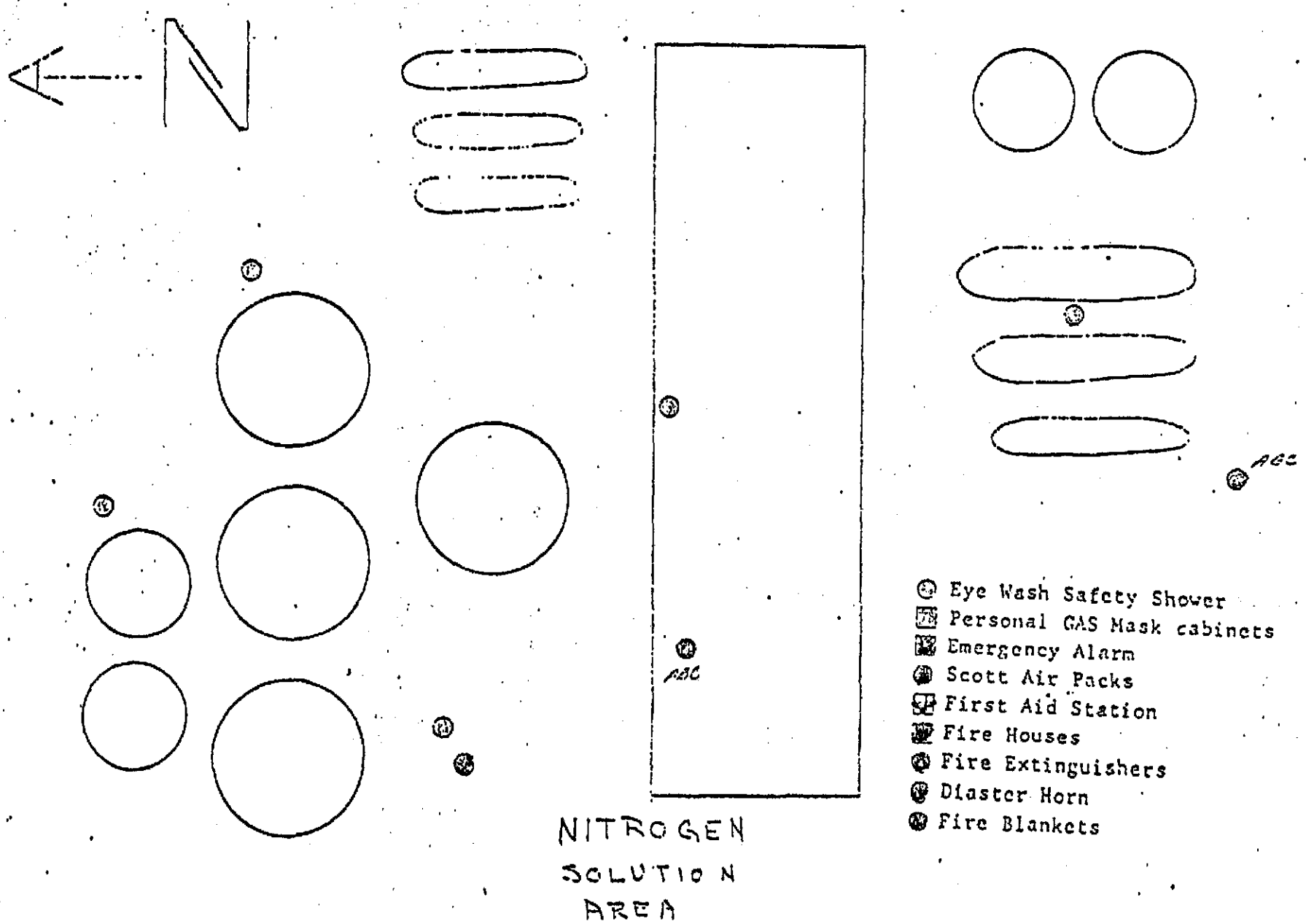

DRUMMING
ABC
ABC
CHANGE HOUSE
WATER TREATMENT
N
Eye Wash Safety Shower
Personal GAS Mask cabinets
Emergency Alarm
Scott Air Packs
First Aid Station
Fire Houses
Fire Extinguishers
Diaster Horn
Fire Blankets
telephones

- Eye Wash Safety Shower
- Personal GAS Mask cabinets
- Emergency Alarm
- Scott Air Packs
- First Aid Station
- Fire Houses
- Fire Extinguishers
- Diaster Horn
- Fire Blankets



ATRAZINE


N
NITROGEN
SOLUTION
AREA
Eye Wash Safety Shower
Personal GAS Mask cabinets
Emergency Alarm
Scott Air Packs
First Aid Station
Fire Houses
Fire Extinguishers
Diaster Horn
Fire Blankets

a(7) Contingency Plan - Additional Information

F-3a(3) Emergency equipment for spill control

Spill control is provided by the fact that gravity drainage within the plant is to the surface impoundment. The only excpetion is those areas that are completely self contained where spills are returned to the process. Nevertheless, it is desireable and prudent to have safety and emergency equipment available to control spills at the source. The following is a tabulation of that equipment:

Equipment:	Frequency of Inspection:
Two major dirt moving contractors (Buford Construction and Miller Construction) are available in Vicksburg on short notice with bulldozers, backhoes, scrapers, trucks, portable sump pumps, portable sludge pumps, cranes, sandbags, rip-rap, generators and emergency lighting systems. Both contractors are extremely familiar with the plant and plant personnel.	As needed.
Dirt borrow areas are avialable on-site.	As needed.
55-gallon used steel drums.	
Emergency showers and eyewash	Monthly
Face shields, goggles, and eye-glasses with side shields	Monthly
Chemical cartridge escape respirators with cartridges for organic vapors and acid gases	Monthly
Chest-mounted gas mask cannisters; full face	Monthly
Self contained breathing apparatus	Monthly
Fire extinguishers	Monthly
Emergency horn	As needed
Fire blankets	Monthly

Equipment:	Frequency of Inspection:
Telephone system	As needed
First aid equipment and supplies	Monthly
Protective clothing (uniforms, rubber boots, gloves)	As needed
Shower room	Monthly

F - 4a Loading Operations

The unloading of DNBP process wastewater into tanktrucks for shipping off-site to deep well disposal in an area of waste management where unloading or loading could present a waste hazard if improperly attended. As described under "a(1) General Description" the DNBP process wastewater is acidic and hazardous by virtue of characteristic D002.

Spill prevention measures are incorporated by design. A loading rack and provision for top entry loading is provided. The operator can safely walk onto the top of the truck and attach the unloading hose connection and control the loading pump while observing the loading. Upon completion the liquid remaining in the unloading hose will drain by gravity into the truck, thus avoiding spillage.

Further spill control is provided by the presence of a process drain at the loading rack and tanks that drains by gravity to the surface impoundment. Contents of the surface impoundment are treated by carbon adsorption prior to discharge to the Mississippi River.

Detailed plant wide spill control is provided in a(7) The Contingency Plan and a(8)ii Run-off Prevention.

a(7) Contingency Plan - Additional Information

G - 1 General Information

The Vicksburg facility of Vertac Chemical Corporation is located in Warren County, Mississippi along the Mississippi River immediately on the south limits of the City of Vicksburg. The address is:

Vertac Chemical Corporation, Vicksburg Facility
P. O. Box 3
Rifle Range Road
Vicksburg, Mississippi 39180

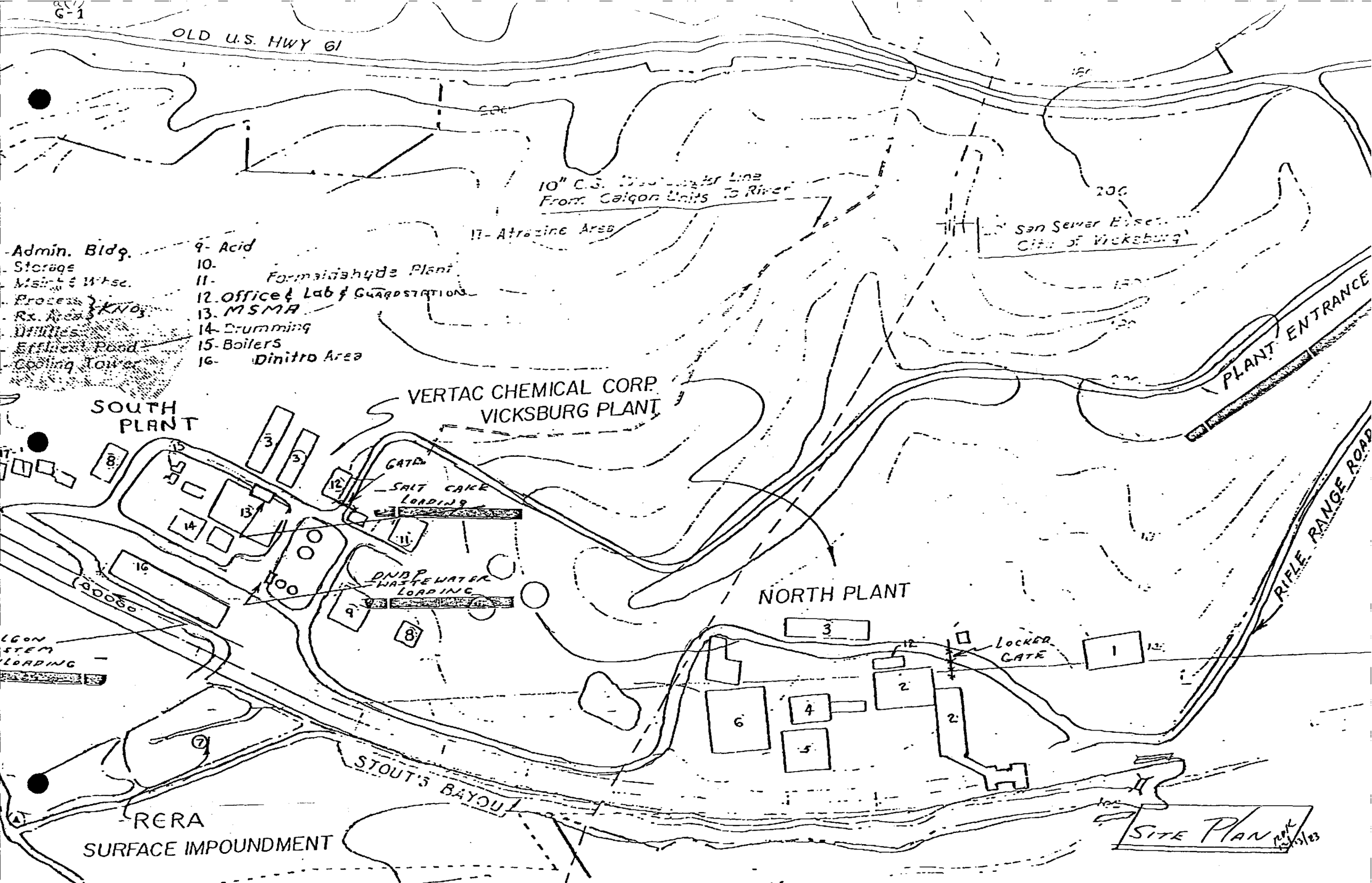
A site map is attached.

The facility is a manufacturer of chemicals. The plant site is divided physically and functionally into a "north plant" and a "south plant". The north plant is primarily a manufacturer of potassium nitrate and additionally manufactures by-products chlorine and nitrogen tetroxide. The south plant is primarily a manufacturer of pesticides, but additionally manufactures nitric acid, which is used entirely as a raw material in the north plant.

The south plant contains these manufacturing operations:

1. Atrazine
2. Toxaphene
3. Dinitrobutyl phenol (Dinoseb)
4. MSMA

The Atrazine and Toxaphene plants are shut down and there is no reasonable anticipation that production of those products will resume. The dinitrobutyl phenol and MSMA plants are operational.


G-1
OLD U.S. HWY 61
10" C.S. Wastewater Line
From Calgon Units To River
17- Atrazine Area
San Sewer Bases
City of Vicksburg
Admin. Bldg.
Storage
Maint & Whse.
Process
Rx. Area
KNO3
Utilities
Effluent Pond
Cooling Tower
9- Acid
10-
11- Formaldahyde Plant
12. Office & Lab & Guardstation
13. MSMA
14- Drumming
15- Boilers
16- Dinitro Area
SOUTH PLANT
VERTAC CHEMICAL CORP.
VICKSBURG PLANT
GATE
SALT CAKE LOADING
DNBP WASTEWATER LOADING
NORTH PLANT
LOCKED GATE
PLANT ENTRANCE
RIFLE RANGE ROAD
STOUT'S BAYOU
RERA
SURFACE IMPOUNDMENT
SITE PLAN

PART 3

PLANNING AND RESPONSE

3.1 Emergency Response Activities and Coordination

a. For emergency response activities, response management at the Vicksburg facility is accomplished through a single predesigned agent, the Emergency Coordinator (EC).

b. The predesignated ECs for all emergencies occurring within the boundaries of the Vicksburg facility are:

(1) EC-1 R. F. Maraman

(2) EC-2 S. Keen

(3) EC-3 B. J. Gunn

c. The specific duties of the emergency coordinator are as follows:

Minor Spills or Leaks (Easily contained and not really an Emergency)

Notify the emergency coordinator and the shift supervisor. Take immediate steps to contain and repair the leak. Initiate clean up measures.

Major Spill, Fire or Explosion

Notify the emergency coordinator.

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

(1) Activate internal facility alarms or communications, to notify all facility personnel: and

(2) Notify appropriate State or local agencies with designated response rolls if their help is needed. The order of notification is to notify local authorities and emergency teams and lastly, State and Federal authorities.

(b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount and a real extent of any released materials. He will most probably do this by observation since he is intimately familiar with raw material at the plant. He may also consult material safety data sheets or submit samples for analysis by the lab. The lab will analyze for the particular product or raw material suspected to be spilled.

(c) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire or explosion. This assessment must consider both direct and indirect effects of the release, fire or explosion (e.g., the effects of any toxic, irritating or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions).

(d) If the emergency coordinator determines that the facility has had a release, fire or explosion which could threaten human health or the environment, outside the facility, he must report his findings as follows:

(1) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated: and

(2) He must immediately notify the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

(i) Name and telephone number of reporter.

(ii) Name and address of facility.

(iii) Time and type of incident (e.g., release, fire).

(iv) Name and quantity of material(s) involved, to the extent known.

(v) The extent of injuries, if any; and

(vi) The possible hazards to human health, or the environment outside the facility.

(e) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions and releases do not occur, recur or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing release waste, and removing or isolating containers.

(f) If the facility stops operations in response to a fire, explosion or release, the emergency coordinator must monitor for leaks, pressure build-up, gas generation, or ruptures in valves, pipes or other equipment whereever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator must provide for treating, storing or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire or explosion at the facility.

COMMENT: Unless the owner or operator can demonstrate that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements.

(h) The emergency coordinator must ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored or disposed of until cleanup procedures are completed: and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The emergency coordinator must ensure that the owner or operator notifies the Regional Adminstrator and appropriate State and local authorities, that the facility is in compliance with apragraph (h) of this Section before operations are resumed in the affected area(s) of the facility.

(j) The emergency coordinator must ensure that the owner or operator notes in the operating record the time, date and details of any icident that requires implementing the contingency plan. Within 15 days after the incident, the owner or operator must submit a written report on the incident to the Regional Administrator. The report must include:

(1) Name, address and telephone number of the owner or operator.

(2) Name, Address and telephone number of the facility.

(3) Date, time and type of incident (e.g., fire, explosion).

(4) Name and quantity of material(s) involved.

(5) The extent of injuries, if any.

(6) An assessment of actual or potential hazards to human health or the environment, where this applicable: and

(7) Estimated quantity and disposition of recovered material that resulted from the incident.

3.2 Local Fire Department Notification

The local fire department is an appropriate agency to be notified in the event of a major fire or explosion or major spill of flammable material as noted under the specific duties of the emergency coordinator. The fire department can be reached by dialing 911 or 636-1121.

3.3 Local Law Enforcement Notification

The Vicksburg Police Department at 636-2511 and the Sheriff at 636-1761 are appropriate agencies to be notified in the event of major fire or explosion or a major spill with reasonable probability of transit of chemicals in sufficient quantities beyond the boundary lines so as to be able to alert the public to avoid potential contact.

3.4 Local Hospital Notification

The local hospital is an appropriate agency to be contacted in the event of a major incident that has caused bodily harm or a major incident with sufficient chemical exposure to require blood testing, physical exams, etc.

3.5 Outside Responsibility and/or Assistance

a. Chemtrec at 800/424-9300. The Chemical Transport Emergency Center is a 24 hour a day service with access to industry-wide expertise on hazardous material handling of any chemical commercially available.

b. Bureau of Pollution Control - The bureau of Pollution Control is responsible for coordinating, monitoring and cleanup of any large-scale release of chemicals which threatens the environment. The Bureau of Pollution Control is also the primary agency dealing with chemical hazards involved in pipeline breaks, train wrecks, truck wrecks, industrial accidents, etc., when health or people are involved.

a(8) Description of Procedures, Structures or Equipment for Hazardous Waste Management Facilities to:

i Prevent unloading hazards
ii Prevent runoff of waste
iii Prevent contamination of water supplies
iv Mitigate effects of equipment failure
v Minimize personnel exposure

G-4d
G-4e
G-4f
G-4h
G-5
G-6

i Unloading Hazard Prevention

There are two areas of waste management where unloading or loading could present a waste hazard if improperly attended. These are the unloading of DNBP process wastewater into tanktrucks for shipping off-site to deep well disposal and unloading of salt cake from the centrifuge of the MSMA process into roll-off sludge containers for shipping off site to hazardous waste landfill disposal.

As described under "a(1) General Description" the DNBP process wastewater is acidic and hazardous by virtue of characteristic D002. Loading of the water into tanktrucks from 1 to 3 day storage is safely accomplished at an unloading rack with top entry into the dome of the truck. The truck is parked on level ground.

By-product salt from the monosodium methane arsonate plant is a listed RCRA waste (K031). The salt discharges from a centrifuge through a chute directly into a polyethylene liner placed inside the roll-off sludge container. The roll-off sludge container is parked on a level concrete diked area with a slight ramp to move the container on and off. The entire area is roofed. Two containers are always in place, as one is removed for transit off-site to hazardous waste disposal, a replacement is slipped into place.

ii Run-Off Prevention

Run-off prevention from process areas onto the ground is designed so as to avoid creation of hazardous wastes. Process areas are diked and roofed. Drains in the process areas, with the exception of the MSMA plant, are tied into a piped system which drains by gravity to the surface impoundment. The MSMA plant is totally contained and spills, rainwater falling within process areas, and process water are returned to the process; that is, there is no effluent from the MSMA plant.

Areas around storage tanks also drain into the piped system which drains by gravity to the surface impoundment.

Spill control is provided by the fact that gravity drainage within the plant is to the surface impoundment. The only exception is those areas that are completely self contained where spills are returned to the process. By virtue of plant layout and design, the strategy on run-off is to contain the run-off in the surface impoundment. Contents of the surface impoundment are treated by carbon adsorption prior to discharge to the Mississippi River. Nevertheless, it is desireable and prudent to have safety and emergency equipment available to control spills at the source.

In the event of a spill the Emergency Coordinator will assess the magnitude and potential seriousness of the spill or release. If the accident is determined to lie within the company's emergency response capabilities, the Emergency Coordinator will contact and deploy the necessary in plant personnel. If the accident is beyond plant capabilities, the Emergency Coordinator will contact the appropriate agencies. Detailed response are described in a(7) The Contingency Plan. Coordination arrangements with appropriate agencies are noted by their acknowledgement of receipt of our contingency plan and their intent to respond when needed.

As described in the Contingency plan, in the event of a major emergency involving a chemical spill, the following general procedures will be used for rapid and safe response and control of the situation. If an employee discovers a chemical spill or process upset resulting in a vapor release, he or she will immediately report it to the area supervisor.

The area supervisor will contact the designated Emergency Coordinator at the time of the incident. When contacted, the designated Emergency Coordinator will obtain information pertaining to the following:

1. The material spilled or released.

2. Location of the release or spillage of hazardous material.

3. An estimate of quantity released and the rate at which it is being released.

4. The direction in which the spill or vapor or smoke release is heading.

5. Any injuries involved.

6. Fire and/or explosion or possibility of these events.

7. The area and materials involved and the intensity of the fire or explosion.

In the event of a leak or spill in a tank, all feed lines to the tank will be closed.

If a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large and involves a tank or a pipeline rupture, an initial isolation of at least 100 feet in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible the area will be roped or otherwise blocked off.

If the spill results in the formation of a toxic vapor cloud and its release, further evacuation will be forced. An area at least 500 feet wide and 1000 feet long will be evacuated downwind if volatile materials are spilled.

If the control and cleanup of a spill, release, or fire is within the capabilities of company personnel and local response teams, the Mississippi Department of Natural Resources or the National Response Center will not be notified unless on the following occurs:

1. The spill will not be contained within the surface impoundment and the guantity of hazardous material spilled is equal to or greater than the reportable quantity specified under 40 CFR Part 117.

2. The spill involves other hazardous materials not listed but used at the plant if they pose an actual or potential hazard of life or property. As called for in regulations developed under the Comprehensive Environmental Liability and Compensation Act of 1980 our practice is to report a spill of a pound or more of any hazardous material for which a reportable quantity has not been established and which is lised under the Solid Waste Disposal Act, Clean Air Act, Clean Water Act, or TSCA. We also follow the same practice for any substances not listed in the Acts noted above but which can be classified as a hazardous wasts under RCRA.

The following guidelines will be used in case of an accidental pisode involving waste materials. These are general guidelines, and circumstances may dictate some alterations to these procedures.

Most waste spills and leaks are easily contained within dikes and sumps or areas of isolation. Small spills occurring in a

diked area are flushed with plenty of water, to the sump or drain to the surface impoundment provided for that area. If necessary, a rented portable sump pump is used to pump the diluted waste material into 55- gallon drums.

For all large spills or serious leaks the following guidelines will be followed as closely as possible:

1. If a leak develops or a spill occurs from a waste storage tank, pipeline pump, etc., the person discovering the discharge will leave the immediate area and contact the Emergency Coordinator. The Emergency Coordinator will obtain the following information:

a. Person(s) injured and seriousness of injury.

b. Location of the spill or leak, material involved, and source (tank, pipeline, etc.).

c. The approximate amount spilled, an estimate of the liquid and/or gas discharge rate, and the direction the liquid flow or gaseous cloud is moving.

d. Whether or not a fire is involved.

2. If a leak develops in the surface impoundment the Emergency Coordinator will:

a. Shut down all processes creating waste that is discharged into the impoundment.

b. Shut off flow into the section of the impoundment that is leaking. (The impoundment is divided into three sections interconnected by drainage pipe.)

c. Begin repairs.

3. If necessary, the Emergency Coordinator will:

a. Initiate evacuation of the hazard area. For small spills or leaks, isolate at least 50 feet in all directions. For large spills, initially isolate at least 100 feet in all directions and keep all persons upwind of spill.

b. Obtain medical attention for any injured persons. It may be helpful to instruct the caller in initial first aid procedures. Then call the hospital.

c. Call the fire department if a fire is involved that cannot be extinguished by plant personnel. Fight small fires with dry chemicals, CO_2, or foam, and large fires with water spray, fog, or foam. Keep heat-exposed containers cooled with water spray and remove them from the fire if possible. IF A RISING SOUND COMES FROM A VENTING DEVICE OR THE TANK BEGINS TO DISCOLOR, WITHDRAW FROM THE AREA IMMEDIATELY.

d. Dispatch emergency personnel to the sire to take the appropriate action.

e. Contact the proper authorities.

4. Cleanup personnel will:

a. Make sure all unecessary persons are removed from the hazard area.

b. Put on protective clothing and equipment.

c. If the flammable waste is involved, remove all ignition sources, and use spark and explosion proof equipment and clothing in containment and cleanup.

d. If possible try to stop a leak. Special materials will be kept on hand for temporary repairs.

e. Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.

f. Contain, divert, and clean up a spill if it has not been contained by a dike or sump. Most spills contained within the dike or sump can be pumped back into the appropriate storage tank or drum.

g. Place all containment and cleanup materials in drums for proper disposal. Some items, such as absorbent rags or booms may have to be cut up.

h. Place all recovered liquid wastes and contaminated soil in drums for removal to an approved disposal site.

In order to prevent the recurrence or spread of fires, explosions or releases include stopping processes and operations, collecting and containing released waste, and recovering or isolating containers.

Storage and Treatment of Released Material (40 CFR 264.56 (g))

Immediately after an emergency, the emergency coordinator will make arrangements for treatment, storage or disposal of recovered waste, contaminated soil, surface water or any other contaminated material accumulated during the cleanup described above.

A listing of emergency equipment is made in the contingency plan and is repeated below:

Equipment:	Frequency of Inspection:
Two major dirt moving contractors (Buford Construction and Miller Construction) are available in Vicksburg on short notice with bulldozers, backhoes, scrapers, trucks, portable sump pumps, portable sludge pumps, cranes, sandbags, rip-rap, generators and emergency lighting systems. Both contractors are extremely familiar with the plant and plant personnel.	As needed
Dirt borrow areas are available on site.	As needed
55-gallon used steel drums	
Emergency showers and eyewash	Monthly
Face shields, goggles, and eye-glasses with side shields	Monthly
Chemical cartridge escape res-pirators with cartridges for organic vapors and acid gases	Monthly
Chest-mounted gas mask cannisters; full face	Monthly
Self contained breathing apparatus	Monthly
Fire extinguishers	Monthly
Emergency horn	As needed
Fire blankets	Monthly
Telephone system	As needed

Equipment:	Frequency of Inspection:
First aid equipment and supplies	Monthly
Protective clothing (uniforms, rubber boots, gloves)	As needed
Shower room	Monthly

After and emergency event, all emergency equipment listed above will be cleaned so that it is fit for use or it will be discarded and replaced. Before operations are resumed, an inspection of all safety equipment will be conducted.

iii Water Supply Protection

The previous paragraphs on run-off protection describe the system to protect surface waters. Further discussion on the integrity of the surface impoundment is included in a(11) iii and b(3)ii.

The groundwater is monitored by seven monitoring wells. A sketch of the well location is attached. Further information is included in "c".

iv Equipment Failure

Equipment failure is, of course, minimized by good plant wide maintenance procedures. Any failure resulting in spills or leaks will be caught in the surface impoundment, if they are not retained at the point of failure. It then becomes significantly important to minimize potential for failure at the surface impoundment.

At the surface impoundment there are three pumps in parallel to pump contents to the carbon adsorption system. Failure in one pump can be tolerated as long as repairs are not delayed. Failure of the impoundment itself can not be tolerated. Surface impoundment integrity is discussed in a(11) iii and b(3)ii.

v Personnel Safety

The wastes within the Vicksburg facility present less of a degree of hazard than raw materials and products, nonetheless, the same safety precautions are taken. When handling wastes minimum safetygear consists of protective gloves, eye protection, and head protection.

The initial response to any emergency will be to protect human helath and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

G - 7 Evacuation Plan

There is no hazardous waste incident that would cause need for an evacuation plan at the Vicksburg facility.

a(12) Personnel Training Procedures

H - 1a

H - 1b

H - 1e

H - 2

Pertinent details of plant compliance are attached. In order to be responsive to questions, details emphasize training for inspection of the surface impoundment.

PART B

Sec. 3(d) (1.) (2) (3)

H-1 INTRODUCTORY TRAINING

Prior experience in other plants and more than 5 years' experience at the Vicksburg plant is considered to be "on the job training" to comply with the requirements of H-1. Introductory training is consistent with duties.

H-1a JOB TITLE AND DUTIES

Title Plant Manager. (F. L. Ahlers)

Duties (as relate to hazardous waste management).

General overall responsibility for hazardous waste management at the Vicksburg plant.

Job Description: Manages the overall operation of the Vicksburg facility.

H-1b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES

1. Training (introductory) See H-2, above.

2. Training (continued)

Review various timely information distributed by the manager of environmental affairs or the effluent coordinator.

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPTION

Keeps the plant manager updated on environmental affairs and plant compliance.

H-1e TRAINING FOR EMERGENCY RESPONSE

Will attend the training session on the contingency plan. Sections H-1e (1), H-1e (2), H-1e (3), H-1e (4), H-1e (5), and H-1e (6) apply to this position at the management and corporate and public information levels.

H-2 IMPLEMENTATION OF TRAINING PROGRAM

Implementation and documentation records will be initiated by 2-15-1984 and reviewed on an annual basis.

3. (d) (1.) (2) (3)

H-1 INTRODUCTORY TRAINING

More than 5 years experience at the Vicksburg facility in positions with hazardous waste management responsibilities is considered to be "on the job training" to comply with the requirements of H-1. The normal introductory training is consistent with the duties.

H-2a JOB TITLE AND DUTIES

Title Production Manager (S. Keen)

Duties: (as relate to hazardous waste management).

1. Direct the activities of the production supervisor assigned to hazardous waste activities.

2. Cooperate with the environmental coordinator in all areas of hazardous waste.

3. Act as emergency coordinator in the absence of the environmental coordinator or plant supervisor.

4. Report to the plant manager in all areas of hazardous waste.

Job Description Manages the production department.

H-2b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES

1. Training (introductory) See H-1 above.

2. Training (continued).

Attend the effluent operator training session, with particular emphasis on the contingency plan.

Review various timely information distributed by the manager of environmental affairs, the plant manager, and the environmental coordinator.

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPTION

The job of production manager should include a familiarity with the activities of all employees engaged in hazardous waste activities pertaining to sections H-1e through H-1e (6).

H-1e TRAINING FOR EMERGENCY RESPONSE

Will attend the training session on the contingency plan. The employee has a copy of the plan for interim study. Sections H-1e through H-1e (6) apply to this position on a plant level.

H-2 IMPLEMENTATION OF TRAINING PROGRAM

Implementation and documentation records will be initiated by 2-15-84 and reviewed on an annual basis.

PART B

Sec. 3(d) (1.) (2) (3)

H-1 INTRODUCTORY TRAINING

More than 5 years' experience at the Vicksburg plant is considered to be "on the job training" to comply with the requirements of H-1. The introductory training is consistent with the duties.

H-1a JOB TITLE AND DUTIES

Title Production Supervisor (B. J. Gunn)

Duties The following duties relate to hazardous waste activities:

1. Report to the Production Manager in all areas of hazardous waste.

2. Cooperate with the Environmental Coordinator in all areas of hazardous waste.

3. Supervise the effluent operators in all areas of hazardous waste.

4. Conduct or assist in the personnel training program.

5. Act as Emergency Coordinator in the absence of the Environmental Coordinator.

6. Assist in emergency action required when the contingency plan is activated.

7. Train or direct the training of new operators in the personnel training program.

8. Direct operation and repair of the activated carbon units. Cooperate with the Environmental Coordinator in this area.

Job Description Supervises the effluent operators.

H-1b TRAINING CONTENT, FREQUENCIES AND TECHNIQUE

Introductory Training

1. Familiarization with the personnel training program.

2. Familiarization with the contingency plan.

3. Familiarization with the location and operation of all hazardous waste areas.

Continuing Training

1. Attend Federal and State environmental seminars on hazardous waste.

2. Study the information distributed by the Environmental Coordinator.

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPTION

The nature of the position is to supervise in the hazardous waste area

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPDTION (continued)

and to act as an alternate environmental coordinator in an emergency.

H-1e TRAINING FOR EMERGENCY RESPONSE

Will attend the training session on the contingency plan. Sections H-1e (1) through H-1e (6) apply to this position on a plant level.

H-2 IMPLEMENTATION OF TRAINING PROGRAM

Implementation and documentation records will be initiated by 2-15-84 and reviewed on an annual basis.

Sec. 3(d) (1.) (2) (3)

H 1 INTRODUCTORY TRAINING

Five years prior experience as the Production Manager and Technical Manager at the Vicksburg facility is considered to be "on the job training" to comply with the requirements of H-1. Introductory training is considered to be "on the job training" to comply with the requirements of H-1. Introductory training is consistent with the duties.

H-1a JOB TITLE AND DUTIES

Title Technical Manager (G. D. Madsen)

Duties (as relate to hazardous waste management).

1. Direct the activities of the environmental coordinator.

2. Report to the Plant Manager in all areas of hazardous waste management.

Job Description

Management and control of hazardous waste activities through the environmental coordinator.

H-1b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES

1. Training (introductory) See H-1 above.

2. Training, continued.

Review various timely information distributed by the manager of environmental affairs, the plant manager, and the environmental coordinator.

Attend the effluent operator training session, including the contingency plan.

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPTION

The job of Technical Manager should include a familiarity with the activities of all employees engaged in hazardous waste activities pertaining to sections H-1e (1) through H-1e (6). The plant manager may, under certain conditions, require assistance in meeting these sectional requirements.

H-1e TRAINING FOR EMERGENCY RESPONSE

Will attend the training session on the contingency plan. Sections H-1e (1) through H1e (6) apply to this position on a plant level.

H-2 IMPLEMENTATION OF TRAINING PROGRAM

Implementation and documentation records will be initiated by 2-15-84 and reviewed on an annual basis.

PART B

Sec. 3(d) (1.) (2) (3)

H-1 INTRODUCTORY TRAINING

A minimum of two years' experience in hazardous waste management as environmental coordinator for the Vertac, Vicksburg facility is considered to be "on the job training" to comply with the requirements of H-1. Introductory training is consistent with the duties.

H-1a JOB TITLE AND DUTIES

Title Environmental Coordinator (R. F. Maraman)

Duties (as they relate to hazardous waste management).

1. Coordinate the environmental activities between the Vertac Vicksburg plant and the manager of environmental engineering, the various Federal and State environmental agencies, and the plant personnel engaged in all phases of environmental activity.

2. Prepare or direct the preparation of all permit-related reports to the various Federal and STate environmental agencies.

3. Advise the Vicksburg plant management and supervisory personnel in environmental areas.

4. Prepare or direct the preparation of work orders necessary to maintain environmental equipment and associated areas such as containment ponds, hazardous waste storage vessels, air monitoring equipment.

5. Prepare or direct the preparation of various Federal and State permits.

6. Supervise the activities of the air and water effluenct analysts.

7. Prepare or direct the preparation of work orders necessary to maintain the laboratory effluent analytical equipment.

8. Prepare or direct the preparation and filing of hazardous waste manifests.

9. Act as the emergency coordinator in emergency situations.

10. Originate plans to deal with new legislation.

11. Report to the technical director in all environmental areas.

Job Description

Coordinate hazardous waste activities. See above, Duties - 1 which is also a very accurate job description.

H-2b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES

1. Training (introductory). See H-1 above.

2. Training (continued)

Attend various federal or state sponsored environmental seminars.

H-2b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES (continued)

Subscribe to and study one or more hazardous waste magazines published at least on a monthly basis.

Subscribe to the Federal Register, study and distribute sections dealing with hazardous waste.

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPTION

Overall familiarity with hazardous waste activities and developments insures adequate coordination.

H-1e TRAINING FOR EMERGENCY RESPONSE

The employee assisted in developing the emergency response and was the emergency coordinator in one emergency.

The employee will teach the plan to the other employees.

H-2 IMPLEMENTATION OF TRAINING PROGRAM

Implementation and documentation records will be initiated by 2-15-84 and reviewed on an annual basis.

PART B

Sec. 3(d) (1.) (2) (3)

H-1 INTRODUCTORY TRAINING

A minimum of 4 years' experience in hazardous substance analysis and waste manifests is considered to be "on the job training" to comply with the requirements of H-1. The normal introductory training is consistent with the duties.

H-1a JOB TITLE AND DUTIES

Title (2) Chemist, Lynn Gunnison
David Green

Duties (as they relate to hazardous waste management).

Perform analyses to determine the presence and concentrations of arsenic, toxaphene, dinitrobutylphenol specifically, and other present and future related analyses.

Fill out hazardous waste manifests for the states of Alabama, Kentucky, Louisiana, and Texas, or to additional states that may be added in the future.

Job Description

1. Hazardous waste analysis.

2. Handling hazardous waste manifests.

H-2b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES

1. Training (introductory) See H-1 above.

2. Training (continued).

Become familiar with new methods of analysis as introduced (usually by E.P.A.) and use as required for the given analysis.

Receive and study any changes in hazardous waste manifests.

H-1d RELEVANCE OF TRAINING TO JOB DESCRIPTION

Keeps the employee abreast of new techniques to improve quality of analyses.

The contingency plan and sections H-1e (1) through H-1e (6) do not apply to this position.

H-2 IMPLEMENTATION OF TRAINING PROGRAM

Implementation and documentation records will be initiated by 2-15-84 and reviewed on an annual basis.

PART B

Sec. 3(d) (1.) (2) (3)

H-1 INTRODUCTORY TRAINING

From 3 to 5 years' service in the Vicksburg facility as effluent operators is considered to be "on the job training" to comply with the requirements of H-1.

H-1a JOB TITLE AND DUTIES.

Title Effluent Operator

Duties

1. Inspection, operating, and reporting duties in the following hazardous waste areas:

A. Containment pond.

B. Activated carbon filters.

C. Perform contingency plan duties in case of an emergency.

Names of Employees

1. Tommy Crutchfield
2. Eddie Cook
3. James Vinson
4. David Cotton

Job Description

Effluent operator.

H-2b TRAINING CONTENT, FREQUENCIES AND TECHNIQUES

1. Training (introductory) for new employees.

The training consists of a lecture session, a hands on period, and a training period with an experienced operator in the following:

Waste Site, The Containment Pond.

1. Description of waste and associated hazards.

2. Location of pond.

3. Explanation of flow to and from the pond.

4. Location of process lines, pumps, valves to and from pond.

5. Proper and safe operation of valves and pumps to and from the pond.

6. Inlet water to the pond and sources of the same.

7. Hazards of inlet water.

8. Location and operation of samplers and integrators.

H-2b

Waste Site, The Containment Pond. (continued)

9. Pond level management.

10. pH control.

Inspection Program for the Containment Pond

Critical Inspection Items

1. Dike inspection, conditions which might lead to leaks or rupture.

2. Grass mowing and upkeep

3. Pond level.

4. Condition of warning signs.

5. Conditions which might lead to fire or explosion.

Review of Emergency Response Contingency Plan includes H-1a (1) through H-1e (6) where applicable.

1. Supervisor to whom to report.

2. General duties, an overall view of the plan.

3. Specific duties for prevention of leaks or rupture.

4. Specific duties in the event of a release.

5. Emergency equipment, care and use.

6. Specific duties in the event of a fire or explosion, communications, fire alarms.

7. Emergency shutdown operation.

Waste Site Activated Carbon Columns

1. Description of waste and associated hazards.

2. Flows from pond to columns.

3. Flows from columns to discharge line.

4. Arrangement and operation of pipes, valves, and associated equipment.

5. Backwashing.

6. Draining.

7. Transfer of spent carbon.

H-1e (continued)

Waste Site Activated Carbon Columns (continued)

8. Receipt of new carbon.

9. Inspection for leaks.

10. Inspection for malfunctions.

11. Conditions that might lead to fire or explosion.

Training, Continued

1. Attend the Calgon Corporation's training session on the operation of the Calgon activated carbon system.

2. Attend personnel training programs developed for any new process.

3. Attend weekly safety meetings.

4. Attend review sessions.

H-1e TRAINING FOR EMERGENCY RESPONSE

Noted under section H-1b. Sections H-1e (1) through H-1e (6) apply to this position at the plant level.

H-2 IMPLEMENTATION AND DOCUMENTATION

Implementation and documentation records will be initiated by 2-15-84 and reviewed on an annual basis.

(a)(13) Closure and Post Closure Plan

I-1a
I-1b
I-1c
I-1d
I-1e
I-2

The first closure and post closure plan was submitted on October 13, 1981. A revised plan based on new information was submitted on March 1, 1983. The new information was the fact that 13,000 cubic yards of dirt had been added to existing dikes and additionally that fill dirt from the old landfill area would not be made available since remedial work would be performed on the landfill and the area completely, finally and permanently closed out in the late summer of 1983. In addition, the elevation of the dike on the surface impoundment was raised to 109.5 feet. That work was completed in November, 1983. This closure plan is, therefore, a 1984 closure plan.

Closure Schedule:

It is factually not anticipated that closure will occur. Closure is purely and simply a hypothetical presumption made necessary by regulations.

It is hypothetically assumed that closure will occur in the year 2014. The surface impoundment does not now contain hazardous liquid wastes. The sediment on the bottom of the pond may be a hazardous waste. The maximum inventory of hazardous waste is 6000 cubic yards. Conceivably by the year 2014 the toxic elements of the sediment may have migrated in part to the waste water, been adsorbed on carbon and destroyed by thermal incineration. Minimum hazardous waste inventory is zero. Once hypothetical closure takes place it will take less than 4 weeks to implement.

Closure Performance Standard:

The closure plan is based on the permanent and safe care of 6000 cubic yards of sediment that may or may not be hazardous. Permanent care will be established by covering the sediment and keeping it dry, thus eliminating the potential for environmental transport.

Decontamination:

There is no facility equipment that is contaminated.

Final Closure Activities (See Sketch a(13)-III-(1))

1. Dredge the sediment from the bottom of sections 1 and 2 into section 3. Section 3 is roughly a 200 ft. by 200 ft. triangle with bottom elevation 98' and top elevation 110'. Its capacity is 1500 yd^3 per foot. Addition of 6000 yd^3 will raise the bottom elevation to 102'.

2. Cap the sediment by using the dirt comprising the finger dike between sections 1 and 2. That section contains about 6000 yd^3 so the sediment would be capped by 4' and the bottom would be at elevation 106'.

3. Remove the top 5 feet of the south and east exterior dike around sections 1 and 2 for the final cap of section 3.

4. With a bulldozer fold over the remaining south and east exterior dikes of sections 1 and 2. Sections 1 and 2 will no longer be hazardous waste areas.

5. Fertilize and plant grass seed.

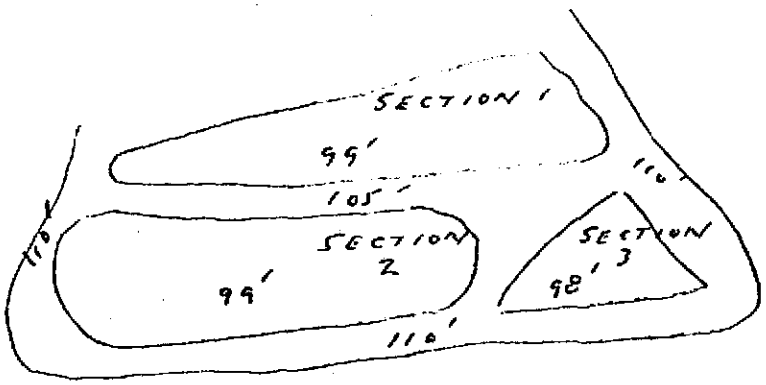
6. Obtain certification that execution of the plan was adequate.

Post Closure Activities

1. As post closure care establish grass and continue to mow the grass plus fill in any erosional areas that develop. Maintain the wells.

2. Annually sample and analyze groundwater from 3 monitoring wells for 3 years then once every 3 years for the remaining 27 years.

Functioning of the monitoring wells is ensured by providing a trust fund to ensure they will be sampled.



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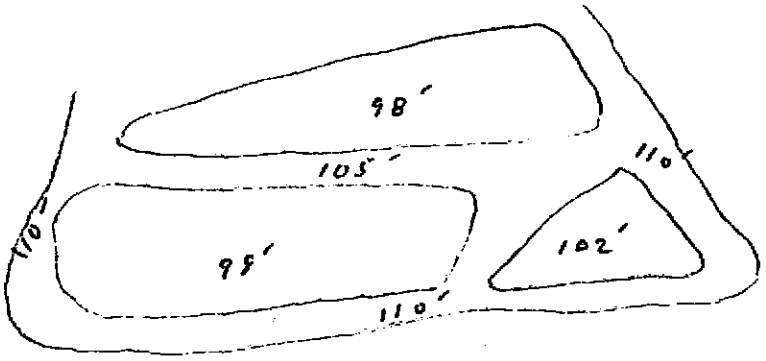
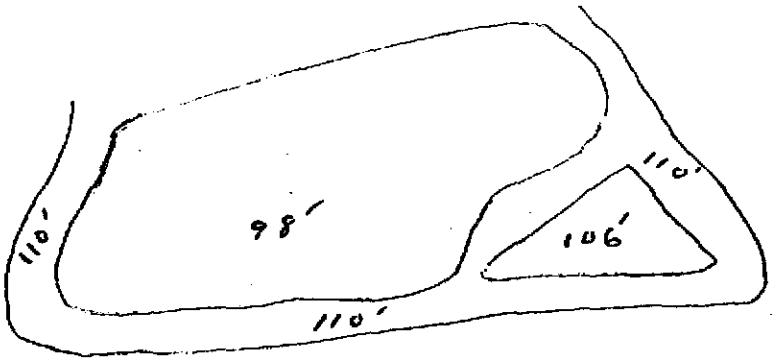
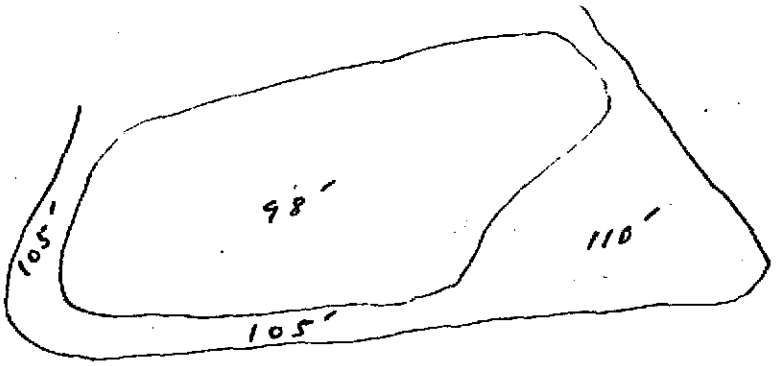


STEP 1

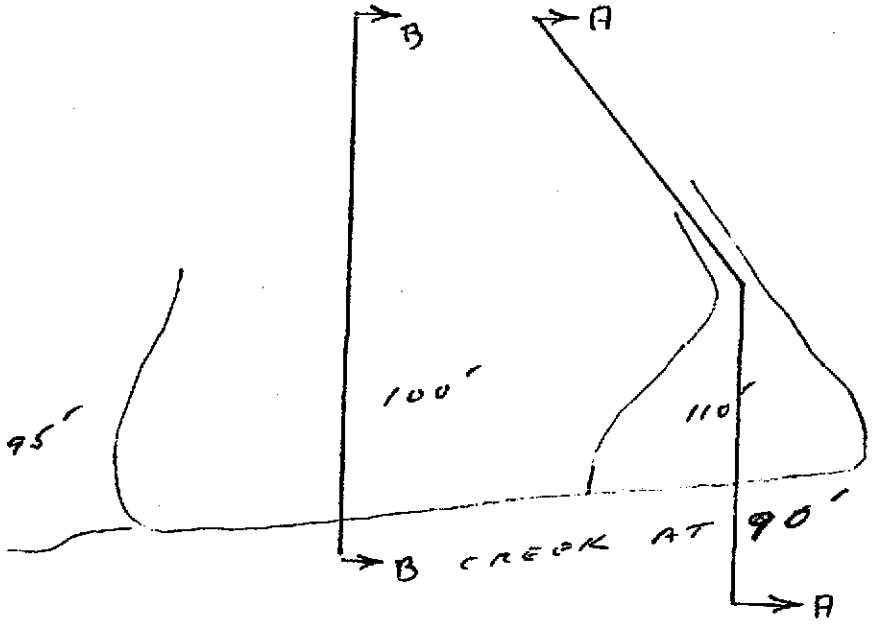


STEP 2



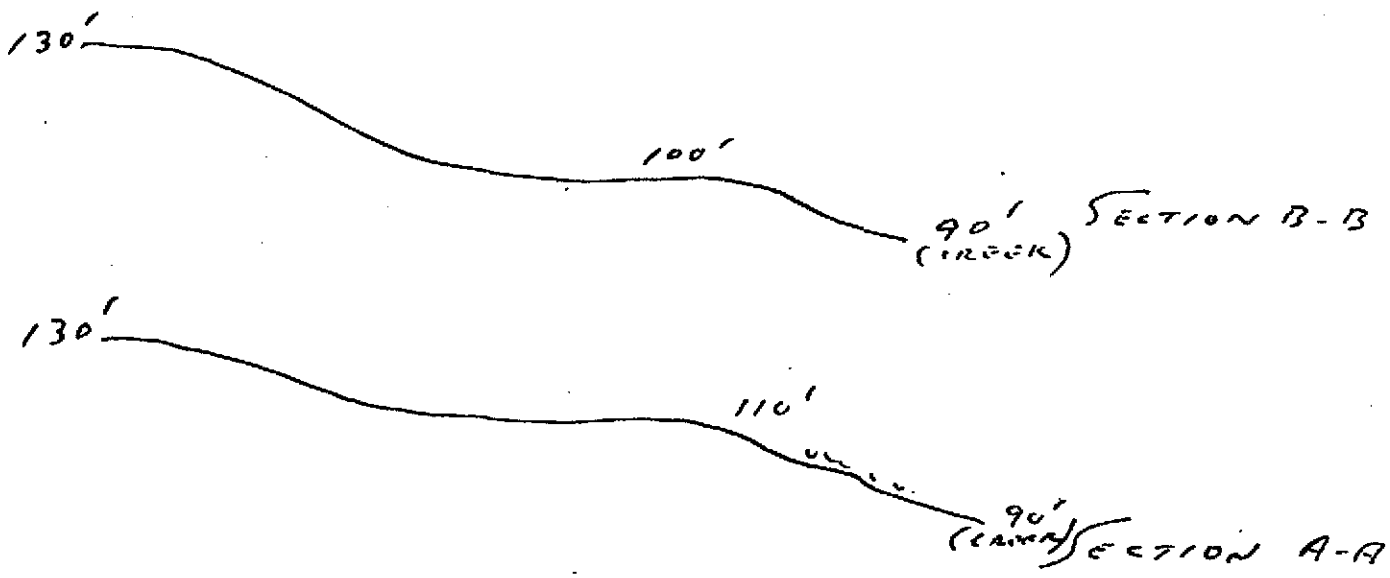
STEP 3

SKETCH
a(13) III - 1



STEP 4

FINAL — PLAN VIEW



FINAL
SECTIONS

SKETCH
G(13) III — 1

a(14)

I - 3 Notice in Deed

We need to consult with the Bureau of Pollution Control prior to making a permanent notation in the deed. I assume the closed out landfill should be on the deed even though it is not pertinent to this permit application. For reasons noted in this permit application, I assume the 16,000 gallon tank and tank V-3 should not be recorded. I assume the surface impoundment should be noted but should it be noted "as is" or "as hypothetically closed out".

a(15) Closure Cost Estimate

a(16) Post Closure Cost Estimate

I - 4

I - 6

Closure (see closure discussion)

1.	6000 yd^3 at \$1/yd^3 - dredge	\$ 6,000
2.	6000 yd^3 at \$1/yd^3 - dredge	6,000
3.	6000 yd^3 at \$.80/yd^3 - bulldoze	4,800
4.	20,000 yd^3 at \$.80/yd^3 - bulldoze	16,000
5.	Plant grass	200
6.	Obtain certification 10 hrs at \$50/hr	500
		\$33,500

Post Closure (see post closure discussion)

1.	20 hours per year at \$10/hr for 30 years	\$ 6,000
2.	36 analyses over 30 years at \$250/analysis	9,000
		\$15,000

Total closure plus post closure \$48,500

a(15) Closure Trust Fund

a(16) Post Closure Trust Fund

I-5a

The closure will not take place in 10 years. The hypothetical presumption of closure is that it will take place in the year 2014. Permits are renewable.

I - 8 - Liability Insurance

Copies of the entire policies were sent to the Bureau of Pollution Control on 12/1/83. See attached for reference.

No copies of properly worded forms were found in the material sent 11/1/83 to me.

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851
TELEX 53927

December 1, 1983

Mr. Jack M. McMillan
Director
Division of Solid Waste Management
Mississippi Department of
Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209

Dear Mr. McMillan:

Enclosed is a copy of our General Liability Policy (National Union Policy No. GLA9456807) covering sudden and accidental occurrences and a copy of our Environmental Impairment Liability Policy (International Insurance Company Policy No. 560-000-145) covering non-sudden occurrences, both of which are forwarded as per your request of Mr. R. D. Karkkainen dated October 28, 1983.

Yours very truly,

John C. Bumpers
John C. Bumpers
Vice President-Finance/Admin.
and Secretary

JCB:ap

Enclosures

cc: Mr. R. D. Karkkainen

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

October 28, 1983

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor
5100 Poplar
Memphis, Tennessee 38137

Dear Mr. Karkkainen:

Re: RCRA Liability Insurance
Policy Review
EPA ID Number MSD990714081

This is a request for a copy of your hazardous waste facility liability insurance policies for sudden and accidental occurrences and nonsudden occurrences as required under the Mississippi Hazardous Waste Management Regulations. The Environmental Protection Agency is employing a contractor to review these policies for adequacy to meet the requirements of the regulations. These policies are being requested to coincide with the Part B permit reviews.

In order for the EPA review to be completed as soon as possible, the policies must be sent to this office no later than December 5, 1983. The package should include the original liability policy and the rider affording the extended coverage, as applicable.

Please send the policies to the attention of David Lee, Solid Waste Management Division. Please feel free to call if you have questions regarding this request.

Sincerely,

Jack McMillan

Jack M. McMillan, Director
Division of Solid Waste Management

JMM:SM:hdb

(c)(1) Summary of Groundwater Monitoring Data

35-a

Analytical chemistry labs are not infallible. Data from one sample can not be cast out; however, when a well is sampled four times and one parameter stands out one time as different by a factor of 10 or 100 from the other data for no reason then that data point should be cast out.

Attached is the summary of data including July, 1983.

WELL I.D. 1

GROUP 1 INORGANICS	December 1981	April 1982	October 1982	January 1983	June 1983
Arsenic	0.015	0.003	--	--	
Barium	0.364	0.103	0.170	0.926	
Cadmium	0.003	--	0.006	0.023	
Chromium	0.019	0.61	0.044	0.059	
Flouride	0.680	0.42	0.650	0.690	
Lead	0.007	0.024	0.048	0.063	
Mercury	--	--	0.014	0.003	
Nitrate	0.250	0.18	0.15	0.280	
Selenium	--	0.006	--	0.017	
Silver	0.001	0.006	0.021	0.001	
Organics					
Endrin	--	--	--	--	
Lindane	--	0.001	--	--	
Methoxychlor	--	--	--	--	
Toxaphene	--	--	--	--	
2,4-D	0.00006	--	--	--	
2,4,5-TP Silvex	--		--	--	
Radiochemistry					
Gross Alpha	6.3±1.0	--	3.3±1.2	6.0±2	
Gross Beta	12.7±3.1	6.2±3.0	16.0±3.6	46.5±3	
Total Radium	--	--	--	--	
Others					
Turbidity	7.4	5.0	1.9	1.1	
Total Coliform	--	2	2	2	
GROUP 2					
Chloride	65.9	76.0	80.9	88	98
Iron	0.14	0.30	--	0.24	--
Manganese	0.57	0.73	0.33	0.48	0.39
Sodium	87.6	92.3	82.3	123	89.9
Sulfate	89.8	82.4	82.7	100	86.0
Phenols	--	0.05	1.28	0.28	0.12
GROUP 3					
pH	7.5	7.14	7.12	6.98	7.6, 7.58, 7.6, 7.62
Specific Conductance	3600	3350	4100	3900	4100, 4100, 4150, 4200
Total Organic Carbon	41.37	63.49	64.59	59.85	47.15,47.68,48.19,47.97
Total Organic Halogen	0.12	0.20	0.11	0.11	0.148,0.136,0.144,0.152

WELL I.D. 2

GROUP 1 INORGANICS	December 1981	April 1982	October 1982	January 1983	June 1983
Arsenic	—	0.003	—	0.002	
Barium	0.560	0.090	—	0.688	
Cadmium	0.002	—	0.003	0.005	
Chromium	—	0.004	—	—	
Flouride	0.40	0.36	0.50	0.50	
Lead	—	—	0.05	—	
Mercury	—	—	0.01	0.0047	
Nitrate	1.50	0.86	0.36	1.0	
Selenium	0.033	—	—	0.015	
Silver	0.0003	0.005	0.0079	0.0008	
Organics					
Endrin	—	—	—	—	
Lindane	—	—	—	—	
Methoxychlor	—	—	—	—	
Toxaphene	—	—	—	—	
2,4-D	0.0002	—	—	—	
2,4,5-TP Silvex	—	—	—	—	
Radiochemistry					
Gross Alpha	1.85±1.00	—	—	—	
Gross Beta	9.71±3.05	2.5±3.0	23.8±3.7	33.6±3.6	
Total Radium	—	—	—	—	
Colors					
Turbidity	5.2	2.5	3.1	1.8	
Total Coliform	—	1	1	3	
GROUP 2					
Chloride	42.0	48.0	54.9	54	45
Iron	0.2	0.15	0.03	0.47	—
Manganese	1.18	0.32	0.04	0.79	—
Sodium	33.8	36.8	31.3	34	28.6
Sulfate	112.9	32.4	181.6	112	105.9
Phenols	—	—	1.15	0.08	—
GROUP 3					
pH	7.51	7.17	7.12	7.02	7.75, 7.76, 7.74, 7.75
Specific Conductance	990	880	1,300	990	1100, 1100, 1050, 1100
Total Organic Carbon	39.56	86.77	85.23	67.65	59.35, 59.03, 60.05, 60.4
Total Organic Halogen	0.062	1.076	0.022	0.021	—, —, —, —

WELL I.D. 3

GROUP 1 ORGANICS	December 1981	April 1982	October 1982	January 1983
Arsenic	0.003	0.0048	--	0.018
Barium	0.704	0.144	0.049	0.647
Cadmium	0.0005	--	0.0009	--
Chromium	--	--	--	--
Flouride	0.44	0.42	0.35	0.4
Lead	0.0027	--	0.0479	--
Mercury	--	--	--	0.0025
Nitrate	0.22	0.24	0.13	0.95
Selenium	0.0295	0.0012	--	--
Silver	0.00045	0.0053	0.0147	0.00057
Organics				
Endrin	--	--	--	--
Lindane	--	--	--	--
Methoxychlor	--	--	--	--
Toxaphene	--	--	--	--
2,4-D	--	--	--	--
2,4,5-TP Silvex	--	--	--	--
Radiochemistry				
Gross Alpha	0.93±0.94	--	1.9±1.1	--
Gross Beta	5.18±3.02	1.0±2.8	14.2±3.6	28.4±4.3
Total Radium	--	--	--	--
Others				
Turbidity	450	5.0	2.3	1.8
Total Coliform		2	3	1
GROUP 2				
Chloride	5.0	10.0	13.9	24.0
Iron	1.92	0.37	--	1.20
Manganese	8.65	9.21	1.64	8.40
Sodium	22.1	23.1	16.6	31.0
Sulfate	18.1	51.2	147.9	178.0
Phenols	--	--	1.25	--
GROUP 3				
pH	7.2	6.6	7.09	6.77
Specific Conductance	920	980	860	1300
Total Organic Carbon	43.89	120.7	91.46	76.22
Total Organic Halogen	0.034	0.033	0.006	0.024

Turbidity Readings for Wells 3 & 4 in Dec. 81 are not consistent. Cast out in statistical analysis. RDK 8/2/83

WELL I.D. 4 Upstream

	December, 1981	April, 1982	October, 1982	January, 1983	June, 1983	July, 1983
GROUP 1						
Inorganics						
Arsenic	--	0.0039	--	0.0089	--	--
Barium	0.292	0.103	0.142	0.366	0.048	0.82
Cadmium	0.0002	--	0.0015	--	0.0007	0.0012
Chromiun	--	0.009	--	--	--	0.002
Fluoride	0.40	0.30	0.50	0.60	0.55	0.50
Lead	0.0017	--	0.041	--	0.0039	--
Mercury	--	0.099	0.007	0.0024	--	--
Nitrate	0.15	0.11	1.1	0.57	1.8	1.5
Selenium	0.0351	--	--	0.0026	0.0079	0.0068
Silver	--	--	0.006	0.00095	--	--
Organics						
Endrin	--	--	--	--	--	--
Lindane	--	--	--	--	--	--
Methoxychlor	--	--	--	--	--	--
Toxaphene	--	--	--	--	--	--
2,4-D	--	--	--	--	--	--
2,4,5-TP Silvex	--	--	--	--	--	--
Radiochemistry						NA
Gross Alpha	1.34±.97	--	3.3±1.2	--	--	NA
Gross Beta	3.28±2.98	1.0±2.8	14.6±3.6	34.6±4.4	--	NA
Total Radium	0.14	--	--	--	--	
Others						3
Turbidity	325	8.5	1.9	1.2	3	NA
Total Coliform	--	--	1	5	11	
Group 2						
Chloride	14.0	22.0	21.9	23	15	15
Iron	0.66	0.26	--	0.27	--	1.04
Manganese	0.80	0.23	1.37	0.27	--	0.22
Sodium	24.3	25.2	20.8	33	17.4	15.2
Sulfate	54.4	71.2	92.4	132	59.2	56.9
Phenols	0.05	--	1.11	--	--	0.8
Group 3						
pH	7.26, 7.31, 7.24, 7.21	6.72, 6.70, 6.69, 6.69	-6.92,6.94,6.94, 6.96	6.89,6.86,6.93, 6.97	7.47,7.30, 7.36,7.40	6.95, 9.96,6.95,6.95
Specific Conductance	750, 800, 760, 760	770, 770, 770, 770	-1100, 1150,1200,1100	830, 850, 830, 840	820, 825, 830, 825	840,850,840,840
Total Organic Carbon	50.21, 50.28,50.15,50.96	71.40,72.42,68.60,71.71	-65.85,64.48,58.54,61.62	44.92, 41.44,40.79,41.49	59.10,57.00,56.44,59.67	30.75,33.42,32.83,32.33
Total Organic Halogen	0.030,0.026,0.030,0.028	0.029,0.028,0.025,0.027	-0.041,0.016,0.039,0.047	0.012,0.015,0.017,0.020	0.020,0.023, 0.020,0.018	0.014,0.015,0.022,0.015

Turbidity Readings for Wells 3 & 4 in Dec. 81 are not consistent. Cast out in statistical analysis. RPK 8/2/83

GROUP 1 INORGANICS	Well 5 June 1983	Well 5 July 1983	Well 6 June 1983	Well 6 July 1983	Well 7 June 1983	Well 7 July 1983	Well 8 June 1983	Well 8 July 1983
Arsenic	--	0.0014	--	0.003	0.011	0.0424	--	0.0606
Barium	0.165	0.45	0.042	0.53	0.2	0.19	0.8	0.30
Cadmium	0.0005	0.0005	0.0056	0.0004	0.014	0.0001	0.0006	0.0005
Chromium	0.009	0.150	--	0.028	0.004	0.031	--	0.057
Flouride	0.45	0.40	0.80	0.30	0.60	0.25	0.50	0.60
Lead	--	0.0218	--	0.0209	--	0.0058	--	0.0043
Mercury	--	0.0009	--	--	--	0.0019	--	0.0133
Nitrate	2.6	2.6	3.0	3.0	1.3	0.5	2.2	0.4
Selenium	0.0064	0.0192	0.0037	0.0110	0.0028	0.0109	0.0055	0.0018
Silver	0.0005	--	0.0017	0.00049	--	--	--	0.00436
Organics								
Endrin	--		--		--		--	
Lindane	--		--		--		--	
Methoxychlor	--		--		--		--	
Toxaphene	--		--		--		--	
2,4-D	--		--		--		--	
2,4,5-TP Silvex	--		--		--		--	
Radiochemistry								
Gross Alpha	--	NA	--	NA	--	NA	--	NA
Gross Beta	--	NA	--	NA	--	NA	--	NA
Total Radium	--	NA	--	NA	--	NA	--	NA
Others								
Turbidity	16	30	8	7	9	5	64	38
Total Coliform	--	NA	--	NA	--	NA	--	NA
GROUP 2								
Chloride	44	42	24	25	11	10	20	19
Iron	--	0.94	--	0.98	--	29.4	--	0.49
Manganese	0.18	0.45	--	--	0.05	0.59	5.74	0.16
Sodium	30.8	64.2	32.2	68.0	18.9	18.5	31.4	64.9
Sulfate	95.7	89.3	68.7	60.0	6.6	28.0	11.8	41.0
Phenols	0.06	0.7	--	0.65	--	0.7	0.05	0.45
GROUP 3								
pH	6.95	7.50	7.10	6.98	7.33	7.24	6.95	6.82
Specific Conductance	1500	1580	1510	1700	780	810	1200	1200
Total Organic Carbon	76.42	33.98	71.89	70.17	64.86	49.53	103.6	105.3
Total Organic Halogen	0.085	0.036	0.042	0.090	0.024	0.044	0.364	0.379

C(3)

35 - b

A more detailed drawing is attached. In addition, please refer to topo sketch a(19)V, already provided.

It is proposed that wells 2, 7, 6, and 5 adequately describe the point of compliance.

Pertinent details as provided by our consulting laboratory, Environmental Laboratories, Inc. of Gulfport, Mississippi are attached.

SAMPLING INSTRUCTIONS

1. Obtain the groundwater elevation in the well by measuring the distance between the top of the well and groundwater level.

2. Rinse the baler with tap water, isopropyl alcohol, then tap water.

3. Bale a volume of groundwater equal to 3 times the volume existing within the well or bale until the well is empty, whichever comes first.

4. Obtain groundwater elevations in wells 1, 2, 4, 5, 6, 7 and 8 and bale wells 4,5,6 and 7 in one day.

5. The next day sample wells 4,5,6 and 7. Prior to sampling rinse the baler with tap water, isopropyl alcohol, then tap water.

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

DESCRIPTION OF SAMPLE COLLECTION, SAMPLE PRESERVATION, ANALYTICAL PROCEDURES AND CHAIN OF CUSTODY CONTROL

prepared for

Vertac Chemical Corporation
Vicksburg, Mississippi

December, 1983

WATER

SAMPLE COLLLECTION

To obtain a representative sample of ground water it is desirable that the well be pumped or bailed until the well is thoroughly flushed of standing water and contains fresh water from the aquifer. We commonly pump the well until four to six bore volums have been removed. Pumping and sample collection is accomplished by an ISCO model 1580 sampler. New tubing is used with each project and the tubing and container is rinsed with dilute acid solution and D.I. water between sample locations. The samples are then placed in properly prepared containers, sealed, and transported to the laboratory as quickly as possible.

SAMPLE CONTAINERS

Sample bottles are prepared in the laboratory according to procedures outlined in Table 1. A label is then attached to each bottle for the field crew to complete when the sample bottle is filled. This label contains the following information:

Sample Number	Date
Name	Sample Description

SAMPLE PRESERVATION

To prevent or retard the degradation/modification of the samples during transportation and storage, the samples will be preserved according to:

Table I, Methods for Chemical Analysis of Water and Waste, EPA-600/4-79-020, 1979, EMSL, Cincinnati, Ohio 45268.

Standard Methods for the Examination of Water and Wastewater, 15th Edition, American Public Health Association, 1015 Eighteenth Street, NW, Washington, DC 20036, 1980.

In addition to chemical preservatives listed in the references above, all samples will be iced down and transported in heavy styrofoam containers as soon as possible.

CHAIN OF CUSTODY

Chain of Custody forms accompany each set of sample bottles per well. Information on this sheet is completed by the field crew during sampling. Upon sample return to the laboratory, the Chain of Custody sheet is completed by laboratory personnel. When analysis is complete, Chain of Custody records will accompany the reports to the client. A copy of the Chain of Custody record that we commonly use follows as Table 2.

TABLE 1

SAMPLE BOTTLE PREPARATION

Recommended Procedure for The Cleaning of Sample Containers is below:

Clean glass bottles and clean glass vials.

Wash bottles with hot, soapy water.

Rinse with copious amounts of tap water and then with three rinses of DI water.

Rinse with nanograde acetone.

Allow container to air dry.

Place in 200°C oven for one hour.

Allow to cool and cap with teflon lined caps.

Plastic bottles:

Wash bottles with hot, soapy water.

Rinse with 5% nitric acid.

Rinse with copious amounts of DI water.

Allow to drain and then air dry.

Teflon liners:

Wash with hot, soapy water.

Rinse with DI water.

Rinse with nanograde acetone.

Allow to air dry.

Place liners in clean caps.

Heat to 40°C for two hours.

Place on clean bottles.

Foil liners:

If teflon liners are not available or practical, foil liners may be used instead.

TABLE 2

CHAIN OF CUSTODY RECORD

Well # _____

Field Section

Location of Sampling: _____

Shipper's Name: _____

Shipper's Address: _____

Collector's Name: _____ Telephone # _____
(Signature)

Date Sampled: _____

Time Sampled: _____

Field Information:

Special Handling/Storage

Laboratory Section

Received by: _____

Date: _____

Analysis Required: _____

Comments:

SAMPLE PREPARATION

Water samples will require no special preparation or filtration unless specifically called for in the procedure. It is possible, however, that some "clean-up" may be required on GC, GC/MS work.

ANALYTICAL INSTRUMENTATION

In an effort to provide high quality analytical services, ELI continues to expand and up-date its equipment and capabilities. A list of instrumentation, manufacturers name, model number and age is provided below for the record.

Dohrmann, Model DC-80, Automated Total Organic Carbon Analyzer, 1981.

Dohrmann, Model DX-20, Total Organic Halogen Analyzer, 1981.

Varian Instruments, Model 1475 Atomic Absorption Spectrophotometer. This instrument includes the CRA-90 Carbon Rod Atomizer and the Model 65 Vapor Generation Accessory, 1981.

Bausch and Lomb Spectronic 20 Spectrophotometer (2), 1973.

Canberra, Model 2200 Low Level Alpha/Beta Counting Systems (2), 1981, 1982.

Yellow Springs Instrument Company, Model 31, Conductivity Bridge, 1974.

Mettler, Model h-30 Electronic Balance (2), 1973.

Yellow Springs Instrument Company, Model 51A, Dissolved Oxygen Meter, 1973.

Hach Instruments, Model 1860 A, Turbidimeter, 1973.

Corning, Model 10, Expandable pH Meter, 1978.

Hewlett-Packard HP5993B GC/MS System with a 32,000 compound search library. This library includes the EPA, NBS, and NIOSH Computer Libraries, 1981.

Hewlett-Packard HP5830A GC with auto sampler, electron capture and flame ionization detectors, 1979.

Hewlett-Packard HP5880A GC with dual electron capture detectors, flame ionization detector and nitrogen/phosphorus detector, 1982.

ANALYTICAL PROCEDURES

Water samples will be prepared and analyzed according to methodologies outlined in Table 3. However, individual parameters are detailed below.

pH is analyzed directly by the Corning, Model 10 pH meter. Commercial Buffer standards of 4.0, 7.0, and 10.0 are used to standardize the instrument before use. This instrument is also equipped with a temperature compensating probe. Accuracy to 0.01 Standard Units can be obtained.

Specific Conductivity is analyzed using the Yellow Springs Instrument, Model 31 Conductivity Bridge. Sodium Chloride Standards and Blanks are run daily. Detection to 10 µmhos/cm can be achieved.

Total Organic Carbon is analyzed using the Dohrmann DC-80 according to manufacturer instructions. The instrument is calibrated daily with Standards of potassium acid pthalate to assure system operations. Duplicates are run routinely. Detection limits of 0.01 mg/l can be achieved.

Total Organic Halogen analyses are performed according to EPA Method 450.1 "Total Organic Halides". 2,4,6-trichlorophenol is used to standardize the instrument and sodium chloride is used to assure proper cell operation. Standards and Blanks are run with every tenth sample. All samples are analyzed in duplicate unless otherwise requested. Routine detection of 0.01 mg/l is met.

Chlorides are analyzed by mercuric nitrate titration procedure as found in Standard Methods. Duplicate, blanks, and standards are run per batch of samples. Detection limit of 1 mg/l can be met.

Metals (Fe, Mn, Na, Sb, Ba, Be, Cd, Cr, Cu, Pb, Mg, Ni, Se, Ag, Tl, V, Zn, B, Co, Mo, Sn, Ti, As, Hg, Se): These metals will be aspirated directly into the Varian 1475 AA, or injected into the carbon rod furnace. As, Hg, Se, will be analyzed by hydride generation and cold vapor techniques. Prior to analysis, three standard solutions are prepared of the ion of interest and are run on the instrument. Calibration curves are performed within the instrument and suspect data is relayed to the operator via the display panel. Direct readout of ion concentration in the sample is displayed on the readout panel, however, a strip chart recorder is also used to provide a hard copy of data. Detection Limits meeting the Safe Drinking Water Act can be achieved.

Phenols are separated form the sample matrix by distillation. Phenols in the distillate are then complexed with 4-aminoantipyrine and measured colorimetrically. A calibration curve is prepared from the results of the analysis of at least three phenol standards and a blank. These curves are the plots of instrument response versus concentration. Typically, the plot will be linear. The standards concentrations should be evenly distributed throughout the range of the method. All standards and associated solutions will be prepared on the day that the samples are analyzed. A routine detection limit of 0.05 mg/l can be achieved.

Sulfate is analyzed by a gravimetric procedure found in Standard Methods. Because gravimetric procedures can result in errors more readily than other procedures, great care must be taken in accurately drying, cooling, weighing in each step of this procedure. One know standard and one ERA Standard analyzed as an unknow along with a blank are performed with each batch of samples analyzed for the day. Routine detection limits of 1.0 mg/l can be met.

Nitrate is analyzed by a procedure as found in Standard Methods. Chromotropic acid forms a yellow product in the presence of nitrate and can be determined colorimetrically. Sample concentration is determined by comparing sample absorbance with a standard curve, prepared using three standards and a blank. Duplicates are run on 10% of the samples. This procedure allows a routine detection limit of 0.05 mg/l.

Fluoride is analyzed by distillation followed by colorimetric determination with SPADNS reagent as outlined in Standard Methods. Sample Fluoride concentration is determined by comparison to a standard curve for fluoride using three standards and a blank. Blanks and duplicates are run per batch of samples. A detection limit of 0.5 mg/l can be obtained.

Radiochemistry Analyses are performed according to methodologies outlined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August, 1980, and Radiochemical Analytical Procedures for Analysis of Environmental Samples, USEPA Office of Research and Development, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

The instruments used in performing Gross Alpha, Gross Beta and Total Radium analysis are two Canberra 2200 Low Level Alpha/Beta Counting Systems. These are thin-window, gas-flow proportional counters, the instrument of choice for Alpha/Beta Counting, and detect a background of less than two counts per minute (<2CPM).

Instrument calibration standards of AM^{241}, Sr^{90}, and C^{14} are from private sources and traceable to NBS.

Plateaus for Alpha and Beta Counting are plotted every four weeks or when the counting gas is changed, whichever comes first. Plateau charts with all pertinent instrument settings are maintained in a log book.

Instrument backgrounds are run weekly for minimum of three 100-minute runs and are charted to detect overall system operation.

Samples are prepared according to aforementioned procedures and deposited onto 2" diameter stainless steel planchets for counting. Each sample is counted for a minimum of three 100-minute runs. The arithmetic mean of the runs is then taken and used in the calculations to arrive at pCi/l determination. The minimum detectable concentration for individual analyses is based on counting statistics and sample volume. The MDC is defined as the activity which is equal to the 95% confidence level counting error. The MDC routinely runs <2 pCi/l.

Radium 226 is analyzed by radoun emanation technique as preferred. The sample is prepared according to the above procedures and allowed to ingrow for Radon 222 for a period of 2-4 weeks. The Radon 222 gas is then deposited into a lucas cell and placed into a scintillation counter. Background checks are run on cells immediately prior to use and standards are run to verify recoveries.

ELI participates in the Cross-Checks program initiated by EPA/Las Vegas for these radiochemistry procedures. All Quality Control Procedures were adopted from the Handbook for Analytical Quality Control in Radio-analytical Laboratories, EPA-600/7-77-088, August, 1977, and with the guidance by direct contact with EPA/Las Vegas.

Total Coliform is analyzed by membrane filter technique and incubated 35°C ± 0.5°C. The media used is specific for total coliform growth and is purchased in ampoul form from the manufacturer. A control is run per batch of samples. Incubator temperature is rigidly maintained and all charts for sterilizing of glassware are maintained.

Turbidity - Samples are analyzed using the Hach 1860A Turbidimeter. Standard solutions of latex are used to calibrate the instrument prior to use. These standards are calibrated against formazin which is the primary standard turbidity material used by Hach Company. Detection limits to 1 NTU can be obtained.

Herbicides/Pesticides - Analytical methods for SDWA pesticides and herbicids are outlined in Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples, USEPA, June, 1980.

On all GC/MS analyses, internal and surrogate standards will be used, when appropriate. During each day of GC/MS operations and autotune program will be checked and either decafluorotriphenyl phosphine (DFTPP) or bromofluorobenzene (BFB) will run a GC/MS system performance test.

Routine detection limits well below the Safe Drinking Water Act are as follows:

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.003	mg/l
2,4-D	<0.002	mg/l
2,4,5-TP Silvex	<0.002	mg/l

TABLE 3

ANALYTICAL METHODS

The analytical methods to be used during this project can be found in the following publications:

Standards Methods for the Examination of Water and Wastewater, 15th Ed., American Public Health Association, 1015 Eighteenth Street, N.W., Washington, D.C., 20036, 1980.

Manual of Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79/020, USEPA, Office of Technology Transfer, Cincinnati, Ohio 45268, 1979.

Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA 600/4-80-032, August, 1980.

Radiochemical Analytical Procedures for Analysis of Environmental Samples, USEPA, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

Procedures for Handling and Chemcial Analysis of Sediment and Water Samples, USEPA/CE 81-1, May, 1981, USAE Waterways Experiment Station, Vicksburg, Mississippi.

"Total Organic Halides" EPA Method 450.1, USEPA, Environmental Monitoring & Support Laboratory, Cincinnati, Ohio, N.W. 1980.

Handbook for Analytical Quality Control in Radioanalytical Laboratories, EPA-600/17-77-088, USEPA, Office of Research and Development, Office of Energy, Minerals and Industry, Washington, D.C., August, 1977.

Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples, EPA-600/8-80-038, USEPA, Health Effects Research Laboratory, June, 1980.

Handbook for Sampling and Sample Preservation of Water and Wastewater, EPA-600/4-82-029, USEPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, September, 1982.

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

QUALITY CONTROL PLAN

1 PURPOSE

1.1 The purpose of this quality control plan is to establish and maintain laboratory practices to ensure the scientific reliability and compatibility of laboratory data generated by ELI.

1.2 In general the Handbook for Analytical Quality Control in Water and Wastewater Laboratories, EPA-60014-79-019, USEPA, Office of Technology Transfer, Cincinnati, Ohio 45268, 1979, is used as the Quality Control Manual for ELI.

1.3 A quality control program has two primary functions - to monitor the reliability of the results and to control the variables that indicate that reproducible data are being obtained and that the methods employed are actually measuring what is in the sample. These systematic checks apply to all types of analyses (Wet Chemistry, AA, GC, TOC, TOX). To control the quality of the data during a study; reagent blanks, and method blanks will be analyzed when appropriate. Spiked samples will document that the procedures utilized are actually recovering what is in the sample.

1.4 ELI participates in EPA and ERA (private company) crosschecks programs of blind samples to assure compliance with Quality Assurance Procedures.

2 QUALITY CONTROL OBJECTIVES

2.1 The primary objective of this quality control plan is to assure that all data collected for this project meets or exceeds the requirements as outlined in the Request for Proposal.

2.2 To accomplish this task, the following specific objectives will be sought:

2.2.1 Estimate the level of quality of each analytical system without requiring excessive precision, accuracy, and sensitivity.

2.2.2 Assist in the early recognition of deficiencies which might affect the quality of the data.

2.2.3 Enable the laboratory to take such action as is necessary to ensure the validity of laboratory data.

2.2.4 Enhance the utility of all data considered in the decision-making process by requiring sufficient documentation to express the limitations on the quality of data.

3 SAMPLING

3.1 General

3.1.1 Environmental Laboratories will be responsible for all sampling procedures and field work when required by client.

3.1.2 Sample bottles delivered to field location will be prepared according to cleaning procedures listed in Section 5.

3.1.3 These bottles will have a blank label affixed to them and are to be completed by the field crew personnel.

3.1.4 Environmental Laboratories personnel will be responsible for maintaining the integrity of the samples.

3.1.5 Chain of Custody Forms will accompany sample bottles to field location and the personnel shall complete these forms placing them with the sample coolers. When the final reports are mailed, Chain of Custody Forms will be returned to the client. These forms will include the following information:

3.1.5.1 Station Location
3.1.5.2 Sample Identification
3.1.5.3 Collector's Name
3.1.5.4 Time of Collection
3.1.5.5 Remarks or Comments

4 SAMPLE BOTTLE PREPARATION

Recommended Procedure for The Cleaning of Sample Containers

4.1 As a preliminary to the procedures that will be used for the preservation and storage of water samples, some mention should be made as to the steps to be taken to insure that the probability of the containers themselves contaminating the samples are minimized. The procedures for cleaning the glass and plastic sample containers and their caps are as follows:

4.2 Clean glass bottles and clean glass vials.

4.1.1 Wash bottles with hot, soapy water.

4.2.2 Rinse with copious amounts of tap water and then with three rinses of DI water.

4.2.3 Rinse with nanograde acetone.

4.2.4 Allow container to air dry.

4.2.5 Place in 200°C oven for one hour.

4.2.6 Allow to cool and cap with teflon lined caps.

4.3 Plastic bottles:

4.3.1 Wash bottles with hot, soapy water.

4.3.2 Rinse with 5% nitric acid.

4.3.3 Rinse with copious amounts of DI water.

4.3.4 Allow to drain and then air dry.

4.4 Teflon liners:

4.4.1 Wash with hot, soapy water.

4.4.2 Rinse with DI water.

4.4.3 Rinse with nanograde acetone.

4.4.4 Allow to air dry.

4.4.5 Place liners in clean caps.

4.4.6 Heat to 40°C for two hours.

4.4.7 Place on clean bottles.

4.5 Foil liners:

4.5.1 If teflon liners are not available or practical, foil liners may be used instead.

5 SAMPLE PRESERVATION

5.1 To prevent or retard the degradation/modification of the samples during transportation and storage, the samples will be preserved according to:

5.1.1 Table I, Methods for Chemical Analysis of Water and Waste, EPA-600/4-79-020, 1979, EMSL, Cincinnati, Ohio 45268.

5.1.2 Federal Register, 3 December, 1979.

5.1.3 Standard Methods for the Examination of Water and Wastewater, 15th Edition, American Public Health Association, 1015 Eighteenth Street, NW, Washington, DC 20036, 1980.

5.2 In addition to chemical preservatives listed in the references above, all samples will be iced down and transported in heavy styrofoam containers as soon as possible.

6 SAMPLE RECEIPT AND LOG IN

6.1 Environmental Laboratories will be responsible for the management of the samples in the field when required by the client.

6.2 On arrival of the samples at ELI, the Chain of Custody Forms will be completed and signed.

6.3 On arrival at the laboratory, the samples will be logged into a bound laboratory log book. The information in this log book will include:

6.3.1 The date of arrival of samples at the laboratory.

6.3.2 Laboratory identification number.

7 SAMPLE PREPARATION

7.1 Water samples will require no special preparation or filtration unless specifically called for in the procedure. It is possible, however, that some "clean-up" may be required on GC, GC/MS work.

7.2 Soil and Sediment Samples will be prepared according to procedures outlined in Procedures for Handling and Chemical Analysis of Sediment and Water Samples, USEPA/CE 81-1, May, 1981, USAE Waterways Experiment Station, Vicksburg, Mississippi.

8 ANALYTICAL METHODS

8.1 The analytical methods to be used during this project can be found in the following publications:

8.1.1 Standard Methods for the Examination of Water and Wastewater, 15th Ed., American Public Health Association, 1015 Eighteenth Street, N.W., Washington, D.C., 20036, 1980.

8.1.2 Manual of Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79/020, USEPA, Office of Technology Transfer, Cincinnati, Ohio, 45268, 1979.

8.1.3 Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA 600/4-80-032, August, 1980.

8.1.4 Radiochemical Analytical Procedures for Analysis of Environmental Samples, USEPA, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

8.1.5 Methods 601-625, Federal Register, 3 December, 1979, Vol. 44.

8.1.6 Procedures for Handling and Chemical Analysis of Sediment and Water Samples, USEPA/CE 81-1, May, 1981, USAE Waterways Experiment Station, Vicksburg, Mississippi.

8.1.7 Procedural Guide for Designation Surveys of Ocean Dredged Materials Disposal Sites. Technical Report EL-81-1, January, 1981, USAE Waterways Experiment Station, Vicksburg, Mississippi.

8.1.8 Method for the Extraction and Analysis of Priority Pollutants in Sediment and Soil. Unpublished document dated November, 1981. US Environmental Protection Agency, Region IV, Atlanta, Georgia (available from CO).

8.1.9 "Total Organic Halides", EPA Method 450.1, USEPA, Environmental Monitoring & Support Laboratory, Cincinnati, Ohio, N.W. 1980.

8.1.10 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA, SW-846, 1980.

9 INSTRUMENT CALIBRATION AND MAINTENANCE

9.1 All equipment to be calibrated under this procedure shall have an assigned record number permanently affixed.

9.2 A label will be affixed to each instrument showing: description, manufacturer, model number, serial number, date of last calibration, by whom calibrated, and due date of next calibration. Calibration reports and compensations or correction figures shall be maintained in the instruments maintenance and calibration file.

9.3 A written stepwise calibration procedure will also be found in this file.

9.4 Instruments past due for calibration shall be immediately removed from service either physically, or if this is impracticable, by tagging.

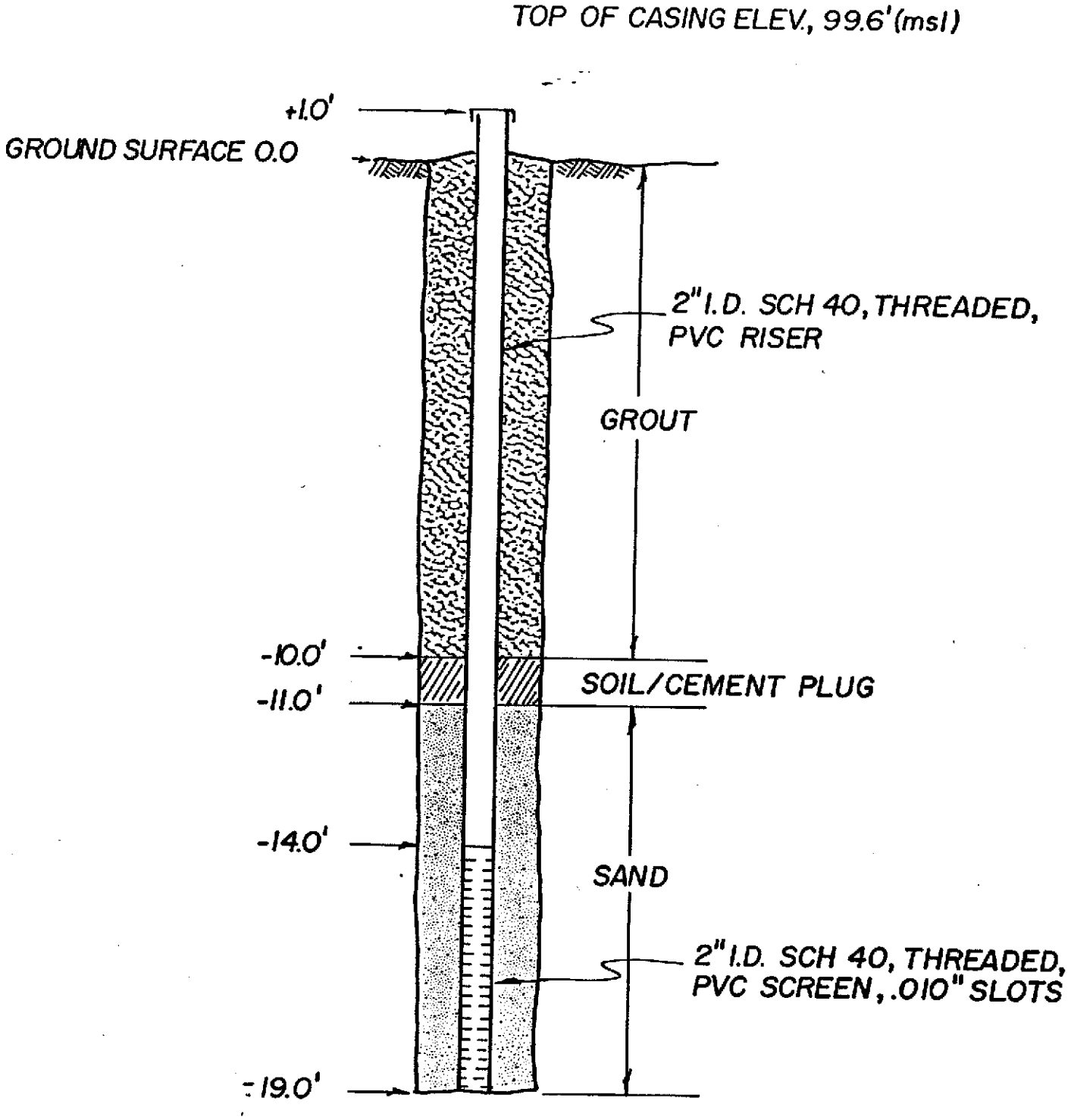
9.5 Instruments will be calibrated on each day in which analyses are conducted. This will be accomplished using "calibration standards" prepared by mixing the species to be analyzed into the solvent that is introduced into the instrument as dictated by the analytical method. The concentration of the calibration standards will be chosen so as to cover the working range of the instrument.

9.6 Identification of a compound by mass spectrometry will be provided. Hard copies of the reference and the sample spectra will be included in the technical report to the client.

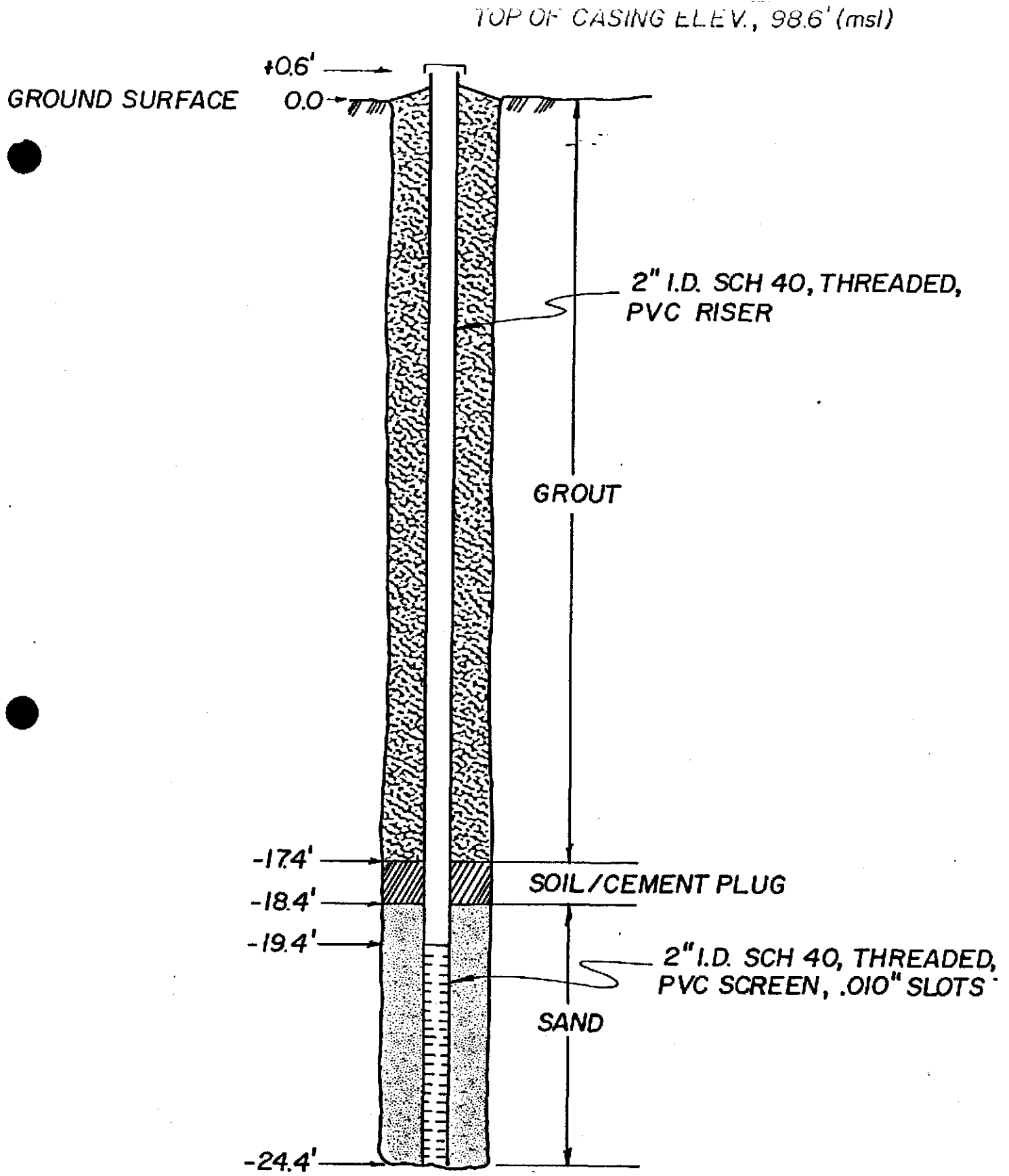
C(5) Plans and Engineering Report

35-d

Attached are engineering drawings describing the installation of wells 5, 6, 7, and 8 including the location of the well screen. The drawings were prepared by MCI/Consulting Engineers, Inc. and should be considered a supplement to their engineering report.



MONITORING WELL No. 5
AS COMPLETED
VERTAC CHEMICAL CORP.
VICKSBURG, MS.
NO SCALE 12/2/83



MONITORING WELL No. 6
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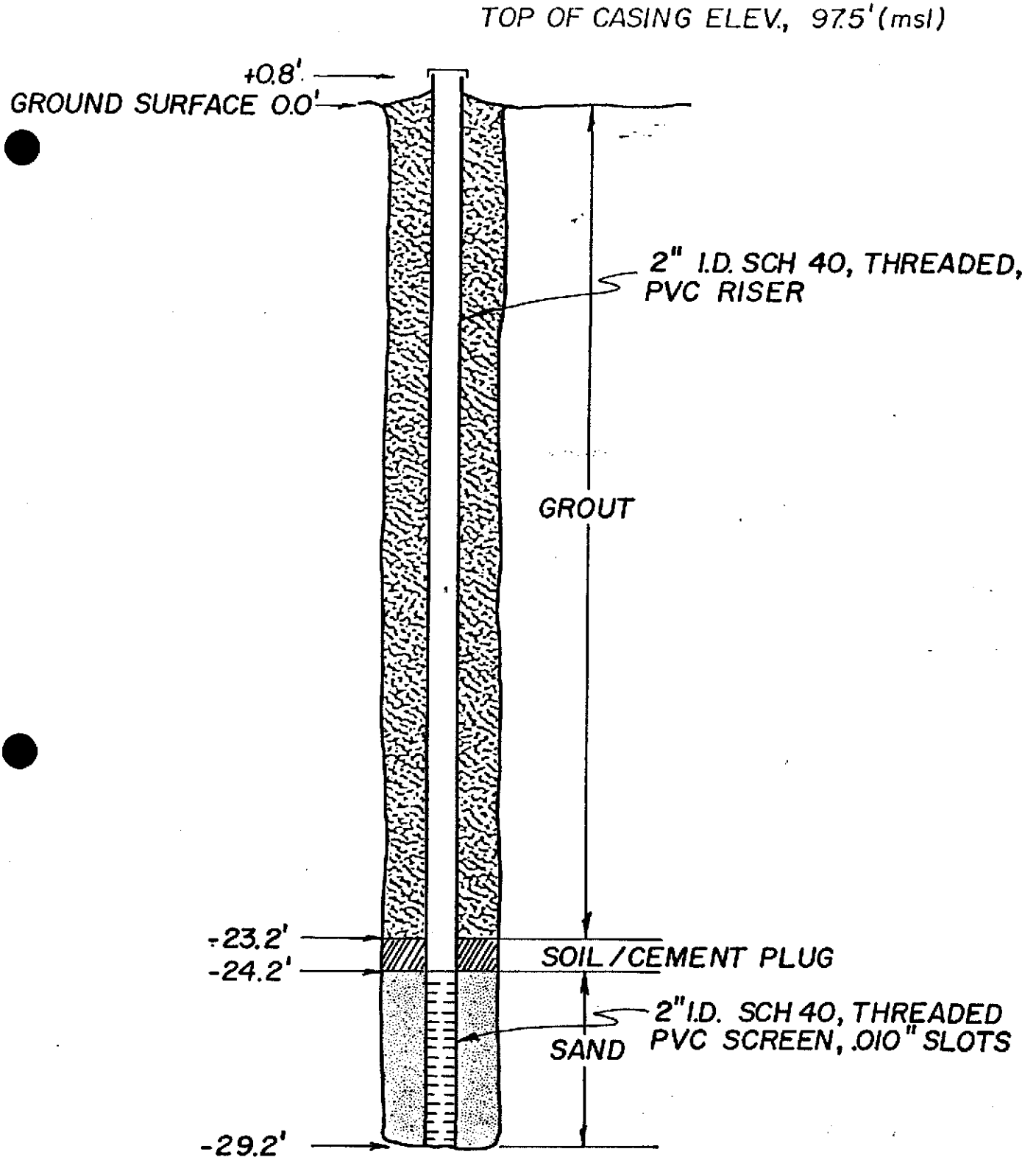
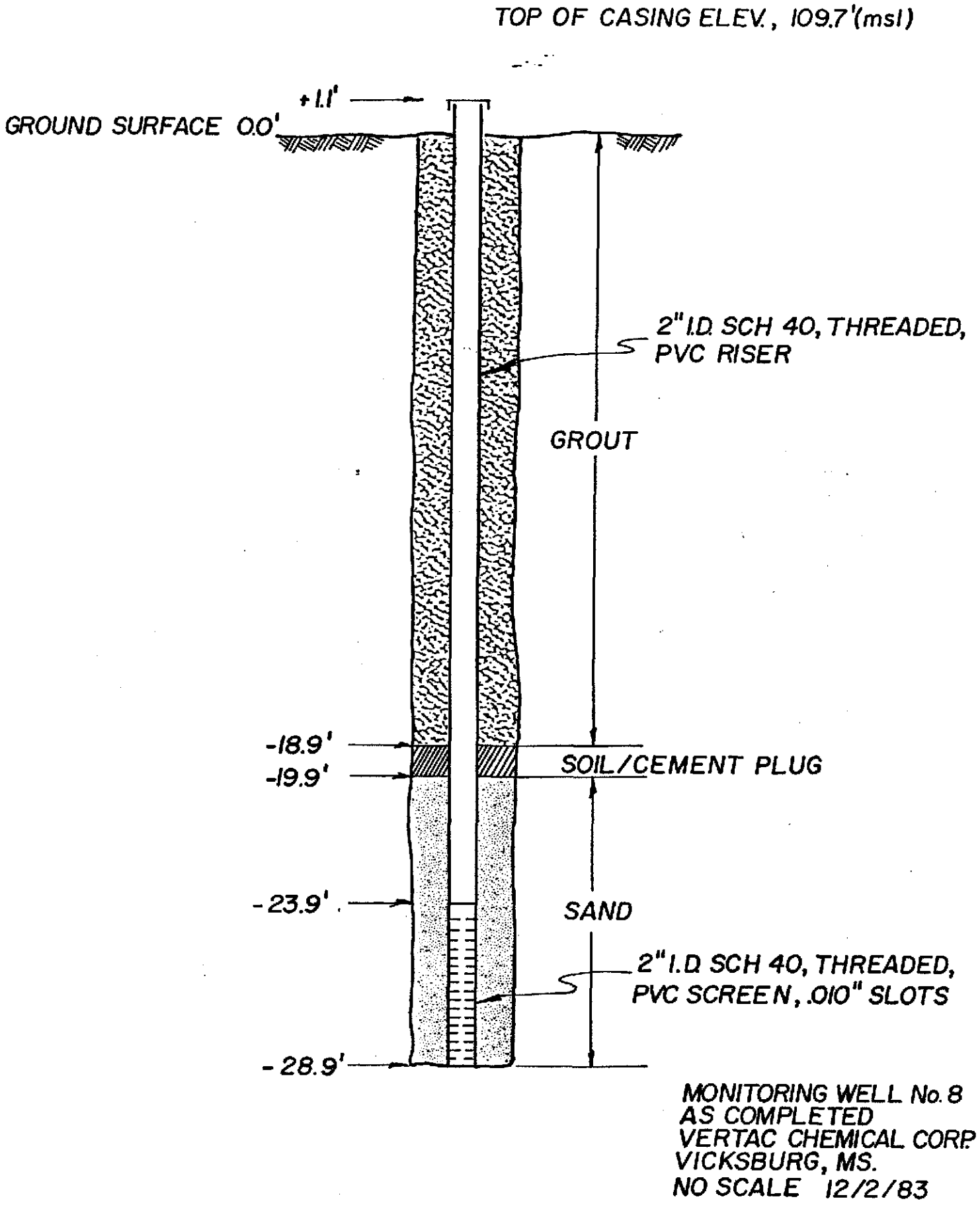
VERTAC CHEMICAL CORP.
VICKSBURG, MS.
NO SCALE 12/2/83



MONITORING WELL No. 7
AS COMPLETED
VERTAC CHEMICAL CORP.
VICKSBURG, MS.
NO SCALE 12/2/83



MONITORING WELL No. 8
AS COMPLETED
VERTAC CHEMICAL CORP.
VICKSBURG, MS.
NO SCALE 12/2/83

C(6) Detection Monitoring Program - Additional Information

35-e -Addition of site specific parameters

The groundwater sampling schedule through 1983 and a summary statistical status through 1983 is attached.

Samples were taken in November, 1983 for wells 1, 2, 5, 6, 7, and 8. Wells 2, 5, 6, and 7 adequately describe the compliance point. Analyses have not been completed as of 12-16-83. We requested these analyses:

"2" = groundwater quality parameters

"3" = indicator parameters in quadruplicate - pH, specific conductance, TOC, TOH

"4" = site specific parameters:
Dinitrobutyl Phenol - EPA method 625
Benzoic Acid - EPA method 625
Toxaphene - EPA method 608
Atrazine - EPA method 608
Total Phenols - Standard methods

It is proposed that in 1984 a monitoring program be followed that is consistent with the desires of the Bureau of Pollution Control. The following is proposed:

Frequency	Semi-annual
Analytical parameters	"3" = indicator parameters (quadruplicate analyses).
	"4" = site specific parameters: Dinitrobutyl phenol, Benzoic Acid, Toxaphene, Atrazine, and Total Phenols (non-replicate analyses)

Samples from compliance point wells - 2, 5, 6, and 7.

Readings of groundwater elevation - the compliance point wells and wells 1, 4, and 8.

Groundwater Monitoring
Sampling Schedule
Through 1983

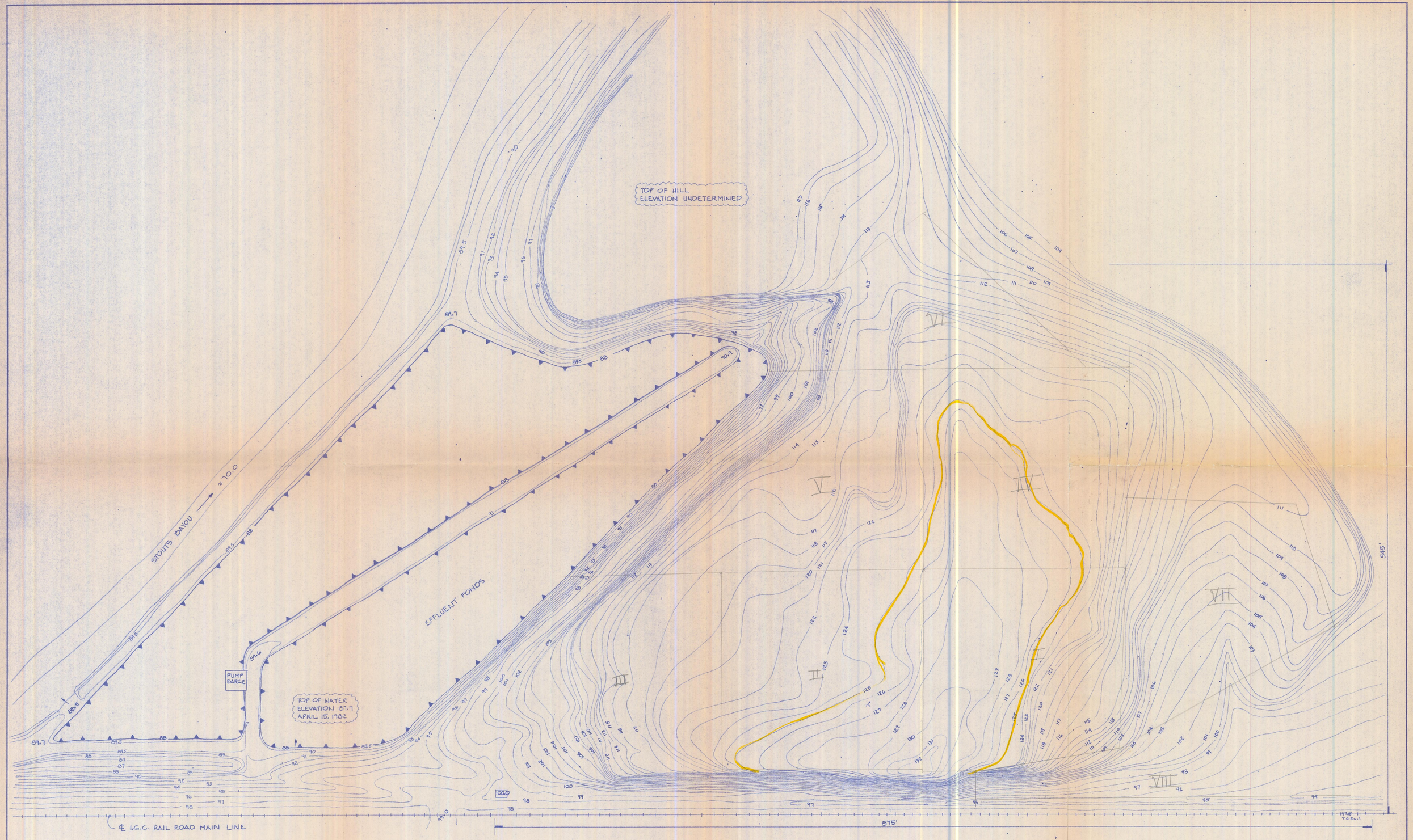
Well Number	Analysis Parameters:	Sampling Date:
4 (upstream)	1,2,3(quadruplicate)	12-81, 4-82, 10-82, 1-83 6-83, 7-83
1,2 and 3	1,2,3	12-81, 4-82, 10-82, 1-83
1 and 2	2, 3(quadruplicate)	6-83
5,6,7 and 8	1,2,3	6-83, 7-83
1,2,5,6,7 and 8	2,3(quadruplicate), 4	11-83

Notes:

1 = drinking water parameters
2 = groundwater quality parameters
3 = indicator parameters
4 = site specific parameters:
Dinitrobutyl phenol, Benzoic Acid, Toxaphene, Atrazine, Total Phenols

Groundwater Monitoring Summary Statistical Status
Through 1983

Parameter:	Status:
1 = drinking water parameter	Complete. All wells meet drinking water standards.
2 = groundwater quality parameters	All wells have a minimum of three quarterly analyses.
3 = indicator parameter	a. Six quadruplicate samples of the upstream well (4) have been taken to dtermine the <u>initial background mean</u> and variances. b. Two quadruplicate samples of wells 1 and 2 have been taken. c. One quadruplicate sample of wells 1, 2, 5, 6, 7 and 8 has been taken. d. One non-replicate sample of 1,2,3,5,6, 7 and 8 has been taken.
4 = site specific parameters	One non-replicate sample of wells 1,2,5,6, 7 and 8 has been taken.



SURVEY CONDUCTED BY DELTA PROCESS MANAGEMENT
ON APRIL 15, 1982

DELTA PROCESS MANAGEMENT MEMPHIS TENNESSEE		
SCALE: 1" = 40'	APPROVED BY:	DRAWN BY DSC
DATE: 5/1/82		REVISED
VERTAC CHEMICAL CORP. VICKSBURG, MISSISSIPPI PLANT		
TOPOGRAPHIC MAP FOR PROPOSED BIO-WASTE TREATMENT PROJECT		DRAWING NUMBER

24 X 36 PRINTED ON NO. 1000H CLEARPRINT

NOTES

1.) MAP BASED ON TWO DIFFERENT SURVEYS, BOTH BY MAP TECH, JACKSON, MS.

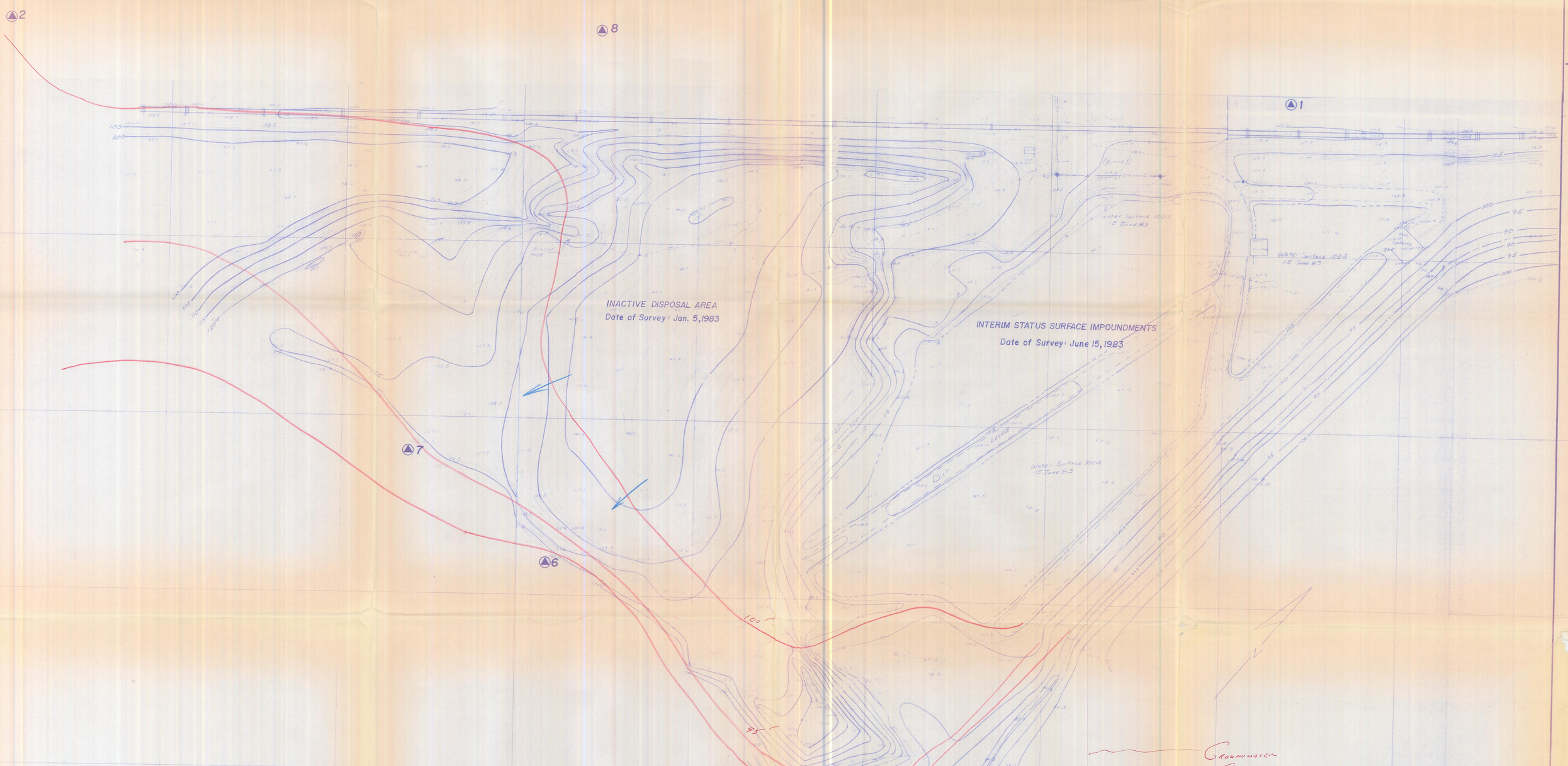
2.) LOCATIONS OF MONITORING WELLS ARE APPROXIMATE.

3.) CORPS OF ENGINEERS BENCHMARK LOCATED AT THE INTERSECTION OF U.S. HWY 61 AND HATCHER BAYOU, WAS USED TO ESTABLISH ELEVATIONS.

4.) ALL ELEVATIONS REFER TO MEAN SEA LEVEL.

LEGEND

GROUND WATER MONITORING WELL . . . . ▲



DATE	REVISIONS	BY

TOPOGRAPHIC MAP
CLOSED DISPOSAL AREA & INTERIM STATUS SURFACE IMPOUNDMENTS

SCALE: 1" = 40'

PREPARED FOR:
VERTAC CHEMICAL CORPORATION

MCI/CONSULTING ENGINEERS, INC.
NASHVILLE & KNOXVILLE, TENNESSEE

PROJ. 83-604 | DATE 12/6/83 | SHEET 1 OF 1

Vertac Chemical Corp.