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NSB KINGS BAY  
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FINAL CONSTRUCTION COMPLETION REPORT FOR CHEMICAL OXIDATION ACTIVITIES  
AT SITE 11 NSB KINGS BAY GA  
6/1/2004  
CH2M HILL

1868

28 August 1992

From: Code 186  
To: Code 09 ;  
Via: Code 09B  
18 SLA

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Subj: SUBASE KINGS BAY - OLD CAMDEN COUNTY LANDFILL

Encl: (1) Briefing presented to COMSUBGRU 10 on 24 August 1992  
(2) Map of Old Camden County Landfill study area

1. Enclosure (1) provides background information on the off-site contamination emanating from the Old Camden County Landfill (IRP Site 11). Contamination appears to have migrated from the vicinity of the landfill, beneath SR 40 to the western-most right-of-way line which is the property line of the Crooked River Plantation Subdivision (see enclosure (2)). Contamination was first discovered in July during routine groundwater monitoring conducted at the closed landfill in accordance with an RFI/SI work plan previously approved by the Georgia Department of Natural Resources. An intense field sampling program performed by our CLEAN contractor ABB-ES began the first week of August and results were presented to the Navy, City/County officials, and GaDNR during meetings conducted at Kings Bay 26-28 August. The following is a summary of each of those meetings:

a. A Navy only meeting was held on 26 August to review the findings of the field investigation and to develop a plan of action for informing the local officials and the public. The following attended the meeting:

Capt. Scullion	PWO Kings Bay
Cmdr. Patterson	APWO " "
LtCdr. McMillon	PAO " "
LtCdr. Larsen	JAG " "
Joe Hyatt	Envir. Manager " "
Jim Moore	IRP Coordinator " "
Bob Steller	PAO " "
David Criswell	IRP Manager SOUTHDIV
Ed Lohr	EIC SOUTHDIV
Sue Lawley	PAO SOUTHDIV
Dr. Michael Keirn	ABB-ES Technical Director
Dr. Marland Dulaney	" " Sr. Toxicologist
Dr. Marjo Carpenter	" " Sr. Engineer
Frank Cater	" " Task Order Manager
Laura Harris	" " Field Geologist
Kathy St. Peters	" " Public Relations

The results indicate that a plume of vinyl chloride, a human carcinogen, is present in the shallow groundwater aquifer at concentrations ranging from 1500 ppb at the western edge of the landfill to 120 ppb at the subdivision property line

The City/County seemed pleased with our progress and with our proposed plan. The City is concerned about providing irrigation water to the subdivision when the private wells are shut down. The potential liability of the County (former owners of the landfill) was not discussed at this meeting.

c. On 28 August a meeting was held with the Camden County Commissioners and attorney, and the St. Marys Mayor, city manager and attorney. Again the results were reviewed and the investigation and remediation plan was presented. The local government officials were pleased with our approach and pledged their support.

2. The following activities will take place during the next two weeks:

a. On 31 August door hangers containing an information fact sheet, questionnaire, and notice of a public meeting will be distributed to all residents in the Crooked River Subdivision. A telephone will be staffed with a trained public affairs specialist to answer questions from concerned residents.

b. At 1900 on 03 September a public meeting will be held at the Crooked River Elementary School. A fact sheet will have been sent to the media and they will be invited. "Concerned parties" such as the Board of Realtors, Chamber of Commerce, local and Navy health officials, and the director of Crooked River State Park will receive a special invitation. The Mayor of St. Marys, the CO and PWO, and Dr. Keirn will present a very brief panel-type discussion. The group as well as other members of the consultant team, and Navy and County officials will then be available to address concerns from individual residents during an availability session.

c. The week of 09 September the CO of Kings Bay, SOUTHDIV and ABB representatives will meet with GaDNR and EPA Region IV in Atlanta to discuss compliance and enforcement options. We will inform you of the exact time and place later this week.

3. There has been intense CNO interest in this situation. A Red Stripe Briefing was presented to CNO on 27 August. The activity submitted a SITREP up their chain on 12 August and an OPREP on 28 August. Also Georgia Congressman Ray was touring the activity on 27 August and was briefed.

4. In summary Capt. Scullion stated that he was very pleased with the response from SOUTHDIV and ABB-ES. The team would not have been so successful in developing and implementing the above actions without Capt. Scullion's support and presence during the entire three days of meetings at Kings Bay and the support of the

approximately 400 feet west of the landfill. The maximum contaminant limit (MCL) for vinyl chloride in drinking water is 2.0 ppb (this is also the cleanup standard). The shallow groundwater aquifer is not used as a drinking water source in this area. However, many of the 600 homes in the Crooked River Subdivision have shallow irrigation wells used for watering lawns and gardens, and perhaps for filling swimming pools. Although we have taken no samples within the subdivision we are reasonably sure that contamination is present above the MCL. Also, although we believe there is no immediate health threat, as a precaution against the inadvertent ingestion of the contaminated water by children we have recommended to the City/County that private wells not be used until the contamination is better defined.

Also discussed at the meeting was the strategy for determining the source and extent of the contamination and its ultimate remediation. The following general plan was developed for presentation to the City/County and the State:

1. Inform affected residents that use of private wells should be discontinued.
2. Identify/locate all private wells.
3. Investigate contamination within the subdivision working within existing City property such as street rights-of-way.
4. Obtain permission and investigate contamination on strategic locations on private property.
5. Perform preliminary risk assessment.
6. Determine the source of contamination.
7. Evaluate corrective measures.
8. Implement corrective measures.

b. A second meeting was held on 27 August with all the above team members present plus Mr. Reginald Young of the Ga DNR in Atlanta, Mr. Mike Mahaney the City Manager for St. Marys, and Mr. John Peterson the Camden County Administrator. The study results were again reviewed and the above plan was presented to the officials. Mr. Young requested that an official letter be sent to DNR notifying them of the off-site contamination. He said the State would probably issue a Consent Order and vaguely referenced monetary penalties. We stated that the Consent Order was not appropriate and that we were working within the authorities of the Kings Bay RCRA permit. The possibility of a Federal Facilities Agreement was discussed also, considering the possibility of the site being placed on the NPL. Regardless, Mr. Young stated that we would receive an official response with deadlines for submittal of investigation and remediation plans. In order to prevent lengthy review times from slowing the pace of investigations we requested conceptual approval of our plans with formal approval/comments to be addressed later. He stated that the state would not hold up progress.

activity's PAO and environmental staff. We will keep you informed of the results of the community relations and compliance actions. If you have any questions, please call me at X-0612 or Ed Lohr at X-0355.

cc: 09C  
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DAVID CRISWELL



24 August 1992

## GROUP TEN BRIEFING PAPER

### DOD CAMDEN COUNTY LANDFILL SITE CONTAMINATION

#### I. DOD Installation Restoration-Historical Perspective

Military installations are subject to regulations under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Both of these acts contain requirements for investigation and restoration of old disposal sites containing hazardous substances. The Navy Installation Restoration program is consistent with CERCLA and RCRA.

In 1976 the National Resources Conservation and Recovery Act (RCRA) provided regulation of solid waste and hazardous waste. In 1984, the Hazardous and Solid Waste Amendments were passed amending RCRA. Part of the amendments required facilities receiving permits to investigate solid waste management units to determine if there are releases of hazardous substances to the environment. It also required remediation of contaminated sites. This program accelerated site investigation and remediation, which would have been covered under CERCLA, where Permitted Hazardous Waste Facilities exist.

In 1980, the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) was passed requiring investigation and cleanup of old disposal sites. Following the enactment of CERCLA the Department of the Navy developed the Navy Assessment and Control of Installation Pollutants (NACIP) program to identify and control environmental contamination from past use and disposal of hazardous substances at Navy and Marine Corps Installations. In 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA) which reauthorized CERCLA and required the military to formalize an Installation Restoration (IR) Program. In 1987, Executive Order 12580 directed DOD to carry out the SARA requirements and established the EPA's role and responsibility in overseeing the military's IR Program. The NACIP program was therefore replaced by the IR program. In 1991 the EPA issued final regulations concerning their improved Hazardous Ranking System (HRS2) as required under SARA.

## II. Background Kings Bay SUBASE

1976-1981

The Environmental Impact Statement (EIS) provided an assessment of economic and environmental impact for the construction and operation of the Kings Bay Naval Submarine Base at the Military Ocean Terminal, Kings Bay Georgia. In addressing solid waste disposal operations, the EIS mentioned that the former Camden County landfill on the Kings Bay site would have to be vacated and that Navy would cooperate with Camden County in locating a new sanitary landfill. Disposal operations continued at the 35 acre on-base Camden County Landfill site until 1981. The EIS did not investigate the possibility of contamination at this site.

1985

The Initial Assessment Study (IAS), published September 1985, was conducted as part of the NACIP Program. The IAS identified 16 potentially contaminated sites. Figure 2-1 shows the location of the 16 sites. The IAS was conducted by a team of scientist and engineers who reviewed records, performed on-site surveys, and interviewed activity personnel. They charted the types of wastes, containment, hydrogeology, potential migration pathways, and possible contaminant receptors. Information reported, concerning the old Camden County Landfill, includes the following information.

- o Operated 1974 to 1981
- o 35 acre site
- o Trench and fill operation into the groundwater table
- o Burning of wastes on site was discontinued in 1975
- o 2' final cover
- o Types of Waste Disposed General household and office wastes, scrap paper, wood, and sewage treatment plant sludge and grit.
- o Estimated Waste Quantity 500,000 Cubic Yards
- o 

<u>Waste Sources</u>	<u>Estimated Contribution</u>
Camden County	60%
SUBASE Kings Bay	20 - 30%
Blue Star Shipping	5 - 10%
Gilman Paper Co.	5 - 10%

The IAS concluded, at that time, none of the 16 sites posed a potential threat to human health or to the environment. No further action under the NACIP program was recommended for any of the 16 sites.

1989 - 1990

Georgia Department of Natural Resources reissued a Hazardous Waste Storage Facility Permit to Kings Bay SUBASE on 29 September 1989. Part of this permit required the SUBASE to perform a RCRA Facility Investigation at 4 of the sites listed in the IAS.

## 1989 - 1990 continued

the sites identified in the Permit are:

- Site 5, Army Reserve Disposal Area, Towhee trail;
- Site 11, Old Camden County Landfill;
- Site 12, Army Reserve Disposal Area, Future Dry Dock; and
- Site 16, Army Reserve Disposal Area.

The RCRA Facility Investigation work plan, prepared by the SUBASE, was approved by the Georgia Department of Natural Resources 28 September 1990. The approved work plan allowed site 12, Army Reserve Disposal Area, Future Dry Dock to be dismissed from further investigation due to certification that all contamination from that site had been removed. The present site investigations are a result of carrying out the permit requirements.

### III. Present Site Investigation Effort

Southern Division, Naval Facilities Engineering Command contracted with ABB Environmental Services Inc. to perform the site investigations. ABB Environmental Services is a regionally recognized professional environmental engineering firm, working under a Comprehensive Long-Term Environmental Action Navy contract. The contract for the SUBASE combines the requirements of the RCRA Facility Investigation with the new HRS2 requirements under CERCLA. This provides a more comprehensive investigation satisfying both Environmental Acts. The reports are titled RCRA Facility Investigation/Site Investigation to indicate compliance with both the RCRA and CERCLA programs.

The contract work plan includes the following effort:

- o Investigation of SUBASE Facility Background including regional environmental descriptions
- o Review of IAS information
- o Field investigations including geophysical survey, soil borings, aquifer characterization, elevation and location survey, and monitoring well installation
- o Sampling of soil and groundwater
- o Chemical analysis of samples
- o Data validation, evaluation, and interpretation

Copies of the contract work plan were sent to Georgia Department of Natural Resources. ABB Environmental Services will provide five technical memorandums after each of the first five of field investigation/ sampling events and a final comprehensive report after the sixth field investigation/sampling event.

Technical Memoranda number 1 and number 2, covering the first two field investigation/sampling events have been completed. The third sampling event was completed 13 July 1992. A summary of the results from the first two field investigation/sampling events is provided in Appendix A.

### III. Present Site Investigation Effort continued

A review meeting concerning the first two sampling events was held on 24 June 1992. Georgia Department of Natural Resources representatives were invited to this session, but were unable to attend. A review of the field work and analytical results were presented by ABB Environmental. A reduction in analytical parameters was recommended for those which were non detectible. Additional soil testing at site 5 was recommended. The concentrations of vinyl chloride found in the ground water at the old Camden County Landfill, site 11, were addressed. It was decided that a contract change order to define the extent of the plume of contamination was needed. The contractor was asked to provide a proposed plan of action to accomplish the task.

### IV. Old Camden County Landfill-Site 11 Follow-Up:

A notice to proceed was issued to ABB Environmental 23 July 1992 to begin the study to determine the extent of the vinyl chloride plume in the groundwater at the old camden county landfill. The scope of work required them to take groundwater samples at additional locations using a cone penetrometer. A portable laboratory was brought in to assist in the field work. A more detailed scope of work is provided in Appendix B.

This special field investigation started 4 August 1992. The initial sampling began adjacent to the landfill, proceeded to the SUBASE property outside the fence adjacent to Spur 40 (East side) and finally sampling the west side of Spur 40 within the right of way. A separate Technical Memorandum concerning the recommendations and results from this field investigation will be issued in September.

The following preliminary field results have not received complete review by the ABB Environmental Staff. The concentrations of vinyl chloride have been confirmed by their off-site laboratory. The groundwater plume of vinyl chloride contamination appears to be 500' wide, 10' thick to a depth of 25', and extends past the Spur 40 right of way to the west of the site. The 500' width begins 75' south to 425' north of monitoring well No. KBA 11-2. The western limit has not been determined. The following three samples were taken with a cone penetrometer on approximately the same east west line. The sample taken 40' west of the Spur 40 centerline contained 120 PPB vinyl chloride. The sample taken within 10' of the SUBASE property line contained 460 PPB. The sample taken next to monitoring well KBA 11-2 contained 1500 PPB. Other sample results indicate there might be multiple sources of contamination within the landfill. The results to date do not indicate a threat to human health.

ABB Environmental will have finished their technical review and laboratory verification by 24 August. A technical meeting with Public Affairs, Legal, and Environmental representation from SOUTHNAVFACENCOM, SUBASE, and ABB Environmental will be held

#### IV. Old Camden County Landfill-Site 11 Follow-Up continued:

rior to publishing of the results and recommendations from this investigation, on 26 and 27 August. There are three topics to be addressed in this technical meeting. The topics will cover, which laws and regulation(s) and government agencies will we be working with, what is the correct and most expedient way of notifying the general public, and what technical plan will we propose/use for identification and mitigation of the contaminant plume? ABB Environmental will be submitting answers to many of the questions in their proposed work plan.

The laws, regulations, and government agency topic will cover a couple of areas. One is whether this site cleanup will remain under the RCRA Facilities Investigation (RFI) program, or be replaced by or combined with the CERCLA program. The RFI program is driven by GA DNR while the CERCLA program is driven by EPA Region IV. There are some minor technical differences in approach as it pertains to public notification but it will not change the technical side. The reason we need to determine this is to establish who will be include in the technical review committee. Legal questions as to releases for investigation on private property and initial landowner notification will also be addressed.

We will be working up a public notification plan which will include meetings and public hearings with the local public, city and county officials, and regulatory agencies.

The technical plan will cover risk assessment, public health issues, contaminant plume delineation, and possible mitigative measures.

#### V. SUBASE-County-City Joint Involvement

Groundwater, from the Old Camden County Landfill, has traveled beyond Spur 40 west of the landfill. Shallow irrigation wells serving the adjacent community may require closure to prevent human exposure. The ongoing sampling and the field work to occur in August will give us factual data on the size of the contaminated groundwater plume, level of contamination, and direction of flow. The SUBASE needs to achieve full and open community involvement in this environmental issue in the event there proves to be a health risk. We will be taking the first step towards open community involvement by informing county and city officials of this issue. Future public meetings will provide for full community participation.

## Appendix A

### Technical Memoranda Number 1 and Number 2

#### SITE 5 SUMMARY

##### Site no. 5, Army reserve Disposal Area on Towhee Trail

The organic compounds detected in the groundwater in the first sampling event were not detected in the second sampling event. Concentrations of inorganic compounds, except for Cadmium, have dropped below the Maximum Contamination Levels (MCLs), set by the EPA, during the second sampling event. Groundwater samples will continue to be analyzed for inorganic compounds, Volatile Organic compounds (VOCs) and Polychlorinated biphenyls (PCBs). Inorganic compounds will continue to be tested because they are present within detectable limits. VOCs are being tested due to their presence during the first sampling event. PCBs are being tested due to the one surface soil sample which contained 53 Parts Per Billion (PPB) of PCBs. Additional soil sampling will be taken to determine possible PCB contamination.

#### SITE 16 SUMMARY

##### Site No. 16, Army Reserve disposal Area

The organic compounds detected in the groundwater in the first sampling event were not detected in the second sampling event. Concentrations of inorganic compounds have dropped below their MCLs, during the second sampling event. Groundwater samples will continue to be analyzed for inorganic compounds, VOCs and Semivolatile Organic Compounds (SVOCs). Inorganic compounds will continue to be tested because they are present within detectable limits. VOCs will be tested due to their presence during the first sampling event. SVOCs will be tested due to their presence in one subsurface soil sample.

#### SITE 11 SUMMARY

##### Site No. 11, Old Camden County Landfill

Analytical results for the first groundwater sampling event (February 1992) at Site 11 indicated that a sample from monitoring well KBA-11-2 contained vinyl chloride at a concentration of 18 ug/l. This monitoring well is downgradient of the disposal area. In May 1992 the second groundwater sampling event was conducted. Two replicate groundwater samples were collected from monitoring well KBA-11-2. Concentrations of vinyl chloride in these samples were considerably higher than before, being 64 ug/l and 100 ug/l for the replicate sample. These concentrations of vinyl chloride are well above the USEPA Federal Drinking Water Standard MCL of 2 ug/l (PPB).

Several other VOCs have been detected in groundwater samples from monitoring well KBA-11-2, including parent compounds that

## Appendix A

### Technical Memoranda Number 1 and Number 2

#### Site No. 11, Old Camden County Landfill continued

decompose anaerobically to form vinyl chloride. These parent compounds include tetrachloroethene, trichloroethene, and 1,2 dichloroethene. The concentration of the parent compounds range from an estimated 1 ug/l to 16 ug/l.

Monitoring well KBA-11-2 is located on the western side of the landfill. Two other monitoring wells located on the western side of the landfill, north and south of monitoring well KBA-11-2, have not produced samples with detectable concentrations of vinyl chloride. The location of monitoring well KBA-11-2 is approximately 80 feet east of the SUBASE property line. Approximately 350 feet to 400 feet to the west of the landfill there is a housing development (private property). As shown on the groundwater potentiometric surface map attached the groundwater flow is to the west, towards the SUBASE line and potentially towards the housing development.

## Appendix B

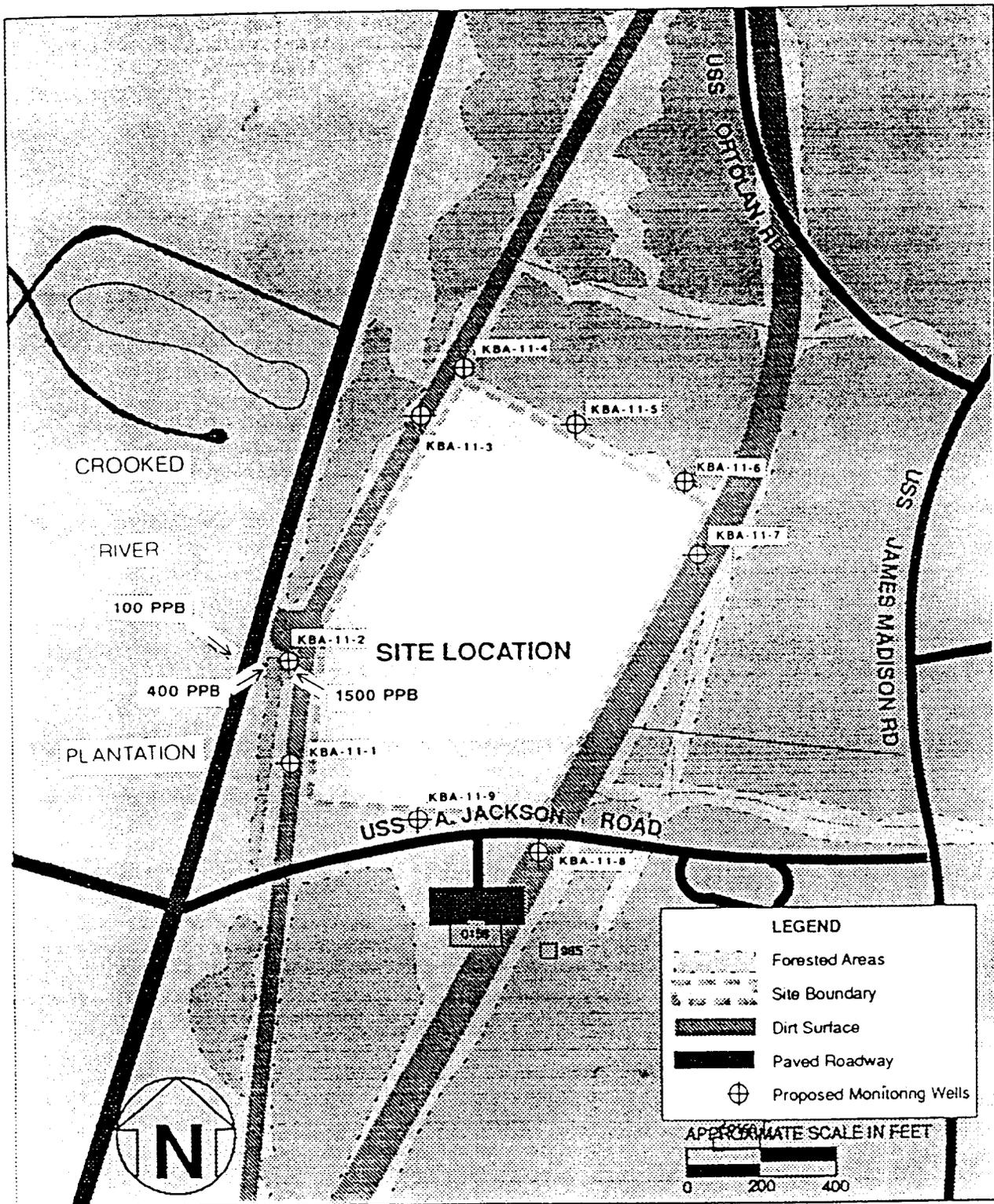
### SCOPE OF WORK CAMDEN COUNTY LANDFILL VINYL CHLORIDE INITIAL INVESTIGATION

The scope of work for this evaluation includes use of Cone Penetrometer Testing (CPT) and on-site analysis of Volatile Organic Compounds (VOCs) using a field laboratory. A percentage of the groundwater samples analyzed in the on-site laboratory will be replicated for analysis in an off-site, NEESA-approved laboratory.

CPT will be used for collection of groundwater samples and geologic characterization. Initially, CPT and field analysis will begin at the location of monitoring well KBA-11-2, to confirm the viability of the technique by comparing the CPT sample data to that obtained from the monitoring well and off-site laboratory analysis. CPT sampling will then move toward the SUBASE property line, downgradient of monitoring well KBA-11-2. Several points, positioned east-west and perpendicular to groundwater flow direction, will be sampled near the property line. If VOC analysis indicates the presence of vinyl chloride near the property line, an effort will be made to locate the center of the contaminant plume by defining the limits of vinyl chloride contamination in the north-south direction. CPT sampling will then move off SUBASE property, to the western right-of-way of Spur 40. Spur 40 generally parallels the SUBASE property line in this vicinity.

IF field analysis of CPT samples collected near the SUBASE property line do not indicate the presence of a VOC contaminant plume, CPT sampling will move towards the landfill. CPT sample locations will be selected to delineate the north and south limits of contamination so that the center of the plume can be located.

When the center of the plume has been located, locations will be selected for collection of CPT groundwater samples at depth. Several CPT penetrations will be done to locate the vertical extent of VOC containment or any confining layers present. For purposes of scoping and budgeting the work, it is assumed that CPT penetrations will not extend beyond 100 feet below land surface. This assumption is based on reports that clay and/or limestone confining layers are present 40 to 90 feet below the land surface.



SITE 11  
 OLD CAMDEN COUNTY LANDFILL  
 MONITORING WELLS



RFI/SI WORKPLAN  
 NSB KINGS BAY

NSB KINGS BAY

RFI/SI MEETING

27 August 1992

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