



DEPARTMENT OF THE NAVY  
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From: Commanding Officer, Naval Air Station Memphis

Subj: RESTORATION ADVISORY BOARD MEETING

Encl: (1) Minutes from 25 October 1994 RAB Meeting  
(2) Tour Information

1. Minutes from the previous meeting are forwarded as enclosure (1). A complete transcript of the previous meeting will be placed in the public repositories and the RAB Library.
2. As requested at the last meeting, we have arranged a tour of field work in progress on Monday, 28 November, at 1:00 pm. We will be observing the investigation of the plating shop dry well at Hangar N-126. Enclosure (2) provides additional information. Please meet at the NAS Memphis visitor's parking lot at the front gate at 1:00 pm on the 28th. A bus will be provided to transport you to the site. The tour should last approximately one hour.
3. Due to limited space, the tour will not be advertised to the general public; however, I encourage you to invite anyone you know is interested in the environmental work underway at NAS Memphis. Should you wish to bring individuals or know of anyone who wishes to participate on the tour, please notify Ms. Sue Hosmer, Public Affairs Office, at 873-5761 by Wednesday 23 November.
4. The next Restoration Advisory Board (RAB) meeting is scheduled for Tuesday evening, 29 November, 7:00 p.m., at the Baker Community Center, 7942 Church Street.
5. Thank you again for your participation and work as a member of this Board. If you have any questions, please do not hesitate to call Ms. Hosmer.

*T. L. Willis*  
T. L. WILLIS

Distribution:  
Mrs. Frieda M. Ellerbrook  
Mr. George R. Harvell, Jr.  
Mr. Kenny Kelly, Sr.  
Mr. Norman C. LaChapelle  
Mr. Trent McVay  
Mr. Russell A. Neighbors  
CDR Russell Noble  
Mr. David L. Porter  
Mr. Tom Seale  
Mr. Charles F. Smith  
Mr. John A. Smith  
Dr. David M. Watt  
Mr. David G. Williams  
Mr. Clinton Willer

Copy to:  
Mr. Tareq Alhams  
Mr. Lawson Anderson  
Ms. Tonya Barker  
Mr. Jack Carmichael  
Mr. Jordan English  
Ms. Sue Lawley  
Ms. Sue Hosmer  
Mr. Jim Morrison  
CDR D. Clark  
Mr. Mark Taylor  
CDR R. Mason

**Meeting of the NAS Memphis  
Restoration Advisory Board (RAB)  
October 25, 1994  
Baker Community Center, Millington, TN**

The meeting was opened by Captain Willis at 7:00 p.m. by thanking everyone for coming. He confirmed that everyone received a copy of the minutes and that they were accepted as written. Captain Willis then introduced David Porter, Environmental Engineer from Southern Division, for an update on the activity at the base.

David Porter briefly discussed activities of the BRAC Cleanup Team during the past month. He began by pointing out on a map the "Gray Areas" to be investigated. The area is primarily the airfield, along with Navy Lake and the horse stables. The investigation is scheduled to start November 7th. This date was postponed from the original estimated start date at the end of October. This postponement was caused by the slight delay in the procurement of the laboratory subcontractor. Also, comments from the community had to be incorporated into the work plan.

Next, Mr. Porter discussed the second part of the investigation, the RCRA Facility Investigation (RFI) of Assembly A. This includes the high priority areas such as the landfills and the plating shop dry wells. Approval of Assembly A Work Plan is expected by November 7th. Clearing is expected to start next week on SWMU 8, which is the cemetery landfill, as well as SWMU 60, which is the western portion of the north side landfill. Mr. Porter clarified that clearing is basically bush-hogging to get the area ready for investigation. The actual field work is expected to start after the Direct Push Technology rigs are on the base, which should be by November 21st.

Mr. Porter reminded the group of the reported dump on the perimeter of the base that was discussed in the last meeting. Upon further investigation, it was found to be located at the corner of the base on the northern boundary outside of the fence line. This is not the property of NAS Memphis. It has been reported to the Memphis and Shelby County Health Department.

Mr. Porter briefly mentioned that the base is continuing to work on SMWU 66 located just south of the radar facility, which was a dump that was discovered recently. Mr. Porter stated that the RCRA Facility Assessment was recently submitted to the EPA, which is the first stage in the investigation of that SWMU. Also noted was that the base has a contractor to do an Interim Measures Removal. The Interim Measure Work Plan is being developed and will be available for review by RAB members before the field work begins.

Mr. Porter noted that changes are being made to the RAB Library and the Repository, based on comments from last meeting. These changes will make locating documents easier.

enclosure (1)

Lastly, Mr. Porter discussed the BRAC Cleanup Team attending a five-day training course on risk assessment sponsored by EPA. Risk assessment is one of the possible alternatives to be considered in developing cleanup alternatives for the base.

Captain Willis introduced Sue Lawley of Southern Division. Sue briefed everyone on the short meeting she held with the community members on the RAB before the official meeting. A few action items were discussed including the concern that the community may not be getting information about the meetings by reading the newspapers. It was decided to use fliers as an alternative. Fliers will be distributed through some of the local businesses, churches, and schools. Basically, it will give the details on the upcoming meeting, where it is held, how they can attend, and who they can contact for additional information. Two members of the RAB, Freida Ellerbrook and Russell Neighbors, have agreed to take on this task. These two members were thanked for their efforts.

Sue Lawley discussed the request for a presentation for the community outreach program at the last RAB meeting. Ms. Lawley showed the NAS Dallas presentation as an example of possibilities. Millington needs to prepare a similar briefing focusing on information about the realignment and the economics involved with the realignment. Ms. Lawley would like to get some volunteers for this project and will be sending out a follow-up letter.

Ms. Lawley reminded members that in last meeting it was decided to publish the names of the RAB members in the paper in the near future in order to let the community know who is working on the RAB.

Captain Willis then introduced Mark Taylor of Southern Division. He brought up the Gray Area Work Plan and the areas to be investigate. Sampling of these areas will determine if any releases have occurred. Mr. Taylor explained that Assembly A grouping has the highest priority of the sites; therefore, work will begin with this group. The RAB was requested to review the RFI Work Plan. Any questions or comments were requested by November 2nd in order to have them incorporated into the final document approval by November 7th. Any delays in the finalization of the RFI will impact the schedule dates and eventually hold up the property transfer.

Captain Willis introduced Mr. Phil Whittenberg to give an update on the Reuse Committee, particularly, developments on the Airport Master Plan or the property's reuse.

Mr. Whittenburg stated that the committee was formed in July or August of last year, and the staff was hired starting in October after an OEA grant was provided for planning purposes. The Municipal Airport Authority has underway a master plan for the airport, dating back to a joint-use agreement that was signed

between the Navy and the airport authority in January of '93. This has been recently updated to reflect the decisions of the BRAC. In September of last year the airport authority put out an RFP for a consultant to develop this master plan. The master plan, under FAA, is essential to the future funding of any operation at the airport.

Mr. Whittenburg pointed out that it is also very important that the committee know exactly how much of the property is required to support the airport to make it a self-supporting operation.

Mr. Whittenburg also noted that there should be another public meeting November 1st or 2nd. Additionally, the reuse committee has arranged for Millington to be involved in a study by the University of Memphis Regional Economic Development Center to look at the economic impacts off-base, to determine what those impacts are in the community, and who is affected by them. The results are due around the end of December. The study will be followed by an adjustment strategy so that the city will know how to approach the economic impacts. The next phase is the reuse plan. The reuse study ties together the Airport Master Plan and the economic impacts that are off-base, projects land uses, and infrastructure to develop the site that is being turned over to the community. The water systems, sewage systems, transportation systems, and off-base land uses are taken into consideration. It was also noted that it would be very difficult to generate enough revenue for the airfield to be self-supporting for all maintenance and operations. Therefore, adjacent properties are proposed to be redeveloped into either commercial or industrial uses that would regenerate revenue to support that operation. This Reuse Plan will be available in July or August 1995 which is approximately when the economic impact study is expected. These studies will demand a lot of citizen input.

Captain Willis stated that the floor was open for any questions.

Mr. Neighbors asked a question concerning the demolition of the housing at the Naval Hospital. Captain Willis answered that all of the two-story duplexes called Johnson Housing will be demolished with the exception of one used by the Reuse Committee and one for use by the University of Tennessee.

Ms. Ellerbrook asked that the responsibility of oversight of a cleanup be explained. Mr. Willer answered that the state has primary responsibility and someone from the state or his office or from David Williams office will be present when cleanup begins. The majority of work will be overseen by the contractors that are doing the cleanup. Someone will be onsite to ensure that all applicable safety regulations and environmental concerns are being addressed. Captain Willis added that the state, the Navy, and EPA meet on a regular basis. This group is responsible for overseeing this cleanup and reporting to the RAB.

Members questioned issues that could come up and delay the

current schedule. After some discussion, it was concluded that at this point, there are no known obstacles in our path but things could come up as the investigation progresses. One point made emphasized the importance of the Reuse Plan coinciding with the Environmental Impact Statement in order to prevent delays. Planning land uses that are more compatible with current uses of the land will make the process less complicated. A lot of paper work and time are involved to avoid any serious delays.

A question was brought up on determining the possibility of contamination traveling to the sub-surface areas via building footings. Mr. Willer stated that it is not considered a problem at NAS Memphis due to the type of construction (slab foundations rather than footings) typically used on the base.

Captain Willis encouraged conversation about next month's agenda.

Sue Lawley will attempt to have someone report on community outreach status.

Phil Whittenburg will report on the Airport Master Plan.

A tour to show the Direct Push Technology is planned for November 28th at 1:00PM. Sue Hosmer is the point of contact for the tour.

The next meeting was set for November 29th, 7 p.m. at the Baker Community Center.

Mayor Harvell adjourned the meeting.

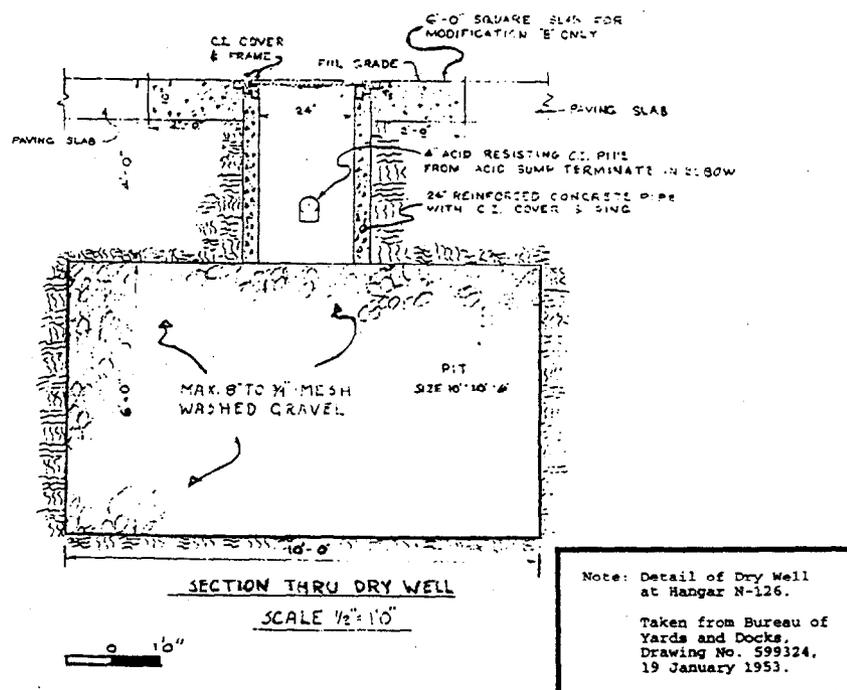
\* Editor's note: A full transcript of the meeting will be available at the RAB Library.

NAS MEMPHIS  
RESTORATION ADVISORY BOARD (RAB)

SITE VISIT TO OBSERVE THE INVESTIGATION  
OF  
SOLID WASTE MANAGEMENT UNIT (SWMU) 7  
HANGAR N-126 PLATING SHOP DRY WELL

MONDAY, 28 NOVEMBER 1994  
1:00 pm

**BACKGROUND:** Solid Waste Management Unit (SWMU) 7 is a plating shop dry well located on the south side of Hangar N-126. Shown below is a detail of the dry well from the 1953 construction plans:



This dry well operated from 1955 to 1978, and was used to dispose of wastes from the plating operations of the Aircraft Intermediate Maintenance Department (the wastes were discharged into the dry well and allowed to percolate into the surrounding soil). These wastes included concentrated cyanide-based nickel, cadmium, and chromium plating solutions, and rinse water from the plating operation. Also, it is probable that small quantities of solvents such as 1,1,1-trichloroethane were used to clean parts prior to plating. The quantities of wastes disposed in the dry well are not known.

**PAST STUDIES:** The dry well has undergone two prior investigations, which included limited sampling:

- Initial Assessment Study (IAS) - 1983: A sludge sample was collected from inside the dry well. The sample contained levels of nickel, cadmium, and chromium as noted below:

nickel	32 parts per million (ppm)
cadmium	1,240 ppm
chromium	223 ppm

- Confirmation Study (Verification Phase) - 1985: Several subsurface soil samples were collected from beneath the dry well pit. The samples were analyzed and found to contain the following levels of cyanide, total chromium, and total zinc:

cyanide	0.812 ppm (14 feet below land surface)
total chromium	34 ppm (20 feet below land surface)
total zinc	64 ppm (14 feet below land surface).

Also in 1985, a monitoring well was installed into the center of the dry well. The groundwater sample was analyzed for volatile organic compounds (VOCs), cyanide, cadmium, chromium, copper, nickel, lead, and zinc. VOCs and cyanide were not detected. Some of the metals were detected, but were below the USEPA Interim Primary Drinking Water Standards.

**RCRA FACILITY INVESTIGATION - 1994:** The purpose of the current investigation is to determine the extent of the soil contamination around the dry well, and to conduct further testing of the groundwater to detect and determine the extent of contamination. Also, the migration characteristics of the contamination in the soil and groundwater will be determined.

The site is being investigated using a technique called Direct Push Technology, or DPT (a description of DPT is attached). DPT is being used to investigate soil and groundwater at relatively shallow depths (up to 30 to 45 feet) around the dry well (see the attached diagrams). The samples are analyzed in an on-site mobile laboratory.

Results from the DPT investigation will be used to place monitoring wells at various depths around the dry well. Data from the DPT investigation and the monitoring wells will be used to conduct a cleanup feasibility study.

## USE OF DIRECT PUSH TECHNOLOGY FOR SUBSURFACE EXPLORATION AT THE NAVAL AIR STATION MEMPHIS, MILLINGTON, TENNESSEE

Hydrogeologic investigations for the RCRA Facility Investigation (RFI) at the Naval Air Station (NAS) Memphis will begin on November 14, 1994. The first phase of the work will consist of use of Direct Push Technology (DPT) methods of subsurface exploration. DPT methods will be used to investigate the shallow hydrogeologic conditions at six Solid Waste Management Units (SWMUs) which comprise Assembly A, the grouping of SWMUs which has the highest investigative priority given to BRAC RFI sites within the NAS Memphis North Complex. The DPT work will be conducted to investigate the shallow geologic materials at the facility (loess/alluvium and possibly the upper part of the underlying fluvial deposits at some locations) to obtain detailed lithologic information and to determine whether contaminants are present in these materials prior to planning and initiating drilling and installation of monitoring wells. The DPT work will be performed for the Navy by Subsurface Technology, a subsidiary of HydroLogic, Inc., under contract to EnSafe/Allen & Hoshall. Technical oversight of the field work will be shared jointly by the U.S. Geological Survey (USGS) and EnSafe/Allen & Hoshall.

DPT is a technique of directly pushing various instruments into the earth and collecting in-situ geotechnical and hydrogeological measurements and samples. The main advantage of DPT over conventional exploratory techniques such as drilling and related sampling methods is that no drilling by-products (cuttings and water, termed Investigation Derived Waste, or IDW) are generated, thus crew exposure and IDW disposal costs are significantly reduced.

DPT methods and tools have evolved from the Mechanical Dutch Cone Penetrometer (ASTM D-3441) which was developed in Holland during the 1920's. The technology consists of a hydraulic load frame that generates downward force for thrusting various instruments into the subsurface and then retrieving the instruments for decontamination and reuse. The DPT rig and equipment is controlled electronically, with the various DPT tools connected uphole to portable computer equipment which uses specifically designed software for real-time data recording, processing, and display.

DPT work to be conducted at selected locations at the six SWMUs essentially will consist of three main components. First, a DPT rig will be used to push a Piezocone PC-1 tool into the ground while measuring and recording various soil and ground-water characteristics. The PC-1 tool will be pushed until refusal, the depth where geologic materials prevent further downward advancement of the instrument. At the NAS Memphis, refusal is anticipated to be in the upper part of the fluvial deposits, based on the sand and gravel lithology of these horizons. At most locations, refusal depths are estimated to range between 30 and 45 feet below land surface. Thus, the loess or alluvium will represent the primary zone of investigation for the DPT work. The output produced from pushing the PC-1 tool will be in the form of tabular and graphic logs displaying lithology and ground-water related parameters associated with the horizons penetrated. The PC-1 data then will be used to plan for soil and ground-water sample collection, the second component of the DPT work.

For the second component of the DPT work, the PC-1 information from each push location at a SWMU will be evaluated in the field to select depth intervals for soil and ground-water sample

collection. A minimum of one soil sample and three ground-water samples will be collected at each location; however, additional samples may be collected if contamination is identified or suspected. Soil sampling will be accomplished by pushing a SS-1 soil sampler, a tool similar to those standardly used to collect core-type samples from unconsolidated earth materials, to the prescribed depth with the DPT rig, then opening the tool, pushing it approximately 24 inches further, and retrieving the sampler and contents. Ground-water samples will be collected using a GS-1 ground-water sampler. The GS-1 sampler is a gas-operated/electronically monitored tool which also is pushed to sampling intervals selected from the PC-1 log. Once the interval for ground-water sampling is reached, the opening, filling rate, and closure of the sampler all are accomplished by a system delivering argon, a chemically inactive gas, under variable pressure to the tool from the rig. Operation of the GS-1 sampler is displayed and monitored on the portable computer by pressure readings from the gas system and electronic signals from the tool. An additional capability of the GS-1 sampler is that the tool has been designed to monitor the infilling rate of ground-water as it enters the sampler under the natural hydrostatic pressure present in the sampling interval. Information on the time rate of filling of the sampler is selected and input to software on the computer to calculate an estimate of the horizontal hydraulic conductivity of material in the sample interval.

The third component of the DPT work will consist of field and laboratory analyses of the soil and ground-water samples. A mobile laboratory will be present onsite for performing volatile organic compound (VOC) determinations using gas chromatographic techniques. A substantial benefit should be derived from having onsite laboratory capabilities in that analytical data can be evaluated within minutes after samples are collected. Rapid turnaround time for these analyses will facilitate adjustments in the number of samples or sampling depths while the field work is being conducted. Additionally, a subset of at least 25 percent of the samples will be selected and prepared for confirmatory analysis for VOCs at an offsite laboratory to fulfill regulatory QA/QC requirements.

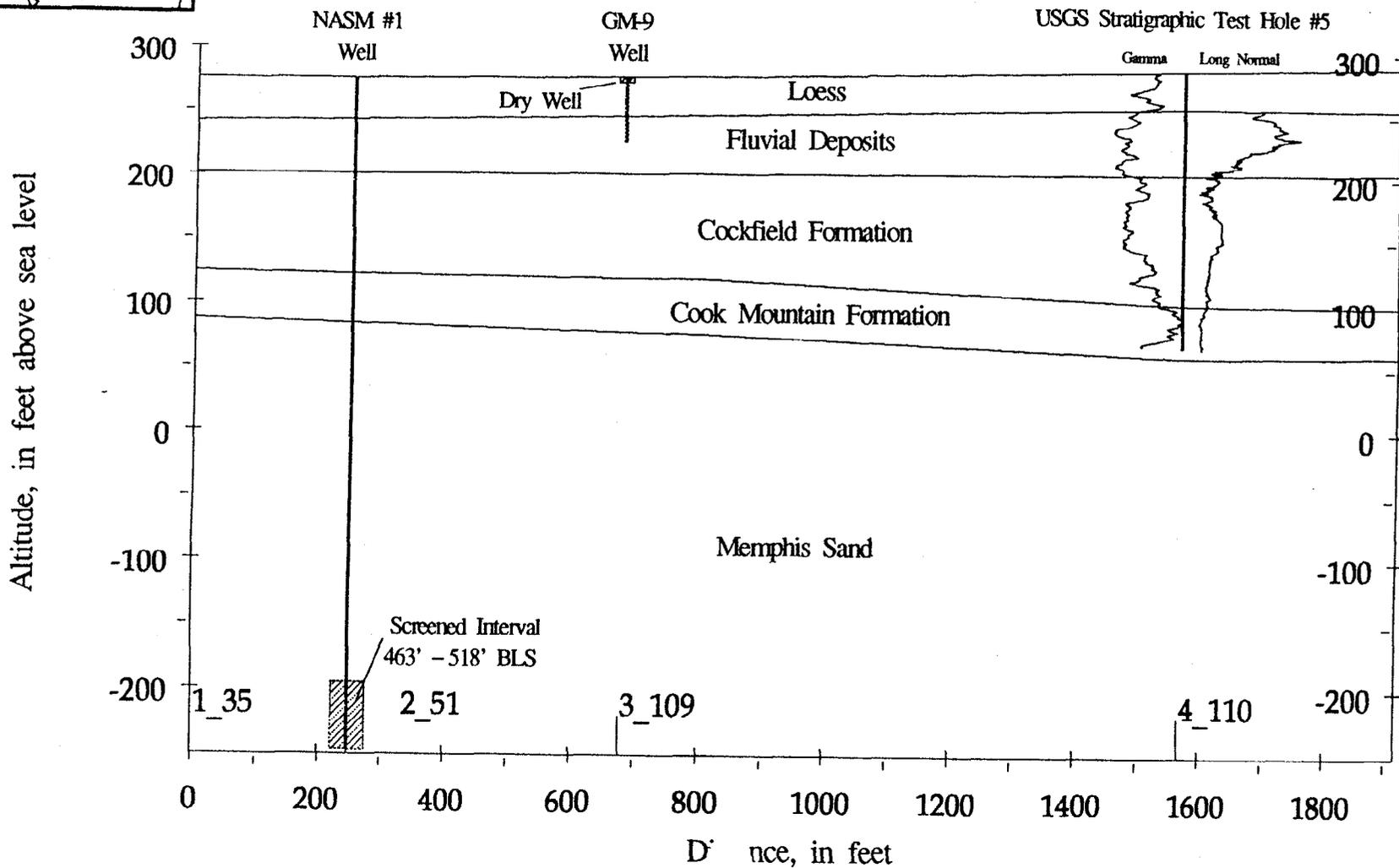
DPT methods of subsurface exploration represent a state-of-the-science technology for hydrogeologic and contaminant investigations, provided that geologic conditions exist for which the method is suited. DPT has received approval by the U.S. Environmental Protection Agency and other regulatory agencies for use at a variety of sites, including several located in western Tennessee. A demonstration of DPT methods was conducted by the USGS at two locations at the NAS Memphis in August 1992. Results from the demonstration showed that the method is suitable for use in the shallow geologic formations at the NAS Memphis, and should enable determinations of environmental conditions at the facility to be performed more safely, rapidly, and at a greater cost savings than traditional well drilling and sampling.

# SWMU #7 - Cross Section

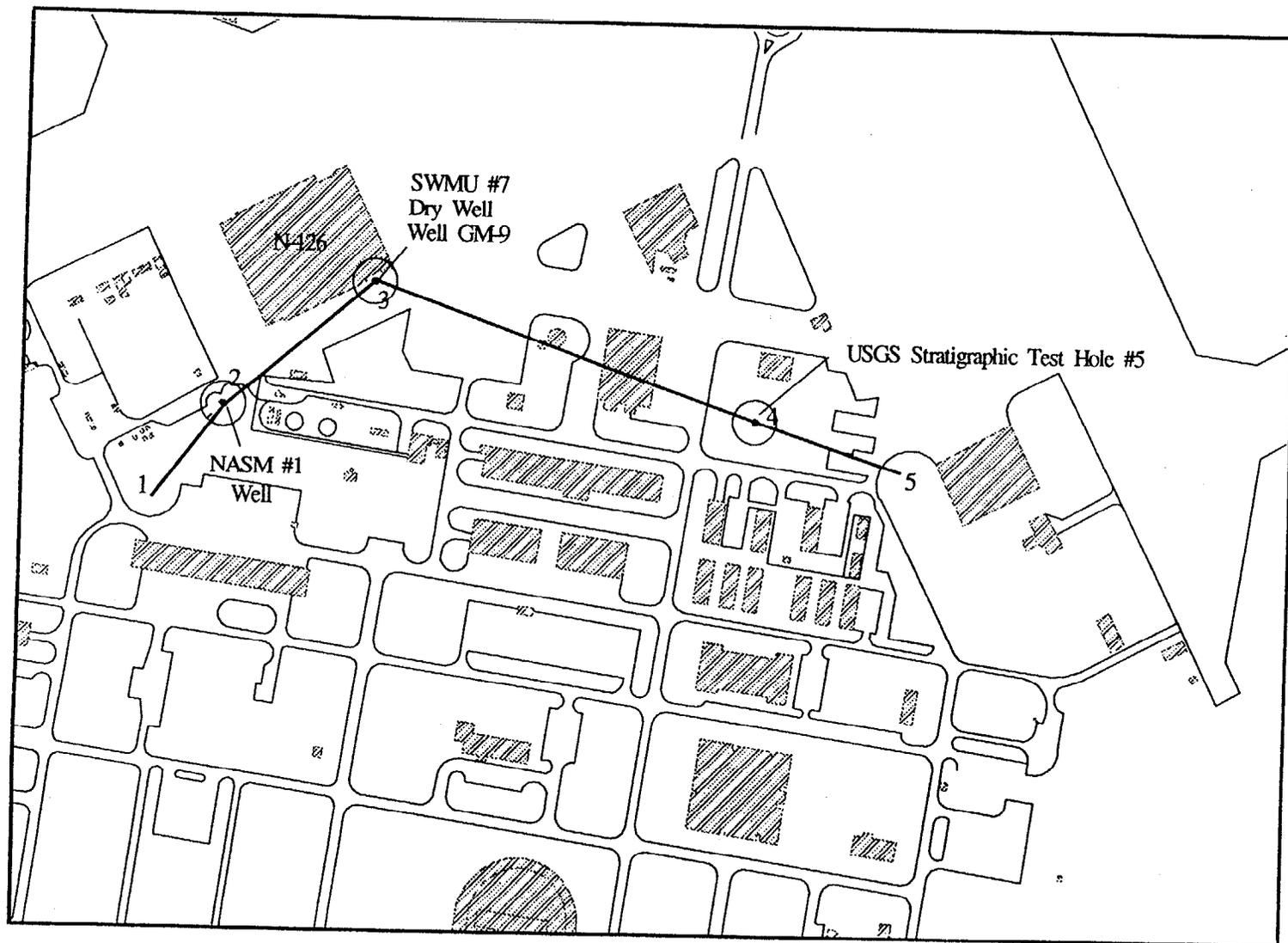
Vertical  
Exaggeration  
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Scale  
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Area of  
SWMU #7



# SWMU #7 - Cross Section Trace



## BRAC Cleanup Team Status Update

### Items of Interest for the Restoration Advisory Board (RAB) - 25 October 1994

- "GRAY" AREAS - Field work is scheduled to begin on November 7th. Slight delay in start of work (from end of October) is due to additional time required to secure laboratory subcontract and respond to additional review comments.
  
- RCRA FACILITY INVESTIGATION (RFI) - Anticipated approval date for the work plan for investigation of Assembly A (high priority areas such as the plating shop dry wells and landfills) Solid Waste Management Units (SWMUs) is November 7th. Initial clearing of brush, weeds, and grass from SWMUs 8 (Cemetery Disposal Area) and 60 (North Side Landfill - Western Portion) will begin the week of October 31st. Two direct push technology (DPT) rigs are scheduled to be on site by November 21st.
  
- The dump reported by a community member at the last RAB was investigated by NAS Memphis personnel. The dump was found to be outside of NAS Memphis property on along the northern boundary of the base. Memphis and Shelby County Health Department officials have been notified.
  
- The Navy has formally submitted a RCRA Facility Assessment (RFA) to EPA Region, with a copy to the Tennessee Department of Environmental Management, on the new SWMU on the north side near the radar unit at facility 1696. The contract with the firm of Morrison Knudsen to conduct an Interim Measures removal of the approximately 50 drums and trash and debris found in the ravine is underway, and work plans are being developed. A formal Interim Measures Work Plan will be developed and available for review prior start of the field work.
  
- Based on comments from the RAB, the RAB Library and Public Repositories are being revised to make it easier to locate documents and information.
  
- BRAC Cleanup Team members are scheduled to attend an EPA sponsored 5-day training course on risk assessment. A risk assessment will be performed at NAS Memphis later in the investigation, and cleanup standards will be based on the risk assessment.

NAVAL AIR STATION MEMPHIS  
Restoration Advisory Board (RAB)

RESPONSES TO COMMENTS/QUESTIONS  
25 October 1994

REVIEW COMMENTS AND QUESTIONS FROM RAB MEMBER, MR. JOHN A. SMITH, ON THE "GRAY AREA" WORK PLAN AND THE ASSEMBLY A RCRA FACILITY INVESTIGATION (RFI) WORK PLAN. RESPONSES PROVIDED BY THE BRAC CLEANUP TEAM.

**GENERAL RESPONSE:** The purpose of the "gray area" investigation is to screen areas to verify a release rather than define the nature and extent of contamination. Should a release be confirmed, the investigation will be expanded. Many of the comments noted by Mr. Smith will be addressed during later stages of the investigative process, if required.

The analytes selected for each "gray area" site investigation were chosen because they were the most likely contaminant to be detected based on the specific history of the site. Should a release be confirmed, the investigation will be expanded, and the number of analytical parameters increased to fully characterize the contamination.

"GREY AREA" WORK PLAN

1. "Should Endangered Species Act be of concern? Add in Water reg's?"

See general response - will be address during later stages of the investigative process should a release be detected.

2. "Should Clean Air Act (CAA) 112(g) or 110(a)(2)(D) be of concern?"

Regulations not applicable to a verification sampling investigation.

3. "Take a second look at the TPH parameter; will it tell you what you are looking for? Many times it needs to be coupled with BETX to be useful. Would a DRO or GRO screen give you more specific information?"

See general response. Total Petroleum Hydrocarbons (TPH) will provide an indication/verification of a release of petroleum related compounds. Should a release be detected, consideration will be given to additional analytical methods.

4. "Whoever is doing your QC needs to take a second look at the documents and the analytical requirements published."

**Sampling and analytical procedures will conform to the U.S. Environmental Protection Agency (EPA) Region IV Environmental Services Division Standard Operating Procedures and Quality Assurance Manual. Also, EPA "Level III" data quality objectives will be used for the "grey area" investigation.**

5. "Take a second look at your sampling plans and take into account what is upstream of the locations of concern. Reason: the influence of the runoff from a location/site upstream may introduce analytical bias or introduce some chemical or compound that will yield false analytical results."

**See general response. Biased sampling locations have been chosen to verify a release. Upstream sampling may be included, should a release be confirmed and the expansion of the investigation be required.**

6. "May want to do some process analysis or material balance analysis to have a better understanding of the processes at a specific site. This would mean more time spent verifying interview results with written records. Reason: this may give a better indication of the operations at a site and decrease the lab and field sampling needs. this is a cost control process."

**The Environmental Baseline Survey (EBS) evaluated all existing and available information on the sites.**

7. "Take a hard look at review of the microbial communities involved in your sampling plans. Review of the indigenous communities as compared to existing communities may be a good indication of the need to proceed with remediation. Whereas, another analytical result may indicate otherwise. I believe the water quality people could provide relevant input."

**See general response.**

8. "Identify where waste collection areas are/were located and sample down stream of these locations."

**Waste collection areas were identified under the RCRA Facility Assessment, and are being handled under the RCRA Facility Investigation.**

9. "Add TCLP analysis in sampling scheme?"

**Concur - will be used for hazardous waste determination, as appropriate.**

10. "Dealing with cemeteries presents significant social and or archeological issues. Is this a concern? What provisions have been made if it becomes a concern?"

**SWMU 8 (Cemetery Landfill) derives its title from its proximity to the Chamberlayne Cemetery. The landfill does not actually include the cemetery, and the cemetery will not be disturbed during the RCRA Facility Investigation of the landfill.**

11. "Section 1.0 - Suggest you include a guideline parameter of "Potential for Impact to Adjacent Facilities"."

**See general response. If a release is confirmed, further investigation will address adjacent facilities.**

12. "Section 2.0 - Don't limit sampling and analysis to RFI guidelines, the indigenous and existing microbial communities will tell you a lot about soil and groundwater condition. Expand analytical parameters to include Atomic Adsorption and GCMS?"

**See general response.**

13. "Section 3.1 N-12<sup>2</sup>: provide for additional visual inspections and sample at stains for analysis? Sample depths should be graduated to 48" in the direction of groundwater/surface water flow. Samples to the 12" level represent a guess at best."

**A visual inspection has been conducted by the BRAC Cleanup Team, and no stains were observed. Samples are proposed for the 0" to 12" depth for risk assessment purposes; consideration will be given to collecting additional samples at depths greater than 12" where appropriate.**

14. "Section 3.2 N-4: Add glycols, paints, halogenated solvents and metals in your analysis. Suggest that you take a look at the entire chemical system to look for preservatives or antioxidants that may be toxic and not readily degradable. I would suspect that your base compounds are gone. The specific names of these compounds should be available off of MSDS or product specification sheets. the Military has always been good at providing specifics with respect to product specifications. The procurement department may be a good place to start to look for additional information/. There used to be a system in place called "Good Manufacturing Practices" that covered every aspect of a facility's operations. This also may be a good place to look?"

**See general response.**

15. "Section 3.3 - Septic field drains, package units, etc., are now thought to be one of the most significant threats to groundwater and surface water contamination. This may be a

significant source of virus, bacteria, or other form of contamination. this one needs to be rethought and have significant input from Water Quality personnel. What is the basis of conclusion that SWMU 29 is determined to be "no threat"? I do not see it here. Add Tri & Hexa-valent Chromium, Mercury, Silver, and Antimony to the check list. A qualitative AA scan for these compound should be relatively cheap. Check microbial communities and add sampling at point where flow enters the property. Add vegetation and aquatic life analysis to the analytical procedures; we may be surprised at what plant life and fish may show when digested and analyzed. Limiting sampling to sediment only provides only part of the equation."

**Memphis and Shelby County Health Department regulates the package wastewater treatment plant at Navy Lake, and they have been contacted regarding this matter.**

16. "Section 3.4 - Add glycols, cadmium, chromium (+3 & +5), lean full metals screen? Add phosphate analysis to the analysis, particularly where hydraulic oils are suspect as part of the contamination. This section needs rework. Sampling may be needed to the groundwater level. full petroleum chemical scan may be needed with area girded and samples at 5 foot intervals to groundwater with field screening. Minimum screening samples to 30' level? Also look for antioxidants, preservatives, lead, antimony, or other compounds characteristic to these chemicals. Look at BOD and COD of the Lake(s) and the affect of leading in areas of stables and golf course after a storm. Do full PCB screen in MX, Electrical waste, and hobby shop areas."

**See general response.**

17. "Section 4.1 - Do specific metals screens; look specifically at areas where pickling or solvent/part wash tanks were located. Take samples at concrete joints and or cracks."

**The area is "gray" due to past engine testing performed at structures which no longer exist. The parameter of concern is petroleum. TPH is being used as an indicator, as it is the most likely contaminant to be encountered.**

18. "Section 4.2 - Add Cadmium and Sulfur to analysis list. Check pH of runoff and have a corrosion expert examine the soil with respect to corrosivity and conductivity. Suggest that sample depths be expanded to the 18" & 24" depths."

**See general response. Consideration will be given to collecting additional samples at depths greater than 12".**

19. "Section 4.3 - Look for butyl compounds and metals specifically associated with the soaps (Na, K, etc.). Look for sulfur and lead compounds."

**See general response.**

20. "Section 4.5 - Your waste solvents will not be limited to petroleum compounds. Add halogenated compounds to the analysis."

**As described in the work plan, halogenated compounds are included in the proposed analytes (VOCs, SVOCs, metals, and TPH).**

21. "Section 4.6 - Do full PCB screen, and add Cd, lead, Mn, and Hg to analysis specifics -- maybe do a full metals screen?"

**See general response.**

22. "Section 4.8 - Look for halogens."

**See general response.**

23. "Section 4.9 - Look for glycols thru penta-glycols -- maybe some cyclic glycols. Don't limit analysis to ethylene. Look for glycol preservatives -- i.e., ethylene diamines, or other amino or nitro compounds."

**See general response. Other glycols will be identified by the analytical method used for ethylene glycol.**

24. "Section 5.2 - Some scales have hydraulic systems associated with them. You may want to do some type of ground penetrating radar analysis to ensure that this is not a problem. Maybe a maintenance records search will suffice?"

**This area was evaluated under the Environmental Baseline Survey, and the hydraulic system was not of concern.**

25. "Sections 5.1 & 5.3 - Document these sources: find something in writing and add it to the text for clarification. Do some verification checks via DPT?"

**Sources will be documented and added to the files.**

#### **ASSEMBLY A RCRA FACILITY INVESTIGATION (RFI) WORK PLAN**

26. "Volume I - Add a validation process to your QC numbers. In sampling plans be careful of your protocol. For example, use of some soaps such as Tide may add a sodium or potassium salt that results in analytical bias. Also many plastic tubes or retainers or vials, etc., may have a malate polymer in them. This introduces a false indication in GCMS as a halogenated compound."

**As described in the work plan, data validation will be performed per EPA protocol. Sampling, decontamination, and analytical procedures will conform to the U.S. Environmental Protection Agency (EPA) Region IV Environmental Services**

**Division Standard Operating Procedures and Quality Assurance Manual.**

27. "Volume II - Where are your Personnel training plans? Where is your site EMT or EMT training?"

All personnel on site will be trained in accordance with 29 CFR 1910.120. Documentation of this will be maintained on site. Not required to have an Emergency Medical Technician (EMT) on site.