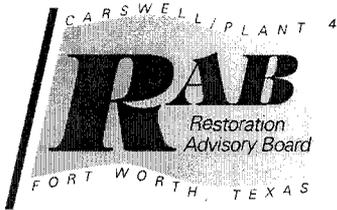




CARSWELL AFB TEXAS

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 758



**Carswell/Plant 4
Restoration Advisory Board Meeting
February 8, 2001
6:00–8:00 pm**

Agenda

Welcome/Introductions/Minutes	5 minutes
Westworth Redevelopment Authority Program Update	10 minutes
RAB Charter Discussion/Donald Yates	10 minutes
Stakeholder Involvement Plan Update/ Mike Hawkins, Don Yates	15 minutes
Air Force Plant 4/George Walters Project Update	15 minutes
Carswell Off-Base/Charles Pringle Program Update RCRA Landfill Investigations Sanitary Sewer System Off-Site Weapons Storage Area Grounds Maint./Aerospace Museum Property Transfer Update Stables Permit Renewal	15 minutes
Carswell On-Base/Mike Dodyk, Don Ficklen Program Update	15 minutes
Next Meeting Agenda	10 minutes
Open Discussion/Questions	5 minutes

**CARSWELL/PLANT 4
RESTORATION ADVISORY BOARD MEETING**

DRAFT

Summary Minutes of February 8, 2001
Regular Quarterly Meeting

A regular meeting of the Carswell/Plant 4 Restoration Advisory Board (RAB) was held February 8, 2001, at the Desert Storm Conference Center, 2570 Desert Storm Road, located on the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB). The RAB meeting began at 6:00 p.m.

Agenda

- Welcome/Introductions/Minutes
- Westworth Redevelopment Authority (Leland Clemons)
 - Program Update
- RAB Charter Discussion (Donald Yates)
- Stakeholder Involvement Plan Update (Mike Hawkins, Donald Yates)
- Air Force Plant 4 (George Walters)
 - Project Update
- Carswell Off-Base (Charles Pringle)
 - Program Update
 - RCRA Landfill Investigation
 - Sanitary Sewer System
 - Off-Site Weapons Storage Area
 - Grounds Maintenance/Aerospace Museum
 - Property Transfer Update
 - Stables
 - Permit Renewal
- Carswell On-Base (Mike Dodyk, Don Ficklen)
 - Program Update
- Next Meeting Agenda
- Open Discussion/Questions

Welcome and Introduction of Attendees

Community Co-Chair J'Nell Pate called the meeting to order and introductions were made. Ms. Pate asked that any corrections or additions be presented regarding the November 2000 RAB Meeting Minutes. Hearing none, the minutes from the previous meeting were approved.

Comments regarding the draft meeting minutes for this meeting (February 8, 2001) should be sent to:

Ms. Miquette Rochford
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Herndon, Virginia 20170
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Westworth Redevelopment Authority

Ms. Pate introduced Leland Clemons to provide an update on activities of the Westworth Redevelopment Authority.

Project Update

Mr. Clemons began by saying that the clearing of the Kings Branch property, the removal of the remaining streets, and the removal of the underground infrastructure was almost complete. He explained that planning has progressed with the assistance of Dunaway & Associates, an urban site planning firm. A plat and landscaping design was developed and will be submitted to the City of Westworth Village. No problems are anticipated because Westworth Redevelopment Authority has been working with the City of Westworth Village. Mr. Clemons noted that there has been a significant response from the community in terms of people who are knowledgeable regarding marketing, and, therefore, he expects the redevelopment to be very successful. The engineering work along with the requisite approvals should be completed prior to beginning infrastructure construction (within 90 to 120 days). Actual street, water, and sewer construction is expected to begin sometime in early June 2001. Mr. Clemons added that the renovation of the golf course is fully under way and on schedule and continues to make good progress.

Mr. Clemons also indicated that progress has been made toward commercial development. The executive committee has reviewed the contract and moved to go forward. The close of that transaction is anticipated within the next 45 to 60 days. There are still a few due diligence items pending including, obtaining necessary approvals from the City of White Settlement in which the property is located and modifying the intersection of Route 183 and Green Oaks.

Mr. Clemons continued by saying that several large retailers have expressed an interest in the site. He believes that the first 65 acres, Phase I of commercial development, could be sold within 120 days. Mr. Clemons concluded by stating that this could generate between 600 and 700 jobs at that particular location.

As he concluded, Mr. Clemons asked if there were any questions. Mr. Gross, a community member, asked the following concerning funding: Do you have

sufficient money to do what you initially want to do in Phase I, as far as infrastructure, and, if not, where are you going to get more?

Mr. Clemons responded by explaining that there are two credit facilities arranged, one for financing the golf course, which will be closing, and the second for the work up to the infrastructure in Kings Branch. The total proceeds of the property under contract is 7.5 million dollars. He believes that this is a sufficient amount to do what is planned at the moment. If that should not close, then the Kings Branch residential site will need an equity partner. The restructure of the debt with the Air Force provided the flexibility necessary to leverage properties and use land that is not environmentally impacted as collateral.

Mr. Gross then inquired about the types of potential industry that may purchase the land.

Mr. Clemons responded that thus far, all are retail. Part of the reason for the interest from retail businesses is that they generate more jobs per square foot than light industrial, and it is also zoned that way. He stated that the City of White Settlement was not receptive to a request for possible flexibility in reconsidering zoning. He credits that decision to the difference between sales tax revenue on light industrial and sales tax revenue on retail.

RAB Charter Discussion

Ms. Pate stated that the former public affairs officer, Dan Johnson, received a promotion and, therefore, Donald Yates will be taking Mr. Johnson's place. Ms. Pate then introduced Mr. Yates who provided an explanation of the charter for the RAB.

Mr. Yates explained that the requested minor typographical changes were made to the charter and, rather than going through the whole document, he passed out copies to the RAB members. He invited them to review it and stay after the meeting if they want to approve it or suggest any additional changes.

Stakeholder Involvement Plan

Ms. Pate introduced Mike Hawkins and Mr. Yates to discuss the Stakeholder Involvement Plan.

Mr. Hawkins began by stating one of Ms. Pate's concerns regarding the small turnout from the community at RAB meetings. He went on to explain that over the past week interviews were conducted to help update the community relations plan. The interviews were designed to determine if there is something that is not being communicated to the community that should be and how it can be improved and how better to promote RAB meeting attendance by community members. He noted that additional information from the interviews would be reported at the next RAB meeting.

Mr. Hawkins went on to explain some of the new ideas regarding community outreach activities. One is a poster board session or an information session in various locations within the community that would take the place of formal RAB meetings. He suggested that the sessions be held in community facilities such as community centers or libraries. A representative would be available for a couple of hours in the afternoon or evening to answer questions and address concerns from the community.

Mr. Stangl, a community member, added that attending Judge Vandergriff's breakfast meeting of leadership once a month would be another good community outreach activity. Mr. Hawkins responded by stating that this suggestion was given during some of the interviews in the local area, and he planned to follow up on that suggestion. Mr. Stangl added that he thinks that other judges in the area hold similar meetings. Mr. Yates expressed his support of the idea and the benefits of interacting with community members.

Mr. Yates continued by describing another outreach activity that includes incorporating schools. He and Mr. Gregg McGraw, an Air Force contractor from IT Corporation, will be interviewing school superintendents in the area about programs that would coincide with our cleanup activities at the base. Mr. Yates added that it is an initial step and will report more at the next RAB meeting. Mr. Hawkins concluded by stating that the intent is to inform the RAB about possibilities for community outreach activities and make sure that the information from RAB meetings can be disseminated to the community through other means, if necessary. Mr. Yates asked if there were any questions.

Mr. Stangl asked what the RAB does to announce the meetings to the community.

Mr. Yates responded that the meetings are advertised in the local suburban newspapers (Times Record and White Settlement Bomber) to let the community members know in advance when meetings are going to be held. Also, press releases are sent in advance to the radio and television, newspapers, and other agencies. Mr. Hawkins added that flyers are posted in local libraries and city halls to announce the meetings. He also explained that one of the thrusts of the interviews was to determine what media the community members use to obtain information so as to better target meeting information in advertisements.

Mr. Stangl mentioned that the City of Fort Worth has a city page which advertises local meetings every Monday. Mr. Hawkins confirmed that this page is in the *Star-Telegram*. Mr. Gross also suggested advertising on the city web sites. Mr. Hawkins added that many of the community members interviewed suggested using local web sites. He then asked if the Fort Worth Star-Telegram web site is a good place to advertise. Ms. Rochford reminded the attendees that there is also a RAB web site, but Mr. Hawkins noted that people do not often go to this web site.

Another community member suggested using local cable channels. Mr. Hawkins responded that there are a number of community access channels that they have not

looked into as of yet. Mr. Yates added that they have received similar suggestions from the interview and plan to explore those ideas further.

Air Force Plant 4

Ms. Pate introduced George Walters of Wright Patterson Air Force Base, Air Force Plant 4 Project Manager, to give an update on Air Force Plant 4.

Project Update

Before beginning his update, Mr. Walters reminded the attendees that all of the Air Force Plant 4 documents and reports are available at the White Settlement Library on CD ROM. Every report, study, boring, and all of the water sample results are accessible to the public at this location.

Mr. Walters then listed each of the topics he would cover in his presentation – the Lake Worth sediment sampling project, the east parking lot treatment system, plume monitoring, the west parking lot investigation, Building 181 six-phase heating pilot study, and a video on phytoremediation.

Mr. Walters discussed past and present work done on the Lake Worth sediment sampling project. Sediment sampling was done in 1995 but was concentrated around Air Force Plant 4. After additional fish tissue sampling was completed, it became apparent that it was necessary to sample a wider area of the lake. He mentioned that in response to the results presented on last year's fish tissue sampling, the citizens requested that additional work be done. An additional \$200,000 in funding was received to perform a follow-up sediment sampling and has been contracted to the United States Geological Survey (USGS). Mr. Walters then showed an aerial photograph of Lake Worth presenting the points where samples were taken. He went on to explain the red dots are sites where long core sampling was done, and he described the long core sampling procedure. He believes sediment began filling the lake around 1910. He again referred to the aerial photograph and explained that the yellow triangles on the map are sites from which shallow sediment samples were taken. He reiterated that the 1995 study was focused around Air Force Plant 4 and this is the time when it was discovered how widespread the polychlorinated biphenyls (PCB) are. Mr. Walters moved on to describe the November 2000 sediment sampling conducted by the USGS. He showed a picture of the sediment sampler used by the USGS, and he noted that the USGS has a crew, its own pontoon boat, and a rig that puts the sediment sampler in the ground. He showed a picture of the sediment sampler, and explained that it is raised up 10 feet then dropped. It goes to the bottom of the lake, through the top layer of the sediment, and through the sediment layers. Next, the sample is collected using a long-core sediment sampler. An analysis technique known as age dating is used to determine when the sediment was deposited. Age dating relates historical events such as atomic testing which involved the release of cesium from clouds in May 1954 and the end of leaded gasoline used in cars and

industry. When a sample show high results of cesium or the concentration of lead drops, the sediment can be correlated with the event in history. Mr. Walter concluded this section by stating that the November 2000 results will be ready in May, and he hopes that either he or someone from the USGS will present the results at the RAB meeting in August.

A community member asked Mr. Walters how a member of the public could get access to the sediment study, particularly the identified source of PCBs in the lake. Mr. Walters responded that he does not believe that the results from the sediment study will indicate a source area because sediment settles all over the lake. Mr. Stangl asked another question concerning the study. Mr. Walters said that the USGS will have a report available to the public, and the results will be given to the City of Fort Worth. He continued to say that the City is considering dredging the lake to create more water capacity, and therefore, the City is very interested in the results.

A community member expressed his concern of stirring up PCBs if dredging took place in the lake. Mr. Walters explained that the PCBs in sediment could be stirred up by dredging but the water itself is clean. Semi-annual testing is done, and the agency that studies the health effects has determined that there is no negative health effect from swimming in the lake or coming in direct contact with the lake water or sediments.

A community member asked if the data from this study would determine if it is possible to dredge the lake without causing a hazard by stirring up the existing PCBs. Mr. Walters said he did not know where the dredging would take place and referred the question to Mr. Camp from the City of Fort Worth Environmental Management Department because of his experience with other lakes in the area. Mr. Camp said the location has not been identified.

A community member asked if the PCBs are at the bottom of the water. Mr. Walters answered that they are in the sediment because PCBs tend to bind with soil and soil is heavier and therefore sinks. He then explained that they want to determine if there is a top layer of PCB-free sediment in the lake.

A community member asked if requesting a copy of the Lake Worth sediment study would be sufficient information to obtain a copy of the USGS study when it becomes available. Mr. Walter informed the member that after the results are published, then it can take another year to complete the report. Mr. Walters explained that when the information comes back from the laboratory, it will be presented at the RAB meeting and will be published at a later date into a report that will be publicly available.

Mr. Walters then began his update on the parking lot treatment system with an overview of what had been done to date. He stated that seven million dollars and 52 extraction wells have been put into the system. The system is 99 percent

complete. The wells have been fueled, pipes laid and asphalted over, and treatment system built inside using many parts from the old system. Mr. Walters made a correction to the minutes from the last RAB meeting. He noted that where it reads 56 gallons, it should read 56 million gallons. He believes that by the May RAB meeting it may be possible to provide a tour of the facility. Mr. Walters explained that the building that encloses all of the wiring, controls, and the computer system currently is the trouble spot. All 52 extraction wells must be properly connected to the computer. The computer will provide information such as when the pumps are on and what the levels are inside each vessel. It also will have an alarm system which is one of the current problems. Other problem areas include some leaks at some of the joints in the piping but the system is expected to be operating in the next couple weeks.

Given that there were no questions about the parking lot treatment system, Mr. Walters moved on to discuss plume monitoring and how he will present the information in future presentations. He will show how the higher concentration areas receive a higher portion of the funding. He explained that as part of the record of decision, the plume must stay on federal property but at NAS Fort Worth, it did cross federal property. A well was installed and it detected 35 parts per billion of trichloroethylene (TCE). The plume is not believed to be migrating off-site perpendicular to Route 183 because there is a bedrock high in this area. Mr. Walters explained that the chemical being treated, TCE, breaks down while it migrates. Many monitoring wells are already installed to track the progress. If the plume migrates toward the river, then additional wells can be installed and, if necessary, action can be taken to stop the plume. Many new technologies that are being developed could be employed. He explained that the objective is to lower the TCE concentration, and he noted that while this is not a drinking water aquifer, it still must be kept out of the river.

Next, Mr. Walters discussed the off-site groundwater treatment system. It was refurbished a couple years ago and maintenance was done on 12 extraction wells. The wells were removed from the ground and cleaned to make sure that the pumping rates were maintained. The wells are located in areas of higher concentrations. He pointed out that along White Settlement Road, some trees roots are infiltrating the wells, and this will require maintenance in the future to ensure that these wells stay clean and there is no interference with flow. One possibility is to use chemicals to stop the tree roots from invading the wells.

Currently, there are studies ongoing to investigate the approach to clean up the plume under the golf course. It is desired to transfer the golf course to Westworth Redevelopment Authority rather leasing it. The problem is that this would require moving the fence line all the way back to the flight line area leaving a larger portion of the TCE plume off-base. He concluded by stating that a risk assessment will be done to see if any other actions need to be done to address the TCE plume.

Mr. Walters then showed slides of the west side of Bomber Road and the treatment system along the bank of the creek. He described some of the wells. The wells are to bedrock roughly 20 to 30 feet deep, the top is solid, but there are fractures in the middle. TCE product was present in some wells. The bottom part of the bedrock was also competent. There were deep wells around the area for monitoring. Meetings have been held with the Texas regulators and EPA to discuss comments and to determine if there are any additional actions to be taken in the future. If one of the wells does have a lot of product in it, then it will be baled. Fractured bedrock is very complicated, as fractures are extensive and difficult to locate.

Mr. Walters discussed earlier work done on the parking lot site. In 1982, the soil in the parking lot area was removed. It was thought that when Lockheed Martin, formerly General Dynamics, removed the soil in this area, the source was removed. However, the solvent, TCE, is heavier than water and, therefore, it settles down into low spots. There are some deep wells that must be carefully drilled so the drinking water aquifer is protected. Some of the wells here have a lot of product and some of the wells off to the side do not have any. This information will be in the report and available at the library on CD ROM and as a hard copy.

Mr. Walters reviewed some past events that took place at Building 181 and mentioned some possibilities for the future. There was a spill in 1991 and a historical release prior to that. This is where the ground was heated during the six-phase heating pilot study. During this process the vapors are heated up, captured above the ground, then run through the treatment system, and destroyed, thereby producing clean water. He explained that he will decide whether to go full-scale with this technology based on the report from the pilot study. Mr. Walters then discussed other technicalities that will influence his decision. For example, considering the increase in the price of electricity and natural gas, it may not be economical to employ this technique, and it may be necessary to explore other technologies available. For example, contractors are interested in injecting potassium permanganate into the ground. Mr. Walter believes that they may try a pilot test sometime this summer. He emphasized the importance of comparing available technologies and then enhancing the treatment system which exists. The goal is to speed up the TCE removal from the ground.

Mr. Walters concluded his presentation by showing a video on phytoremediation.

Carswell Off-Base

Ms. Pate introduced Charles Pringle to give a briefing on the Carswell Off-Base program status.

Program Update

Mr. Pringle introduced himself as a program manager working for the Air Force Center for Environmental Excellence (AFCEE) operating out of the Brooks Air Force Base. His work on the environmental side of Carswell began about two years ago. He explained that Rafael Vazquez who was the Base Realignment and Closure (BRAC) environmental coordinator, recently went to AFCEE, and he now will assume the responsibilities for the environmental cleanup. As far as the transfer of land, he is assisting the Air Force Base Conversion Agency (AFBCA) in Washington, D.C., to clean up these sites and move on to the land transfer. This is expected to take a couple years. Most of the base is either leased to the Navy or to Westworth Redevelopment Authority.

Mr. Pringle mentioned the four sites on which he will provide an update. These were the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) that was sent to the regulators for Landfills 4, 5 and 8, and Waste Pile (WP) 07; the sanitary sewer on base; the Weapons Storage Area (WSA) off site; and the grounds maintenance yard, which used to belong to civil engineering and the Aerospace Museum Site (AMS). He also indicated that he will give an update on a recently submitted permit renewal. In regard to property transfers, the land where the old hospital used to be was transferred to the Federal Bureau of Prisons in January. The Kings Branch area where Westworth Redevelopment Authority currently is doing a lot of soil work was also transferred. The stables is the next area that is being worked on for a transfer.

Mr. Pringle then provided more detail on the RCRA Facility Investigation for Landfills 4, 5, 8, and WP 07. Most of the sites are on base; however, Landfill 4 is off base and this is where Westworth Redevelopment Authority is doing a lot of the golf course renovations. Essentially, this landfill will be built up and converted it into a green. The RFI report has been submitted to the Texas Natural Resource Conservation Commission (TNRCC) and Environmental Protection Agency (EPA). TNRCC's comments are explained within one or two weeks. Mr. Pringle believes that the sites will probably be able to close for the soil but not for the groundwater. The groundwater is still going to be addressed by Air Force Plant 4 but if these sites have contributed contaminants to the groundwater, then AFBCA may have to assist with funding. There is a focus feasibility study that is examining some areas now which may require some of money. The Defense Environmental Restoration Account (DERA) is contributing some of money to find out who is contributing to the groundwater.

Mr. Pringle then discussed the sanitary sewer system. This unit exists on base and has undergone three phases of investigation. The first phase was an investigation that uncovered some problems. Phase II was used to delineate contamination. Then, the Navy conducted a video survey and discovered other breaks in the sanitary sewer line. A Phase III investigation will begin at the end of the month.

Next, Mr. Pringle described the off-site weapons storage area where bombs used to be stored. An investigation has been done and the report has been submitted to TNRCC and EPA.

Mark Weeger, the BRAC project manager with TNRCC, stated that all the weapons storage area sites under the corrective action program have been approved. He believes there are still three old fuel tanks that are regulated by different components within the TNRCC, and TNRCC finalizing its review of those. Once the review and required cleanup are complete the property transfer can take place.

Mr. Pringle added that a separate report must be submitted for the underground storage tanks. He expects the work there to be completed within the next 90 days, and closure to follow shortly after. Regulators agreed with the ground maintenance yard report, and for all practical purposes the site is closed. The Aerospace Museum site has metals present and the problem point will be dug up and disposed of off site. It then should be ready for closure.

Mr. Pringle explained that the permit renewal has been submitted and is currently in the application process. The permit will have 45 DERA sites and 10 BRAC sites. He anticipates that most of the BRAC sites will close in the next 5 to 6 months. The Federal Bureau of Prisons has 145 acres of BRAC land. This was transferred in December, and therefore, this land will not be on the permit.

Mr. Pringle expects that the draft Finding of Suitability to Transfer (FOST) for the stables to be ready by March 15, 2000. That will include the supplemental Environmental Baseline Survey (EBS), which will update the original one. After an inspection, it will be reviewed and commented on by the regulators and sent to AFBCA, who is ultimately responsible for land transfer.

Mr. Pringle expects that Landfills 4, 5, 8 and WP 07, and the Grounds Maintenance Yard to be ready for closure in July and the work for the DERA sites to continue for at least another two years.

There were no questions.

On-Base Program Update

Ms. Pate introduced Mike Dodyk to provide a program update on the work being conducted On-Base at the former Carswell Air Force Base. Copies of the presentation and fact sheets were made available for more specific information.

Mr. Dodyk introduced himself as the resident engineer for AFCEE at Carswell. He then briefly discussed the history of the Installation Restoration Program (IRP). Carswell Air Force Base was officially closed on September 30th, 1993. A large part of the base was transferred to the Navy and renamed Naval Air Station Fort Worth Joint Reserve Base

(NASFW JRB). To complete the property transfer, environmental investigations and remediation of potentially contaminated sites related to activities prior to October 1993 are required. The Air Force has assigned the Air Force Center for Environmental Excellence both management and implementation responsibilities for completing the IRP at the site at the base.

Mr. Dodyk explained that a permit was issued 10 years ago, and it is necessary to have it renewed by TNRCC. AFCEE is investigating a total of 43 Solid Waste Management Units (SWMUs) and 13 Areas of Concerns (AOC), 11 of which have officially been closed. The remaining 45 sites are at various stages of investigation and corrective action. Some of these SWMUs include the six landfills, nine waste accumulation areas, three fire training areas, 15 oil/water separators, three fueling stations, a Petroleum, Oils, and Lubricants (POL) tank farm, and various other locations.

Mr. Dodyk discussed the investigation performed thus far on former Carswell AFB. The Phase III investigation for Landfills 1, 2, 3, 6, 7, and 9 was completed in June 2000. Additional field work began last month and is currently ongoing. The Landfill RFI reports are planned for submittal to AFCEE this year, pending successful completion delineation activities.

Mr. Dodyk moved on to discuss the Waste Accumulation Areas (WAA). In November, TNRCC approved an RFI report recommending no further action at seven WAAs. Phase II soil and initial groundwater sampling for the nine remaining Waste Accumulation Areas was completed in June 2000. The second round of groundwater sampling was completed in October 2000. Based on these sampling results, four of the nine WAA will be submitted for closure and no further action will be recommended. The five remaining sites require additional field work which will be conducted in 2001.

Mr. Dodyk explained that the initial field investigations for SWMUs 19, 20, 21; SWMU 53; and AOC 19 were completed in June 2000. SWMUs 19, 20, and 21 are associated with a fire training area; SWMU 53 is a storm water drainage system; and AOC 19 is a suspected former fire training area. Additional sampling is required at these sites and began this month.

Mr. Dodyk discussed AOC 17 and AOC 18. Field investigations were completed in June 2000 and included soil sampling and geophysical survey. The results indicated a release had not occurred from these sites. A report was submitted to TNRCC in December 2000 recommending closure on these sites.

Mr. Dodyk continued with a discussion on the Underground Storage Tanks (UST). Additional soil and/or groundwater sampling was completed at six UST in 2000. An investigation summary for three of these underground storage tanks will be submitted to TNRCC this month. A Release Determination Report form for the other three sites will be submitted in March 2001.

Mr. Dodyk noted the additional UST investigation at the former base service station/gas station. Semi-annual groundwater sampling was done in 2000 and the report is being prepared to submit to the TNRCC in April 2001. The monitoring will continue on a quarterly basis in 2001 and a Plan B Evaluation report will be prepared.

Mr. Dodyk explained that semi-annual groundwater sampling was performed on SWMU 68, the POL tank farm, and AOC 7, the former base refueling area in 2000. An Annual Groundwater Monitoring Report for 2000 will be submitted to the TNRCC with a Site Closure Request form in March 2001.

Then, Mr. Dodyk discussed AOC 4, the former fuel hydrant system. Groundwater sampling was performed in 2000 and a report will be submitting the requesting site closure report in March 2001.

Mr. Dodyk reviewed the corrective measures at AOC 13, Building 1145 oil/water separator at the base auto hobby shop. Removal and replacement of the leaking oil/water separator was completed in June 2000. Contaminated soils were over excavated and confirmation samples were collected on excavation sidewalls. Analytical results were evaluated to determine additional sampling requirements. Soil and groundwater sampling was conducted in December 2000. A draft RFI report will be submitted to AFCEE in March 2001.

Mr. Dodyk commented on base wide oil/water separators OWS. An RFI closure report was submitted to TNRCC for five OWS in December 2000. IT Corporation completed Phase III of field investigation at 14 other oil/water separators throughout the base in December 2000. This included soil and ground water investigations. Based on the results of Phase III, approximately 13 OWS are will be submitted for closure under RRS2. One remaining OWS will undergo a Phase IV investigation next month.

Mr. Dodyk mentioned the Ground Water Sampling and Analysis Program (GSAP). The Draft Annual Report for 2000 was submitted last month. The report presents the plume characteristics and trends from data collected during the three groundwater sampling events in 2000. The Draft GSAP will be submitted to AFCEE this month. The GSAP provides sampling strategy for the groundwater sampling events that will be conducted in 201. The plan calls for a reduction from quarterly groundwater sampling to semi-annual groundwater sampling, as the plume is stable and changes in concentrations from quarter to quarter are minimal.

Mr. Dodyk discussed the paleochannel investigation. SAIC has completed Phase II of the subsurface inspection to delineate gravel channels in the Walnut/Goodland bedrock confining layer. Phase utilized geophysical techniques to delineate subsurface gavel channels. Phase II completed the confirmatory phase of the geophysical work including, the installation of 6 borings, 4 completed as monitoring wells, and the sampling of 4 new and 10 existing monitoring wells. The data appears to suggest that the highly concentrated part of the plume (>1000 ppb) is located within a narrow band (probably >500 ft) within the paleochannel. However, the diluted plume is much wider (>2000 ft).

Mr. Dodyk then discussed the Carswell Golf Course Are Investigation. A walk through was done to evaluate and document the structural integrity of the aquaduct. Three monitoring wells were installed in the Paluxy upper sand unit and one in the Walnut Formation. All wells showed no detectable concentrations of VOCs, with the exception of WHGLPU001 which showed concentrations of 4 ug/L and 5 ug/L in October and December 2000, respectively. Seven additional plume delineation wells were installed at locations along the Federal property boundary and Farmers Branch Creek. One off site well displayed TCE concentrations of 26 and 35 ug/L. The Focused Feasibility Study (FFS) addressed remediation needs for the off site migration of TCE. The Draft Report is due to AFCEE in June 2001. The Risk Assessment was performed on the BRAC Property. The EPA and TNRCC are currently reviewing the report.

Mr. Dodyk asked if there were any question and no questions were posed.

Adjournment

The next RAB meeting is scheduled for May 10, 2001. The meeting adjourned at 7:25 p.m.

In Attendance

Carswell DERA (On-Base)

Mike Dodyk, HQ AFCEE/ERD
 Don Ficklen, HQ AFCEE/ERD
 John Gillespie, AFCEE
 John Matthews, AFCEE
 Melvin Alli, Brooks Air Force Base
 Margaret Johnston, HydroGeoLogic, Inc.
 Pete Dacyk, HydroGeoLogic, Inc.
 Audrie Medina, Universe Technologies
 Christiana Hewitt, Universe Technologies
 Miquette Rochford, HydroGeoLogic, Inc.
 Andrea West, Universe Technologies
 Todd Harrah, HydroGeoLogic, Inc.
 Rich Wheeler, Ellis Environmental Group

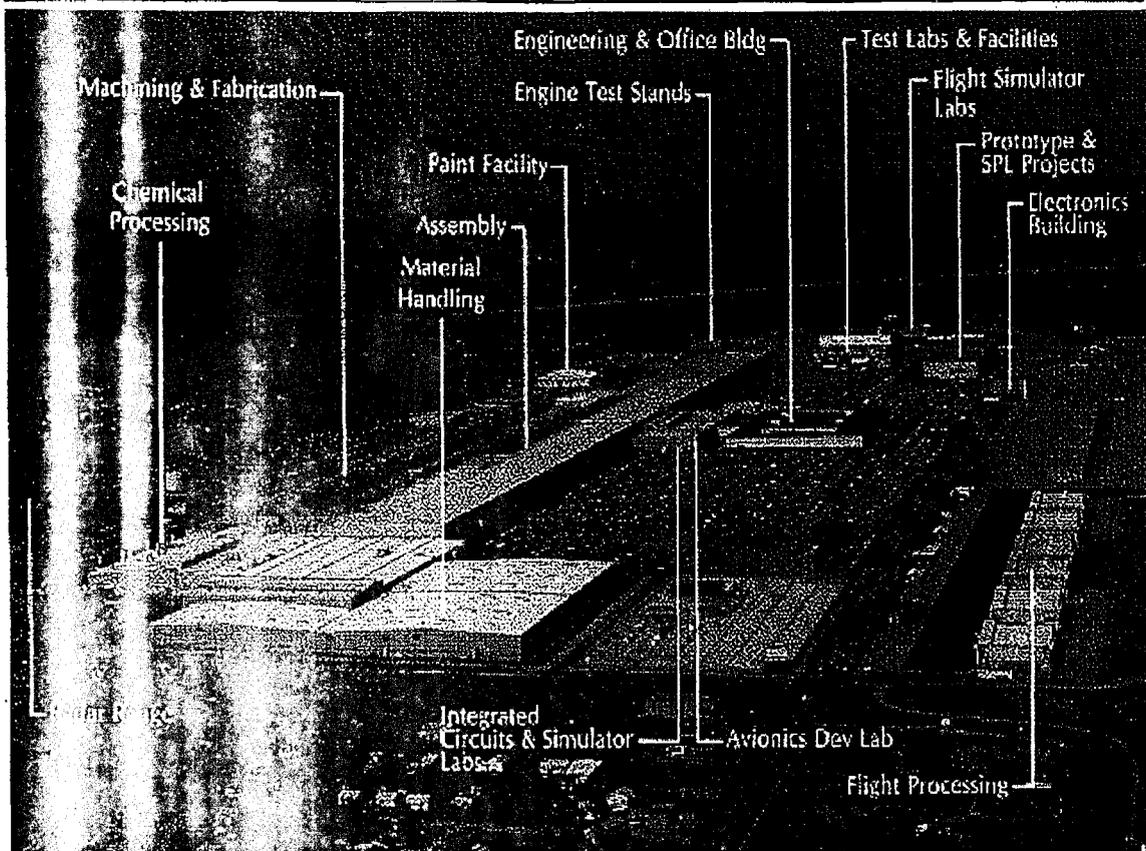
Carswell AFBCA (Off-Base)

Charles Pringle, AFCEE
 Alvin Brown, AFCEE

Air Force Plant 4

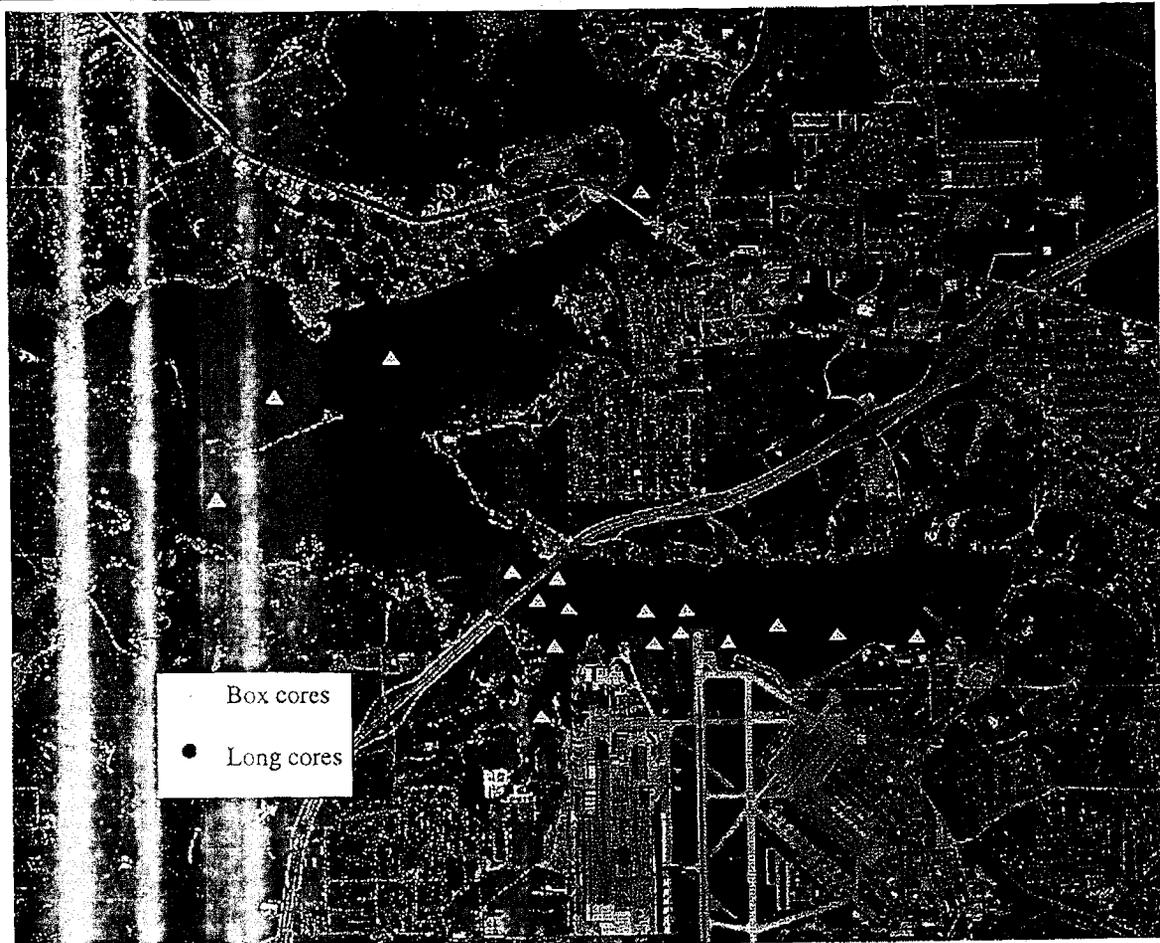
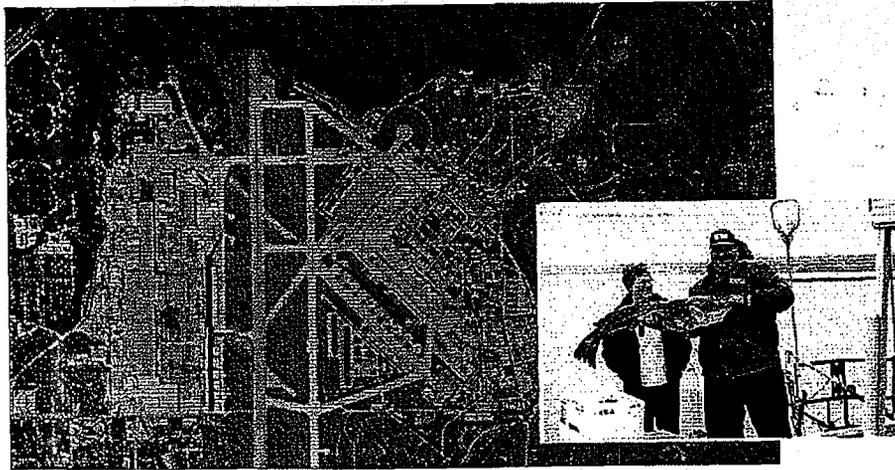
Rick Wice, IT Corporation
 Greg McGraw, IT Corporation
 Victor Dozy, IT Corporation
 Will Carter, IT Corporation
 Frank Steele, Wright Patterson Air Force Base
 Don Yates, Public Affairs Office Wright Patterson Air Force Base
 George Walters, Wright Patterson Air Force Base, AFP 4 project manager

Janey Shih, Lockheed Martin Environmental Resources Management
 Sonya Jones, U.S. Geological Survey
 United States Navy
 Captain Steve McMullin, Commander in Chief of NAS Fort Worth
 Commander Craig Love, Executive Officer
 John Cummings, Navy Environmental Department
 Don Ray, Navy Public Affairs
 Texas Natural Resource Conservation Commission
 Linda Roseka, TNRCC
 Mark Weeger, TNRCC
 Mike Hawkins, Public Affairs Office, TNRCC
 Tim Sewell, TNRCC
 U.S. Environmental Protection Agency
 Gary Miller, EPA
 Ruben Moya, EPA
 Lockheed Martin
 Janey Shih, Lockheed Martin Environmental Resources Management
 Fred Novak, Lockheed Martin
 Norman Robbins, Community Relations Manager
 Others, Off-Base
 Brian Camp, City of Fort Worth Environmental Management Dept.
 Chris Baack, Community Member
 Anita Baker, Star-Telegram
 Greg Hendrickson, City of River Oaks
 D. W. Owen, City of River Oaks
 Ralph Stangl, Lake Worth Civic Club
 Mike Rose, Community Member
 James Mercer, representative from the Bergstrom AFB RAB
 Robert Taylor, City of Fort Worth Water Department
 Vince Wilcox, Community Member of Benbrook
 James Rau, Community Member
 Bill Olshyski, Retired Air Force
 Mike Gross, Community Member
 J'Nell Pate, Community Member
 Gary DuPriest, Science Applications International Corporation (SAIC)
 Don Brenneman, Tetrotech NUS

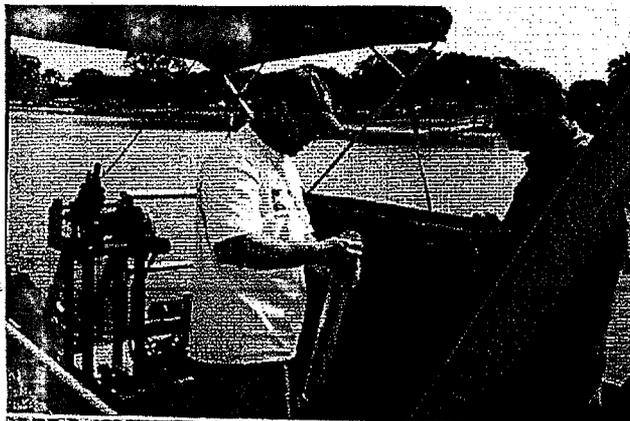


Lake Worth Sediment Sampling

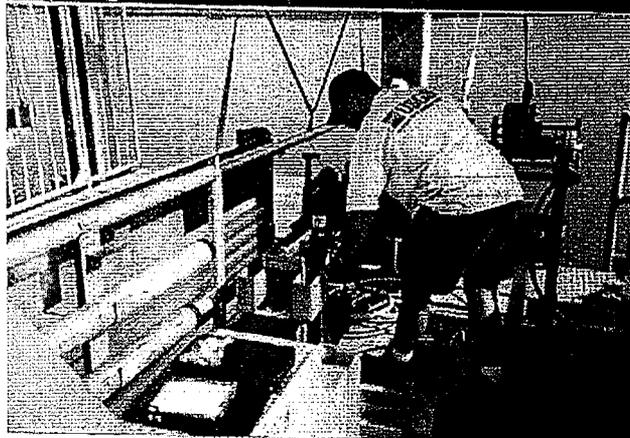
- USGS Peter Van Metre- Austin TX
- \$200K Sampling now, results in 6 months.
- Follow-up to Fish Tissue Sampling
- Will focus on PCB's in sediment and whether additional contamination is continuing to migrate into the lake (based on depth of PCBs)



USGS
Pontoon
Boat

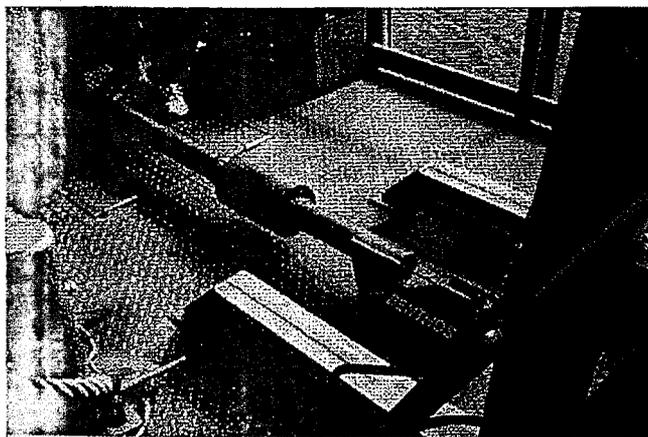


Nov 00
- Long Core
Sampling (3)

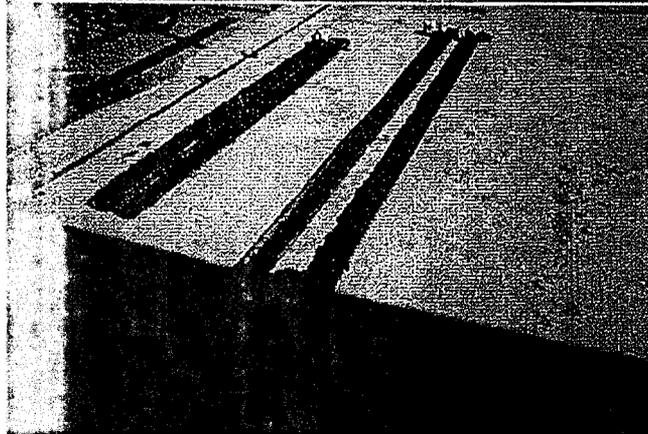


Jan 01
- Box Cores
shallow (18)

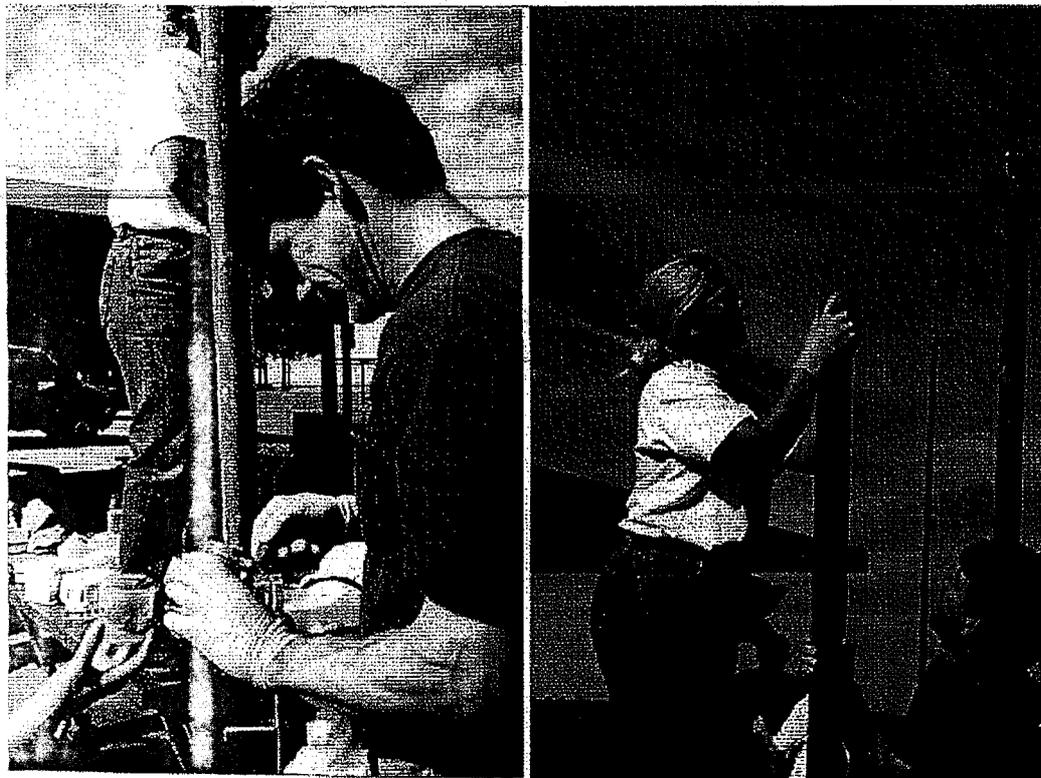
Sediment
boring
device



Long Core
Borings

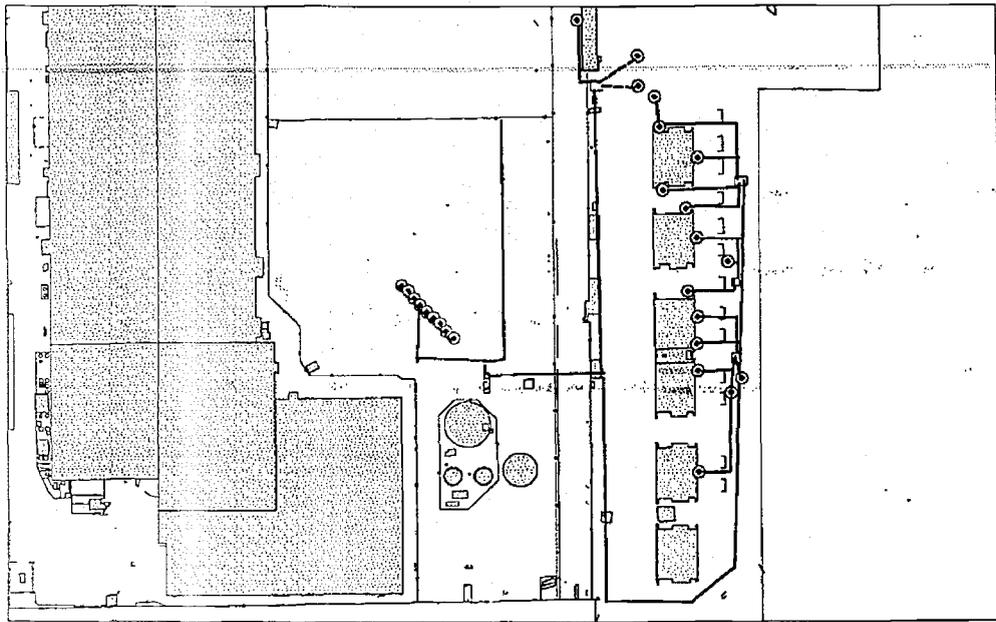


Transferring Sediment to Collection Jars

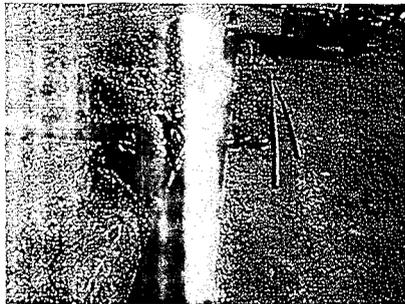
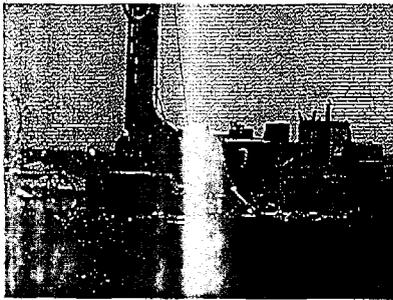


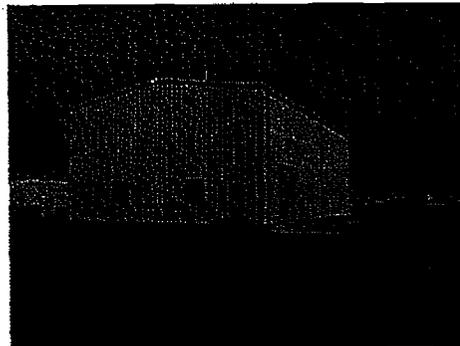
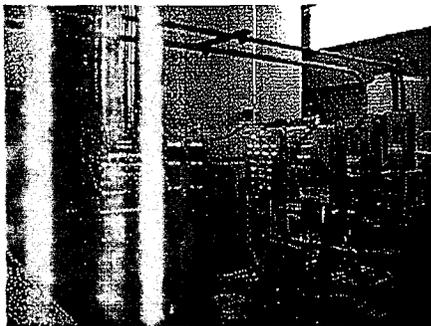
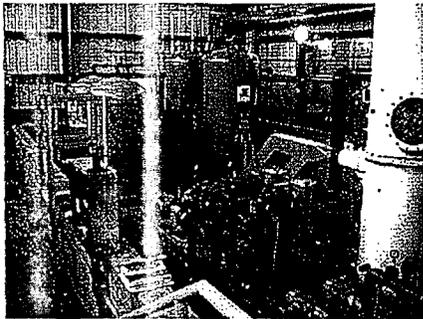
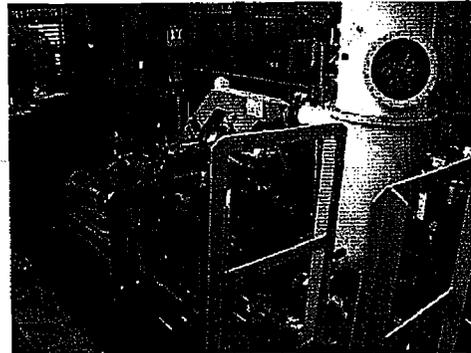
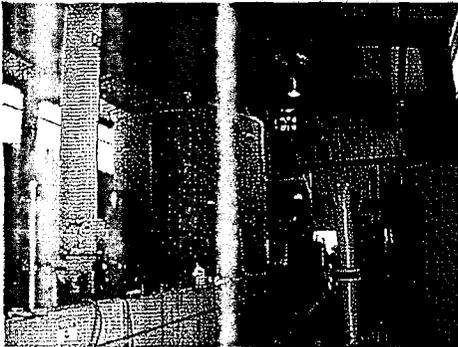
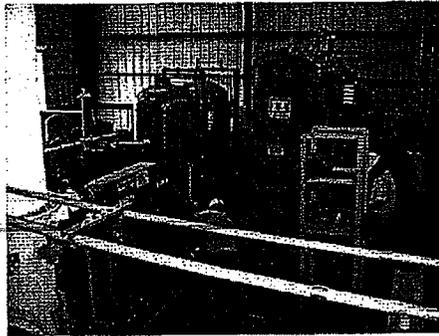
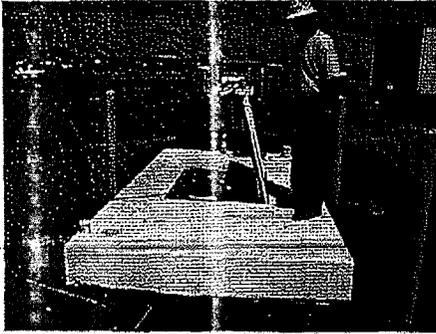
East Parking Lot Remedial Action

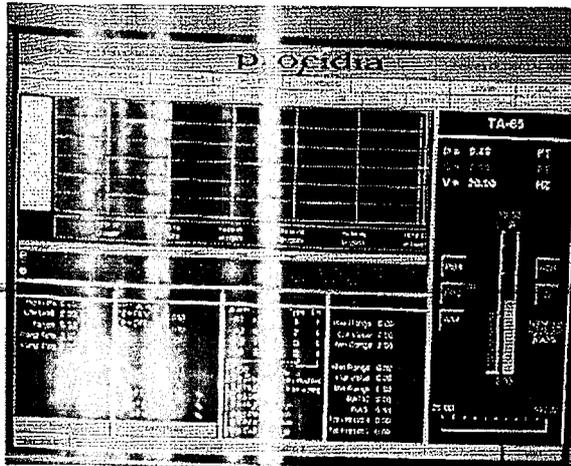
Operational ~~Dec 2000~~ March 2001



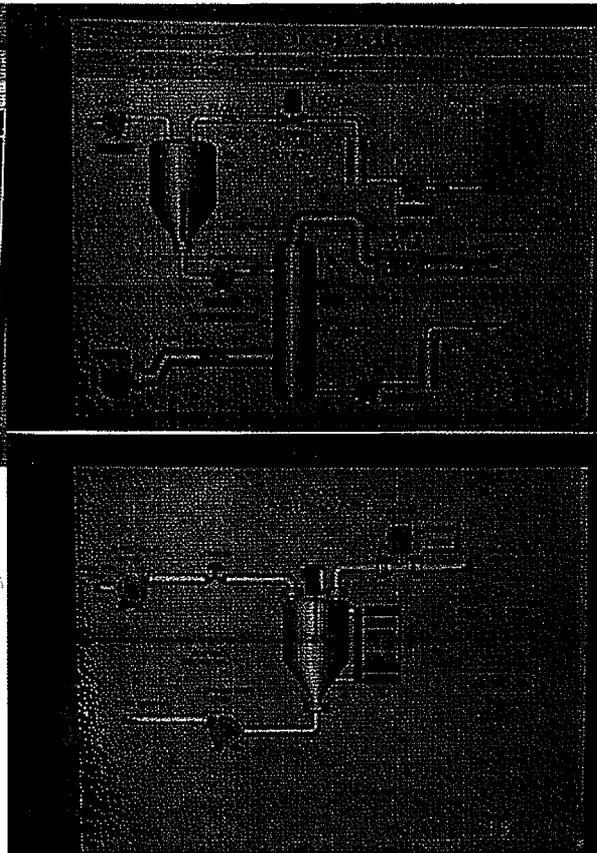
East Parking Lot Groundwater Treatment Sys.



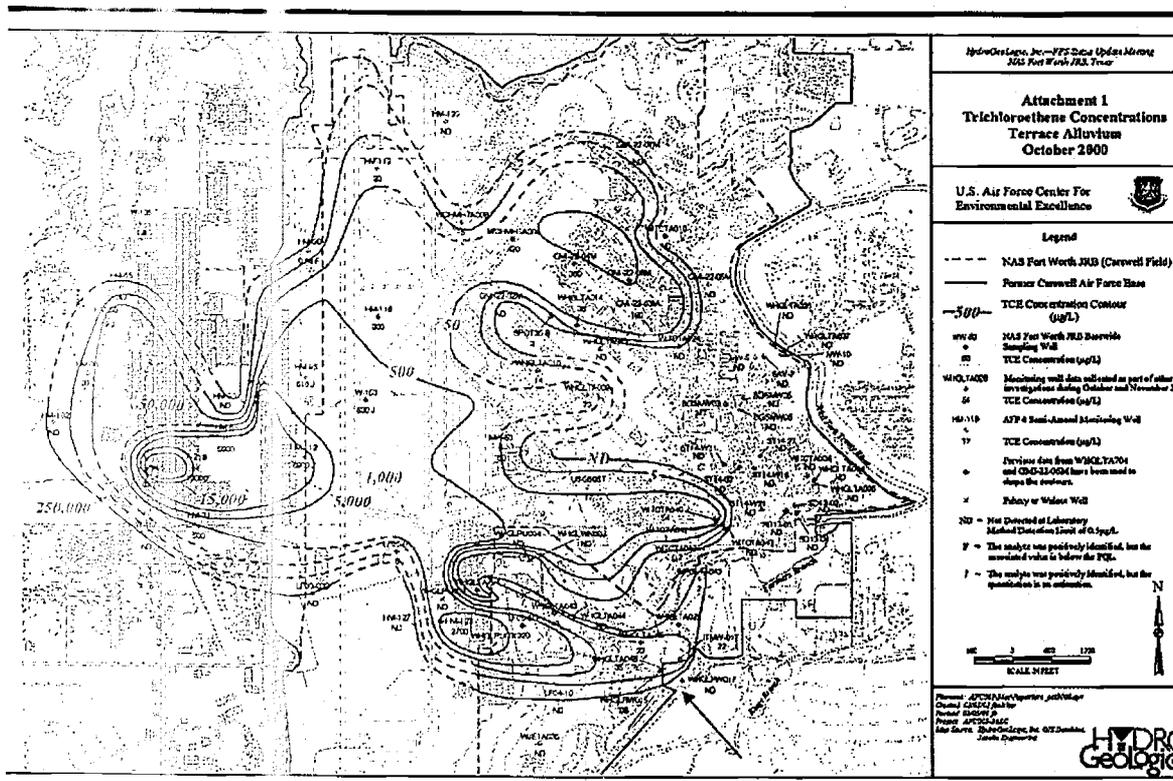




Computer Monitor for controlling extraction wells and trouble shooting



Plume Monitoring Actions



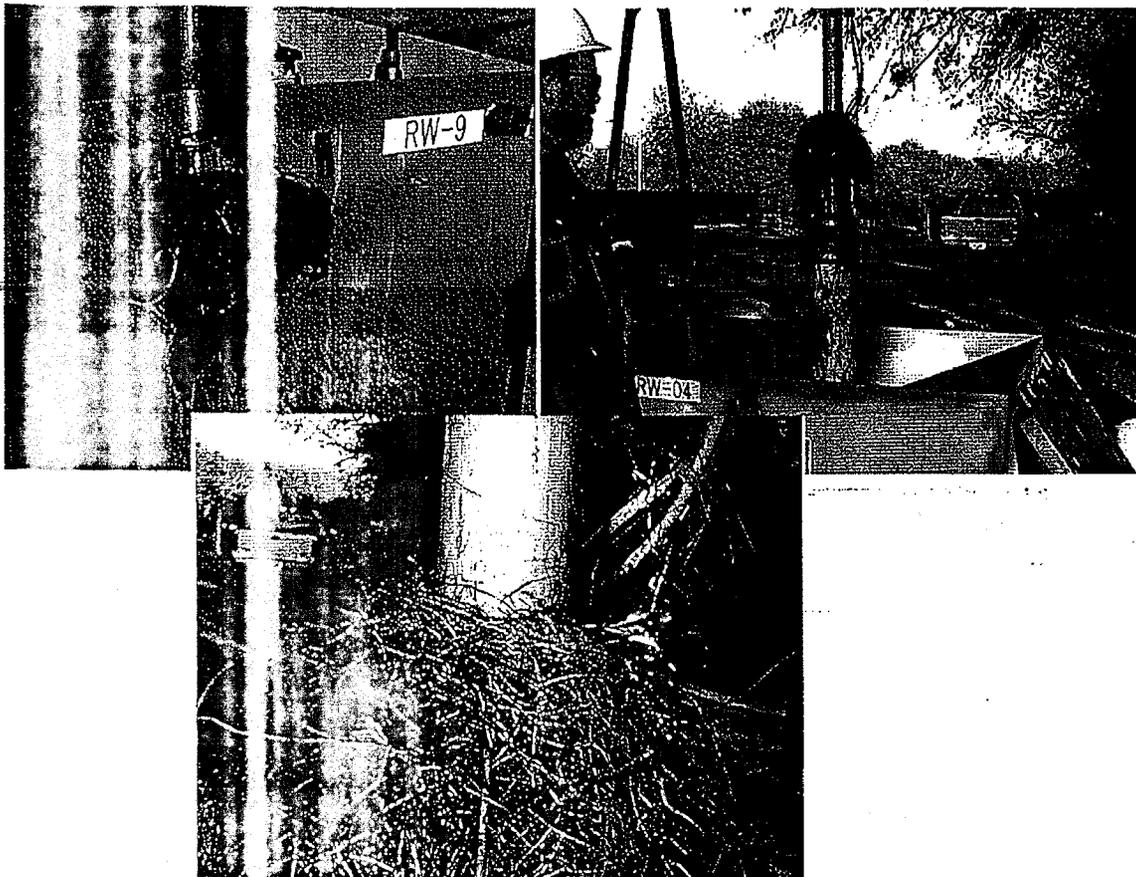


Extraction Well
Maintenance



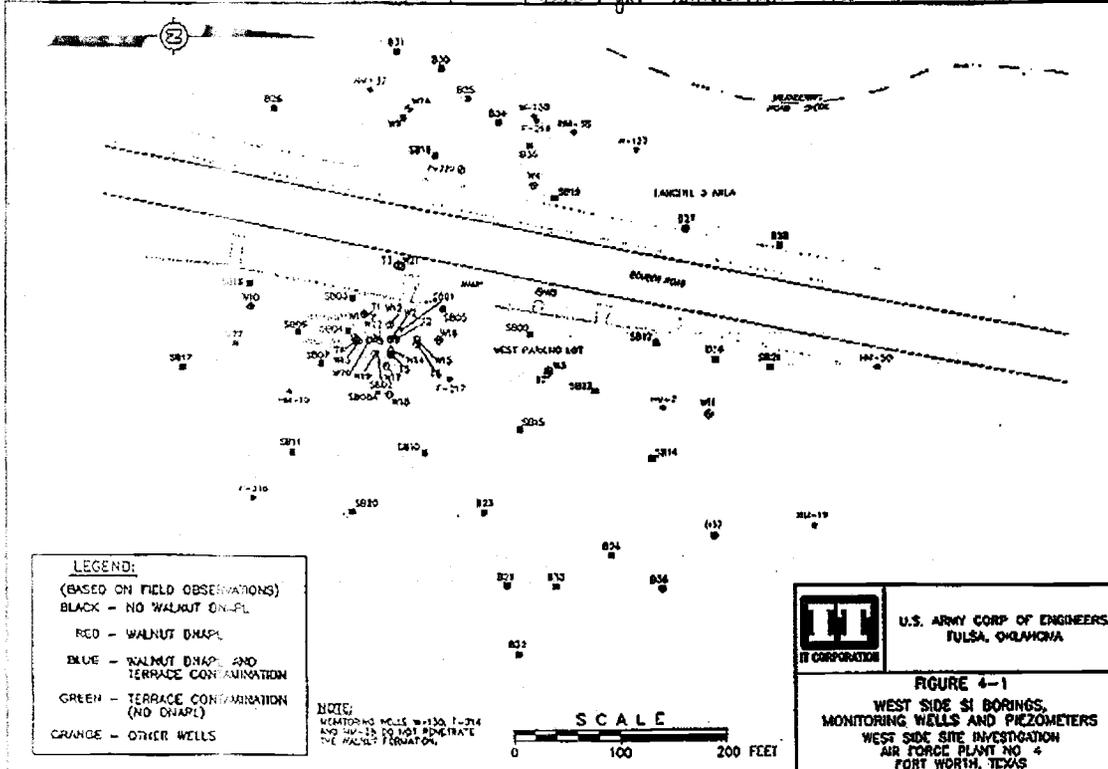
Tree roots clogging



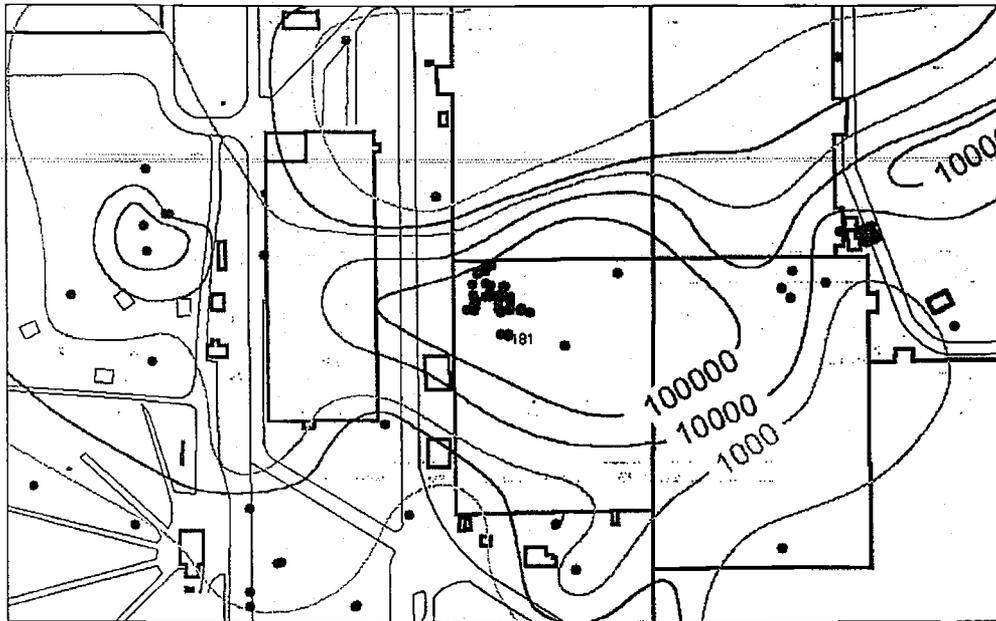


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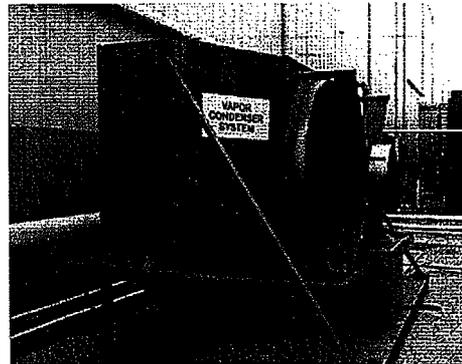
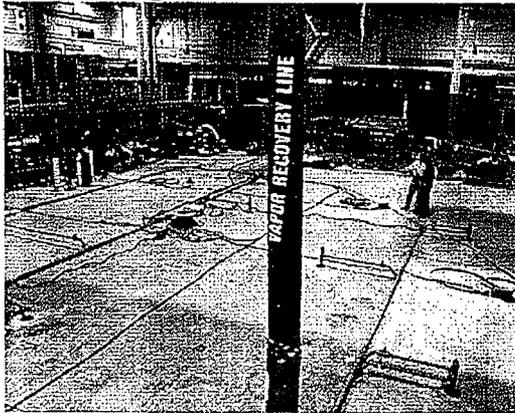
OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
ANDERSON PA	E.A.K.	2/09/00	GRV 10/19/01 RW 1/9/2007	784148-A30



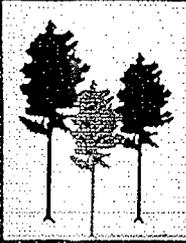
Building 181 Soil Vapor Extraction and SPH



Bldg 181 - Six Phase Heating Pilot study



AWAIT REPORT - DUE NOW!!



Project Objective

To generate cost and performance data from field-scale investigations of the use of poplar trees to help cleanup shallow chlorinated-solvent-contaminated ground water for the purpose of technology transfer.

Talk Outline

1. Volatilization

4. In-Situ Bioremediation

2. In-Situ Biodegradation

3. Enzymatic Degradation / Mineralization Within Vegetation



NAS Fort Worth JRB Installation Restoration Program Update

Michael R. Dodyk, P.E.

February 8, 2001



Installation Restoration Program History

- ◆ Carswell AFB officially closed September 30, 1993
 - A large part of the former Carswell AFB was transferred to the Navy and renamed the NAS Fort Worth JRB.
 - Prior to complete property transfer, environmental investigations required potentially contaminated sites related to Air Force activities prior to October 1, 1993 are to be completed; and contaminated sites remediated.
 - The Air Force assigned AFCEE both management and implementation responsibility for completing the IRP on NAS Fort Worth JRB property.



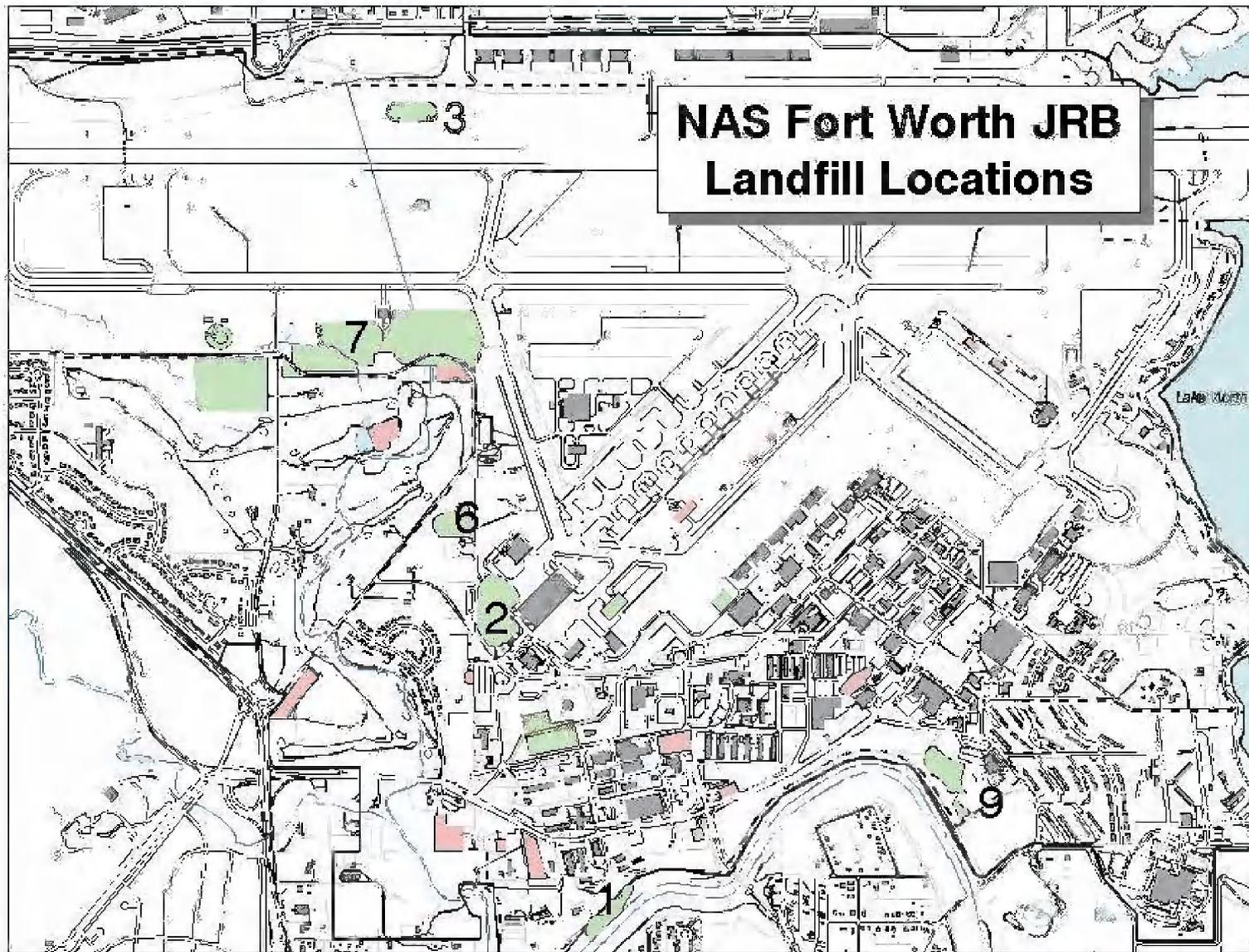
Regulatory and Site Overview

- ◆ Former Carswell AFB issued a RCRA Permit on February 7, 1991 (HW-50289)
 - This permit requires a RCRA Facility Investigation (RFI) of all Solid Waste Management Units (SWMUs).
 - AFCEE is investigating a total of 43 SWMUs and 13 AOCs at NAS Fort Worth JRB (11 of these 56 sites have been officially closed by the TNRCC). All other sites are at varying stages of investigation or corrective action.
 - Remaining SWMUs and AOCs include 6 landfills, 9 waste accumulation areas, 3 fire training areas, 15 oil/water separators, 3 fueling stations, a POL tank farm, and various other locations.



Investigation Update - Landfills

- ◆ Phase III field work completed in June 2000 at Landfills 1, 2, 3, 6, 7, and 9.
 - Additional field work began last month and is ongoing.
- ◆ Landfill RFI Reports planned for submittal to AFCEE this year, pending successful completion of delineation activities.

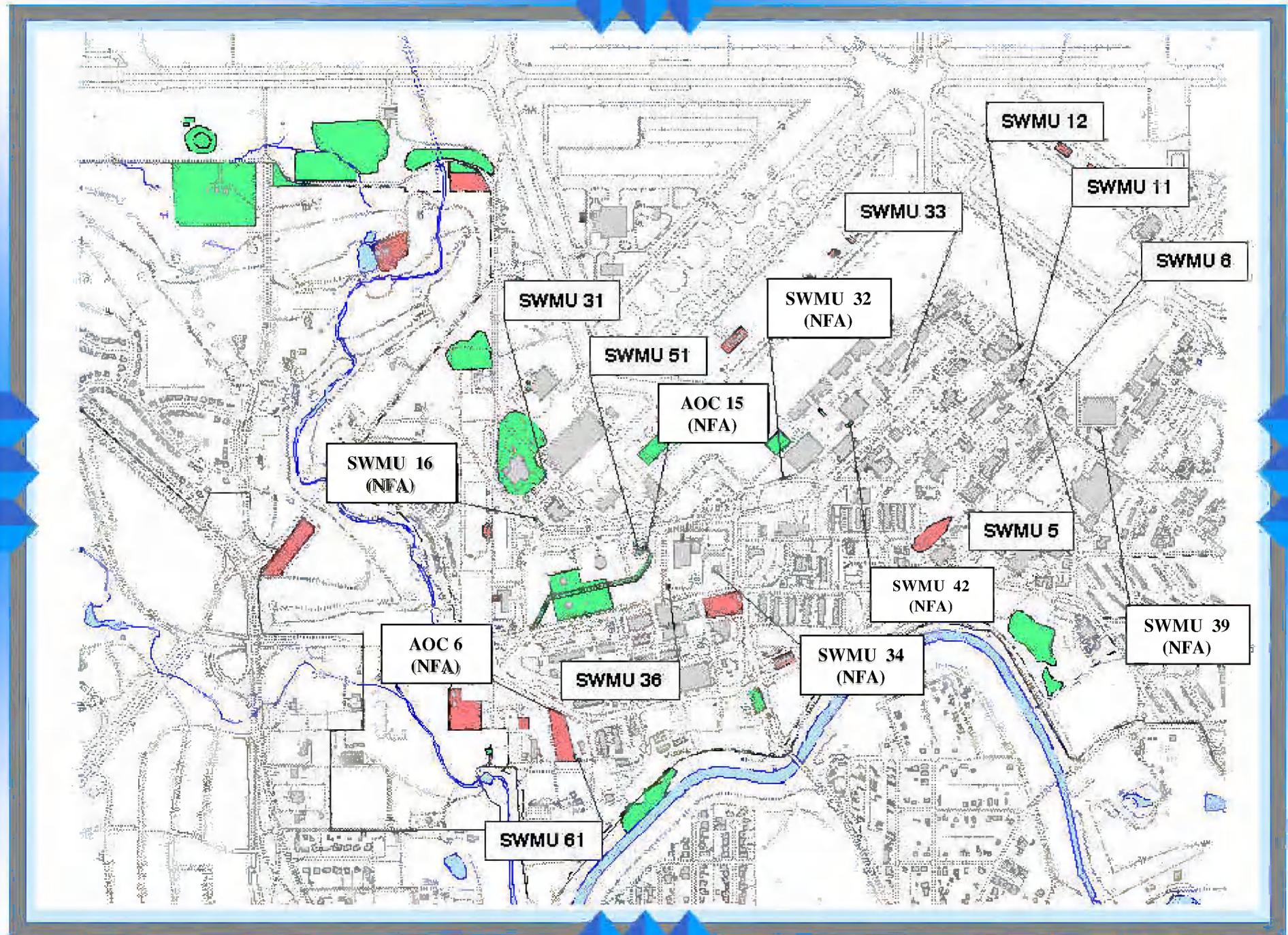


Investigation Update

Waste Accumulation Areas (WAAs)

- ◆ TNRCC approved the RFI Report recommending no further action for 7 WAAs in November 2000.
- ◆ Phase II soil and initial groundwater sampling for 9 WAAs completed in June 2000. Second round of groundwater sampling completed in October 2000.
 - Based on these sampling results, 4 WAA sites to be submitted for closure; the 5 remaining sites require additional field work to be conducted in 2001.



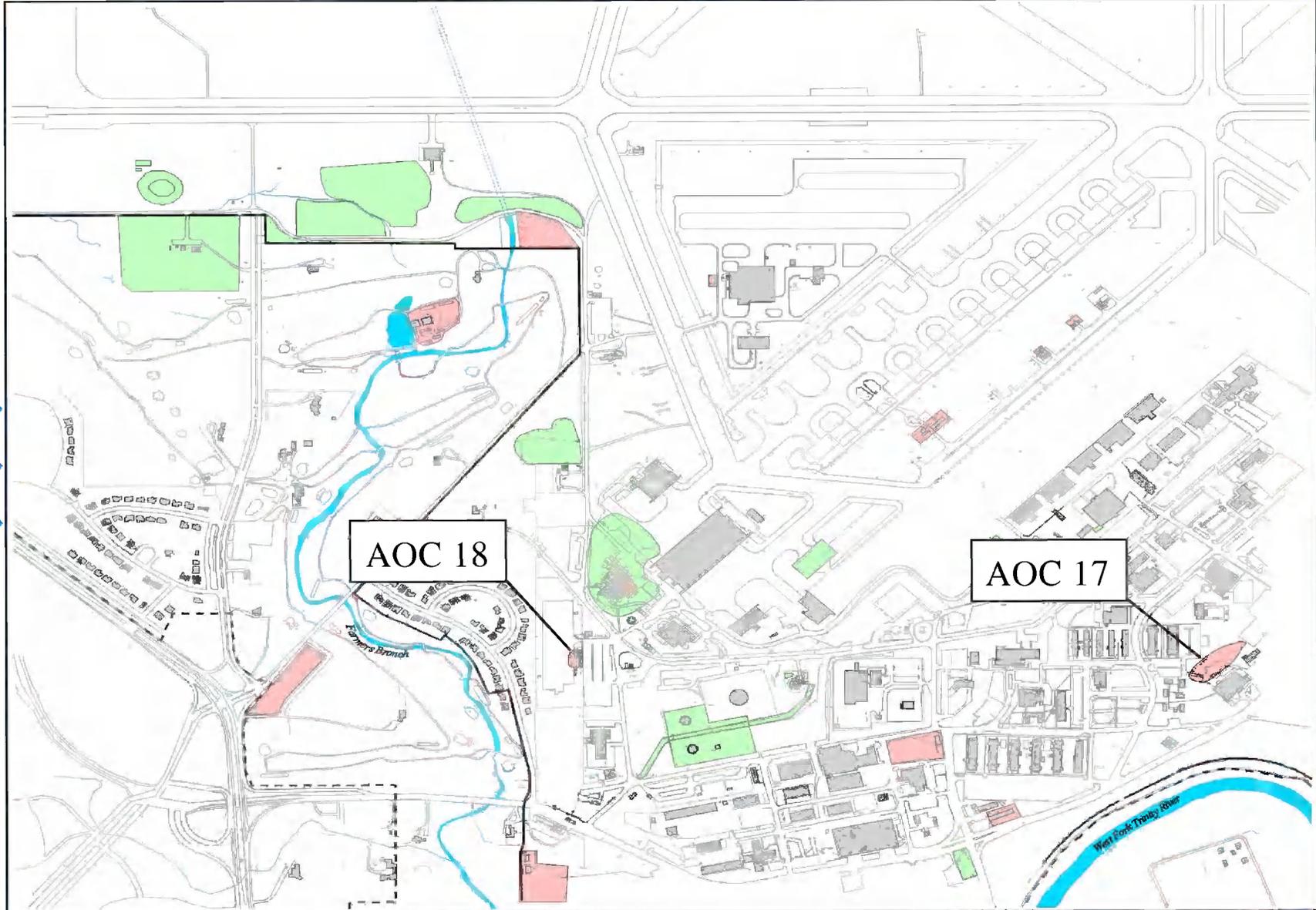


SWMUs 19, 20, 21, and AOC 19

- ◆ Initial field investigations were completed in June at these sites:
 - SWMUs 19, 20, and 21--Former Fire Training Area 2
 - SWMU 53--Storm water drainage system
 - AOC 19--Suspected former fire training area
- ◆ Field Investigation results indicate additional sampling is necessary at each of these sites.
- ◆ Phase II field work began this month and is ongoing.

AOCs 17 and 18 Site Investigation

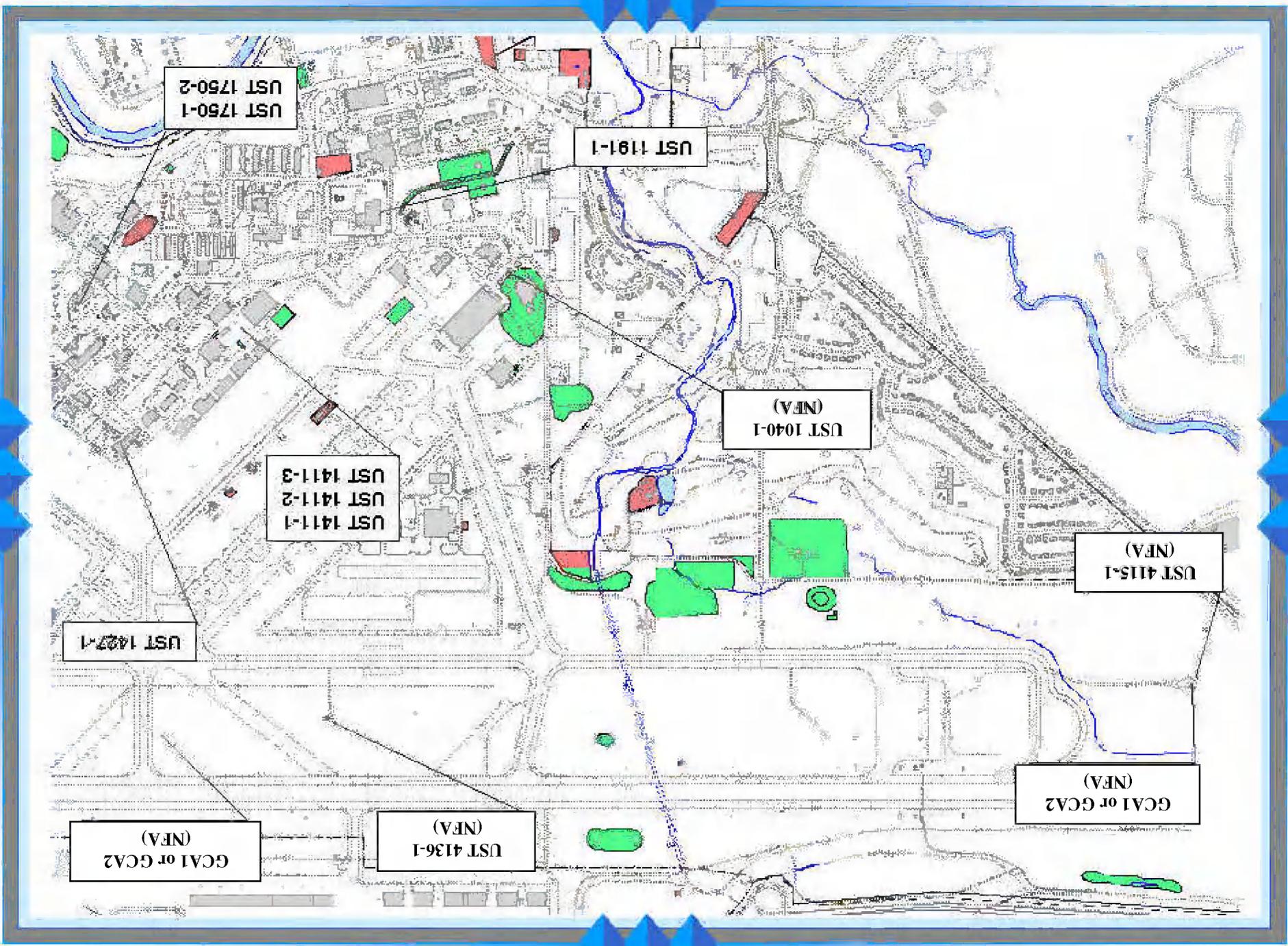
- ◆ Initial field investigations were completed in June 2000 at these sites:
 - AOC 17--Suspected former landfill
 - AOC 18 --Suspected former fire training area
- ◆ Field work activities included a geophysical survey and soil sampling.
- ◆ Field investigation results indicate that a release from these units has not occurred. RFI Report recommending closure was submitted to TNRCC in December 2000.



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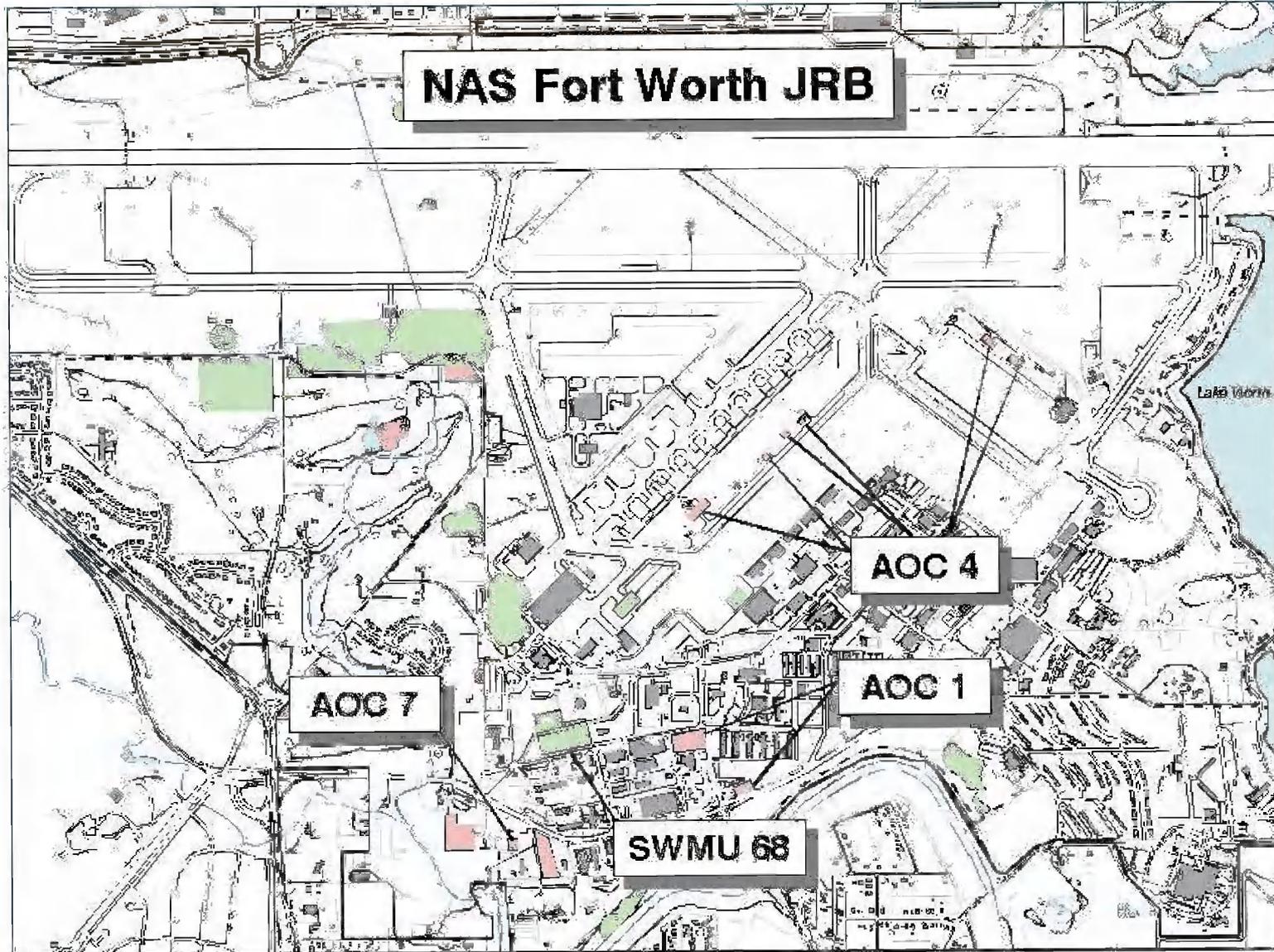
Underground Storage Tank (UST) Investigation

- ◆ Additional soil and /or groundwater sampling was completed at 6 USTs in 2000. An Investigation Summary for 3 of the 6 USTs will be submitted to the TNRCC in February 2001. A Release Determination Report form for the other 3 USTs will be submitted to the TNRCC in March 2001.



UST Investigation (cont.)

- ◆ **AOC 1, Former Base Service/Gas Station**
 - Semi-annual groundwater sampling was performed in 2000.
 - A 2000 Annual Groundwater Monitoring Report will be submitted to the TNRCC in April 2001.
 - Groundwater monitoring will continue on a quarterly basis in 2001 and a Plan B Evaluation will be prepared.
- ◆ **SWMU 68, POL Tank Farm, and AOC 7, Former Base Refueling Area**
 - Semi-annual groundwater sampling was performed in 2000.
 - An Annual Groundwater Monitoring Report for 2000 will be submitted to the TNRCC with a Site Closure Request form in March 2001.
- ◆ **AOC 4, Former Fuel Hydrant System**
 - Semi-annual groundwater sampling was performed in 2000.
 - An Annual Groundwater Monitoring Report for 2000 will be submitted to the TNRCC with a Site Closure Request form in March 2001.

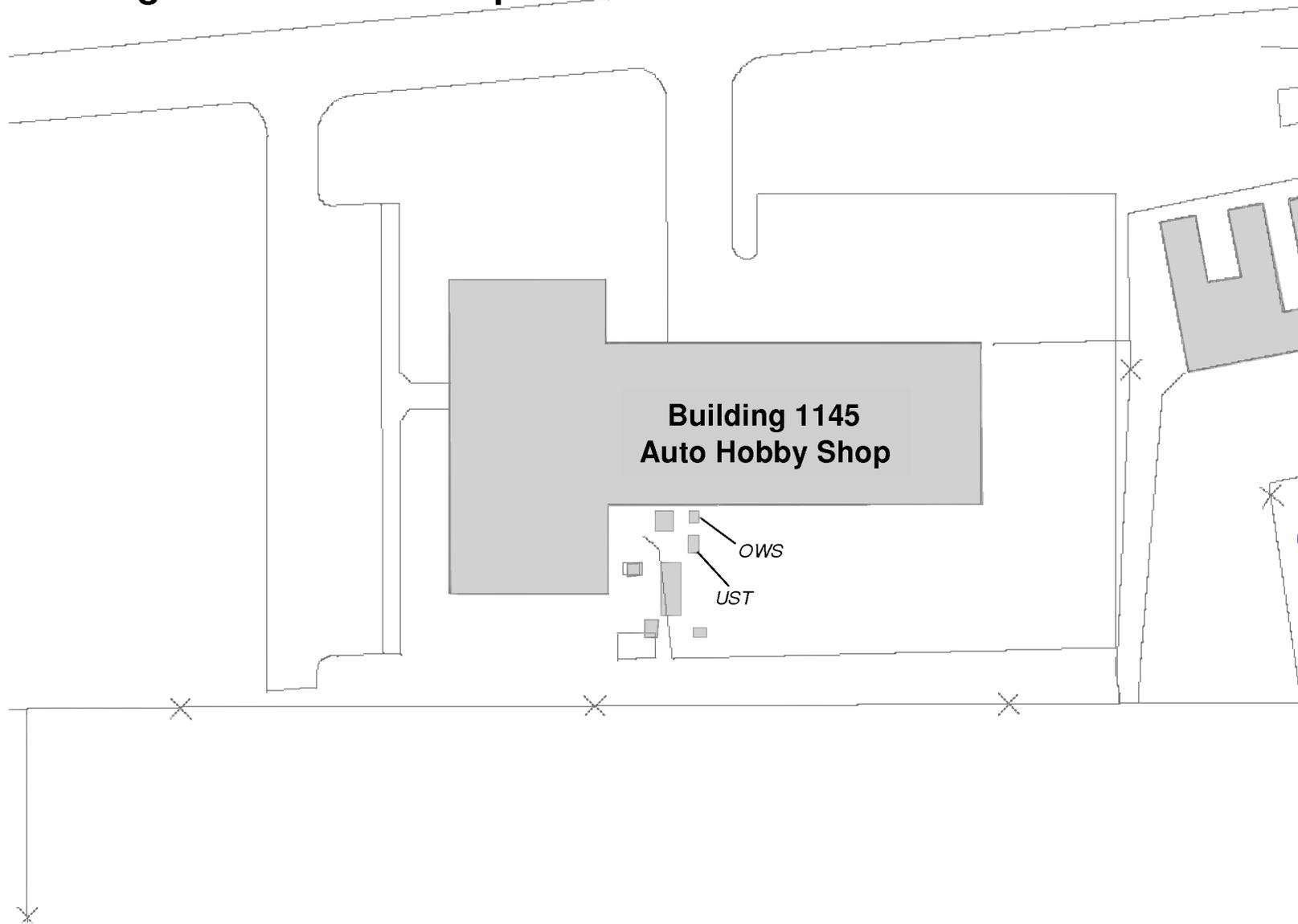


Corrective Measures at AOC 13 (Building 1145 Oil/Water Separator)

- ◆ Removal and replacement of the leaking Oil Water Separator was completed in June 2000.
 - Contaminated soils were overexcavated and confirmation samples were collected on excavation sidewalls.
 - Analytical results were evaluated to determine additional sampling requirements.
 - Soil and groundwater sampling was conducted in December 2000.
 - Draft RFI Report to be submitted to AFCEE in March 2001.



Building 1145 Oil Water Separator



Basewide Oil/Water Separators

- ◆ An RFI Closure report for 5 OWS was submitted to the TNRCC in December 2000.
- ◆ IT Corporation completed the third phase of field investigations at 14 Oil/Water Separators located throughout the base in December 2000.
 - Included soil and groundwater sampling.
- ◆ Based on the results of Phase III, approximately 13 Oil/Water Separators will be submitted for closure under RRS 2. One remaining site will undergo a Phase IV Investigation next month.

Groundwater Sampling and Analysis Program (GSAP)

- ◆ Draft Annual Report submitted to AFCEE last month.
 - The report presents plume characteristics and trends from data collected during the three groundwater sampling events conducted in 2000.
- ◆ Draft GSAP to be submitted to AFCEE this month.
 - The GSAP provides the sampling strategy for the groundwater sampling events to be conducted in 2001.
 - The plan calls for a reduction from quarterly groundwater sampling to semi-annual groundwater sampling, as the plume is stable and changes in concentrations from quarter to quarter are minimal.

Paleochannel Site Inspection

- ◆ SAIC has completed Phase II of the subsurface inspection to delineate gravel channels in the Walnut/Goodland bedrock confining layer.
- ◆ Phase I utilized geophysical techniques to delineate the subsurface gravel channels.
- ◆ Phase II completed the confirmatory phase of the geophysical work, which included:
 - Installation of 6 borings, 4 completed as monitoring wells.
 - Sampling of 4 new and 10 existing monitoring wells.
- ◆ The data appears to suggest that the highly concentrated part of the plume (>1000 ppb) is located within a narrow band (probably <500 ft) within the paleochannel. However the diluted plume is much wider (>2000 ft).



Carswell Golf Course Area Investigations

- ◆ Aqueduct assessment
 - A walkthrough was conducted to evaluate and document structural integrity.



Carswell Golf Course Area Investigations (cont.)

- ◆ Monitoring well installation and groundwater sampling
 - Deep wells
 - 3 monitoring wells installed in the Paluxy upper sand
 - 1 monitoring well installed in the Walnut Formation
 - All wells showed no detectable concentrations of VOCs, with the exception of WHGLPU001 which showed concentrations of 4 µg/L and 5 µg/L in October and December 2000, respectively

Carswell Golf Course Area Investigations (cont.)

- Plume delineation (shallow) wells
 - 7 additional wells installed at locations along the Federal property boundary and Farmers Branch Creek.
 - One off site well displayed TCE concentrations of 26 and 35 $\mu\text{g/L}$
- ◆ Focused Feasibility Study (FFS)
 - An FFS to address remediation needs for the off-site migration of TCE and the transfer of the Golf Course is 30% complete. Drafts of the report are due to AFCEE in June 2001.

Carswell Golf Course Area Investigations (cont.)

◆ Risk Assessment

- A risk assessment was performed on the BRAC Property (Golf Course and Wherry Housing Area). The EPA and TNRCC are currently reviewing the report.



NAS Fort Worth JRB Installation Restoration Program Update

Michael R. Dodyk, P.E.
February 7, 2001



Site Closure Update

- ◆ One site submitted for and granted closure by TNRCC since the November 2001 RAB meeting:
 - Solid Waste Management Unit (SWMU) 26, Landfill 3
 - To date, the Air Force has received closure on 48 of 88 total SWMUs and AOCs basewide.



Field Activities

- ◆ Soil “hot spot” excavation work continued at various Landfills and Waste Accumulation Areas.
- ◆ Soil and groundwater sampling conducted at SWMUs 49 and 50, former aircraft washing areas.
- ◆ Soil and groundwater sampling conducted at SWMU 19, the former fire training area.
- ◆ Groundwater sampling conducted at AOC 1, the base service station.
- ◆ Sediment and surface water sampling conducted at SWMU 54, the storm water interceptors.





**Interim Remedial Action –SWMU 61, Looking SE
January 2002**





**Interim Remedial Action
SWMU17B/Landfill 7
Looking North
January 2002**

Excavated Area



**Interim Remedial Action
SWMU17B/Landfill 7
Looking East
January 2002**

Upcoming Field Work

◆ **This Month:**

- Site preparation work will be conducted for the installation of Permeable Reactive Barrier (PRB).

◆ **March 2002:**

- PRB installation will begin along the western side of the Carswell Golf Course March 4th and continue for 4 weeks.

◆ **April 2002**

- Semi-annual basewide groundwater sampling will occur.

◆ **Summer 2002:**

- Installation of a groundwater remediation system at the base gas station (AOC 1).



Documents Submitted to TNRCC

- ◆ Final Baseline Risk Assessment Southern Lobe of Trichloroethene Plume (November 2001)
- ◆ Draft Final Permeable Reactive Barrier Construction and Performance Monitoring Work Plans (January 2002)
- ◆ Plan A for Building 1427 UST
- ◆ Response to TNRCC for Buildings 1518, 1750, and 1191 USTs Release Determination Report
- ◆ Release Determination Report for Building 1411 UST



Continued Progress

- ◆ Risk Assessment and Focused Feasibility Study of the southern lobe of the TCE plume continued.
- ◆ Design work for the permeable reactive barrier (PRB) for the southern lobe TCE plume continued.

Last Month

- ◆ Work Plan for Paluxy well installation submitted to AFCEE for review.
- ◆ Draft Technical Report for AOC 2 submitted to AFCEE for review.
- ◆ Draft Site Investigation Report for AOC 20 submitted to AFCEE for review.



Continued Progress (cont.)

- ◆ Draft RFI Report for Building 1655 Oil/Water Separator was submitted to AFCEE for review.

Next Month

- ◆ Draft RFI Report for Landfills 2, 6, 7, and 9 to be submitted to AFCEE for review.
- ◆ Draft RFI Report for Waste Accumulation Areas 5, 6, 12, 31, and 61 to be submitted to AFCEE for review.
- ◆ Draft 2001 Semi-Annual Groundwater Sampling Report to be submitted to AFCEE for review.





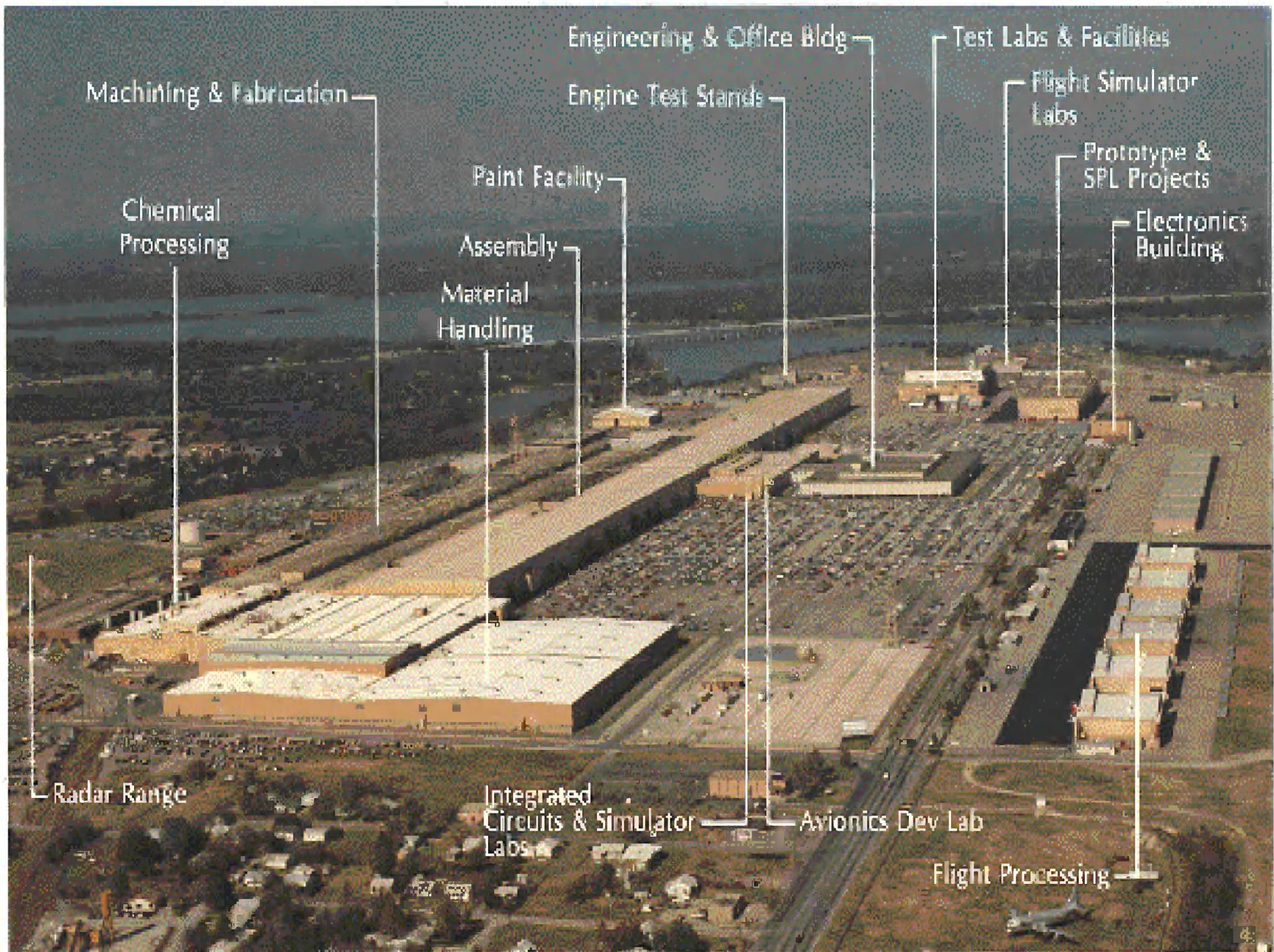
Air Force Plant 4 - RAB

February 8, 2001



- Lake Worth Testing
- East Parking Lot
- Plume Monitoring
- West Parking Lot
- Bldg 181 SPH Test
- Phyto Remediation

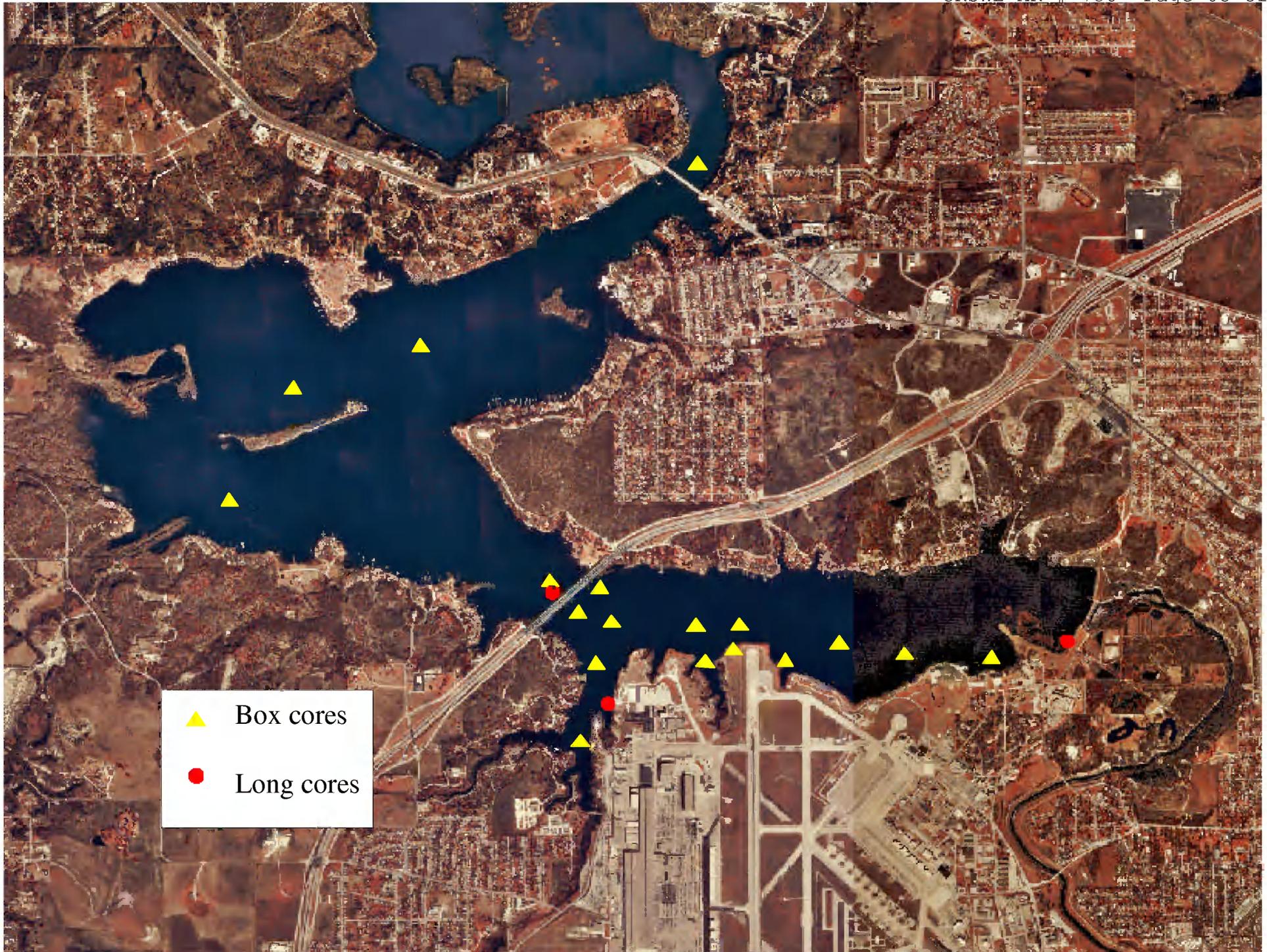
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Lake Worth Sediment Sampling

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- \$200K Sampling now, results in 6 months.
- Follow-up to Fish Tissue Sampling
- Will focus on PCB's in sediment and whether additional contamination is continuing to migrate into the lake (based on depth of PCBs)





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Pontoon
Boat



Nov 00
- Long Core
Sampling (3)



Jan 01
- Box Cores
shallow (18)

Sediment
boring
device



Long Core
Borings



Transferring Sediment to Collection Jars





East Parking Lot Remedial Action

Operational ~~Dec 2000~~ March 2001

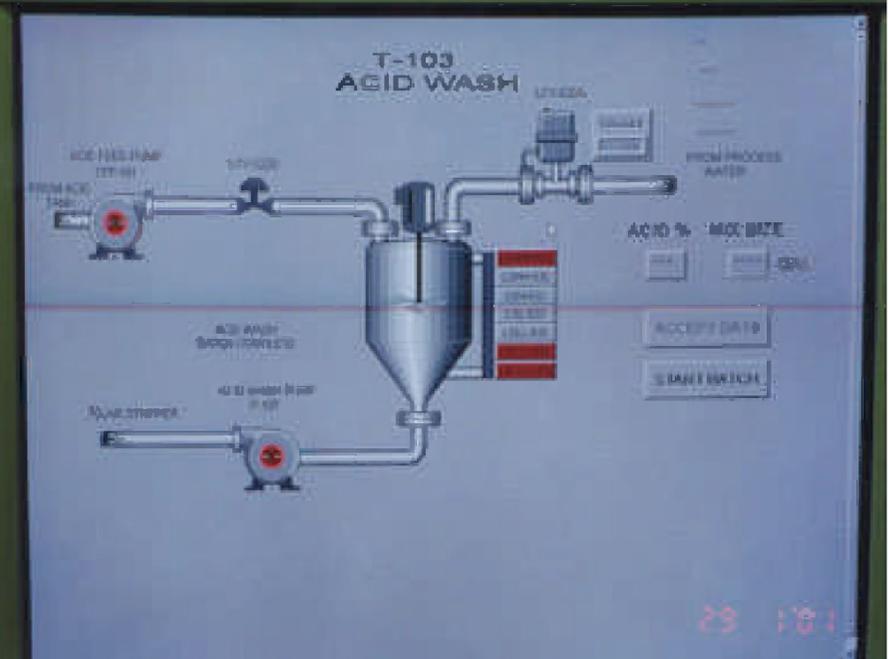
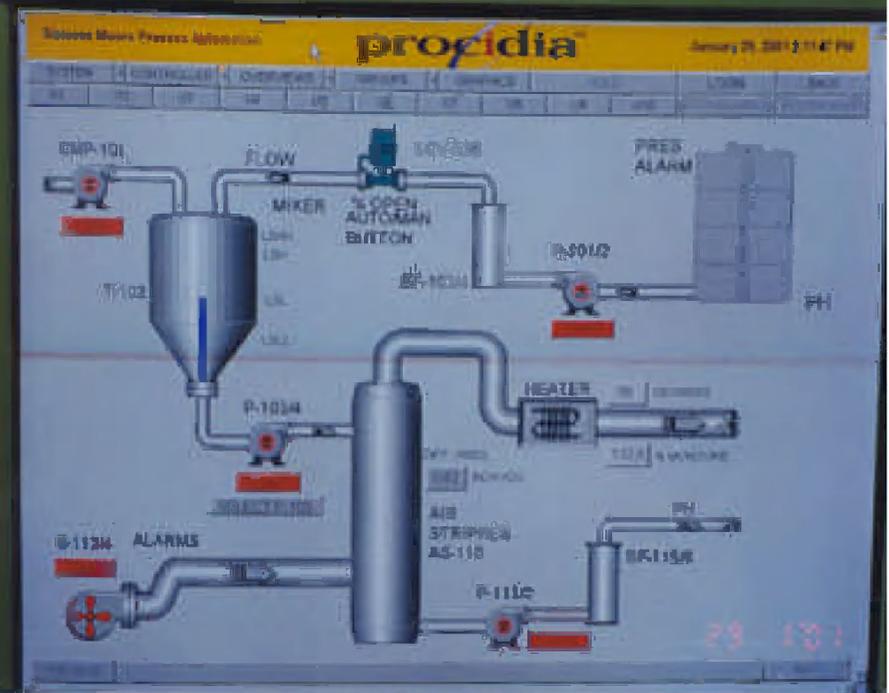
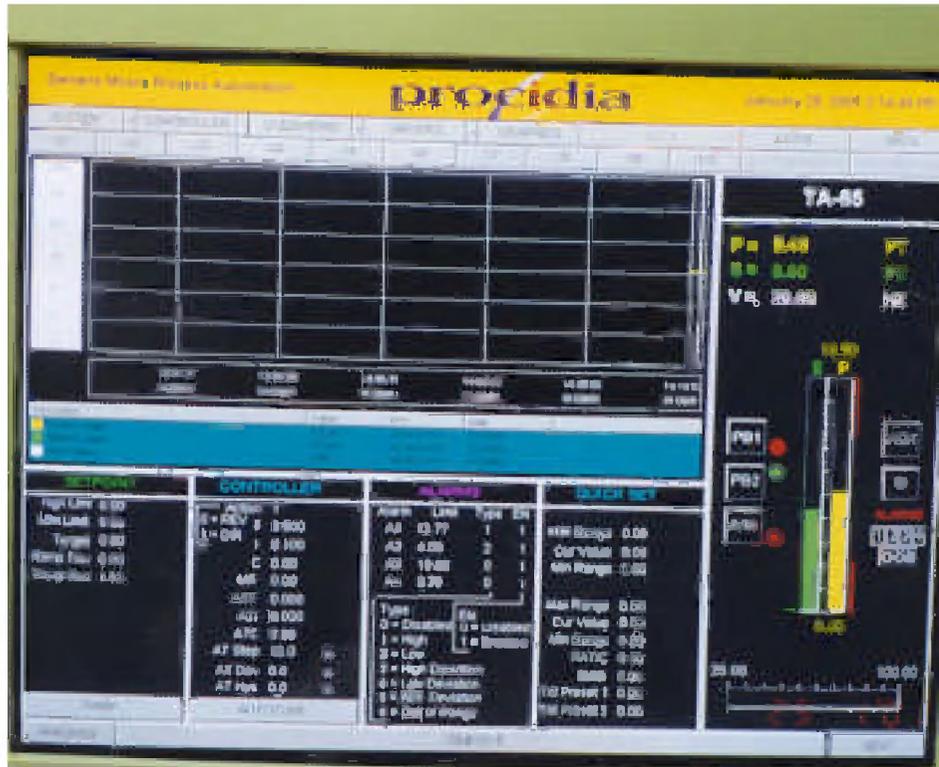


East Parking Lot Groundwater Treatment Sys.









Computer Monitor for controlling extraction wells and trouble shooting

Plume Monitoring Actions

HydroGeoLogic, Inc.—FFS Status Update Meeting
NAS Fort Worth JRB, Texas

Attachment 1 Trichloroethene Concentrations Terrace Alluvium October 2000

U.S. Air Force Center For
Environmental Excellence

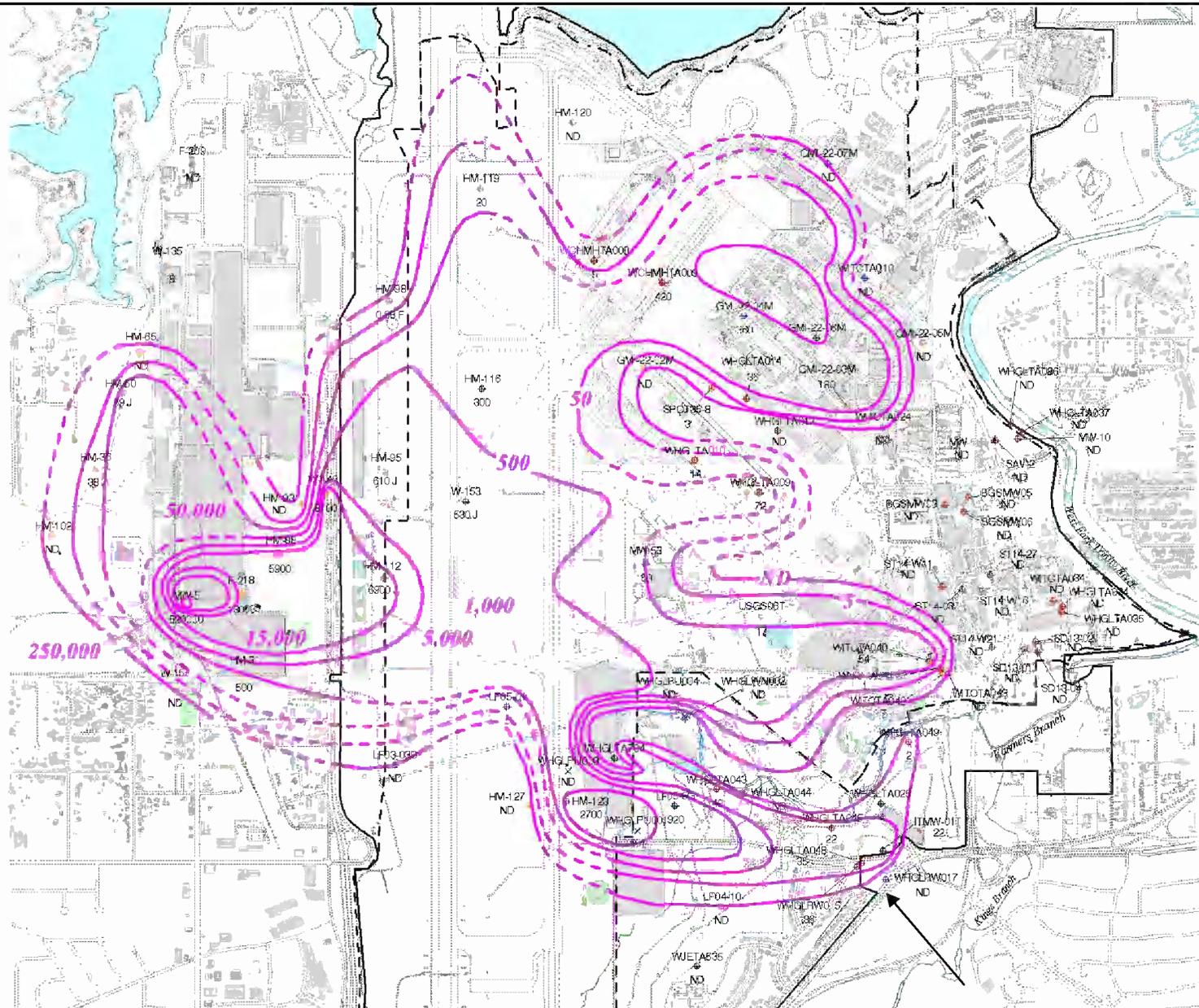


Legend

- - - - - NAS Fort Worth JRB (Carswell Field)
- Former Carswell Air Force Base
- 500— TCE Concentration Contour (µg/L)
- MW-53 + NAS Fort Worth JRB Basewide Sampling Well
- 50 TCE Concentration (µg/L)
- WHGLTA028 + Monitoring well data collected as part of other investigations during October and November 2000
- 54 TCE Concentration (µg/L)
- HM-119 + APP 4 Semi-Annual Monitoring Well
- 17 TCE Concentration (µg/L)
- + Previous data from WHGLTA704 and GMI-22-06M have been used to shape the contours.
- x Paluxy or Walnut Well
- ND = Not Detected at Laboratory Method Detection Limit of 0.5µg/L
- F = The analyte was positively identified, but the associated value is below the PQL.
- J = The analyte was positively identified, but the quantitation is an estimation.



Filename: A:\FC00136ac\Reports\oct2000.apr
Created: 02/01/01 helcher
Revised: 02/05/01 jb
Project: A\FC001-36AC
Map Source: HydroGeoLogic, Inc GIS Database
Jacobs Engineering





Extraction Well Maintenance





Tree roots clogging







Rt 183









¹⁹ In determining whether a plume is stable or migrating, users of this Directive should consider the **uncertainty** associated with defining the limits of contaminant plumes. For example, a plume is typically delineated for each contaminant of concern as a 2- or 3-dimensional feature. Plumes are commonly drawn by computer contouring programs which estimate concentrations between actual data points. EPA recognizes that a plume boundary is more realistically defined by a zone rather than a line. Fluctuations within this zone are likely to occur due to a number of factors (e.g., analytical, seasonal, spatial, etc.) which may or may not be indicative of a trend in plume migration. Therefore, site characterization activities and performance monitoring should focus on collection of data of sufficient quality to enable decisions to be made with a high level of confidence. See USEPA, 1993b, USEPA, 1993c, USEPA, 1994b and USEPA 1998b for additional guidance.

- If migration of contamination in the groundwater appears to be moving off site at concentrations above MCLs, corrective actions will be taken to stop the plume. Corrective actions could involve various containment measures, such as interceptor wells, an interceptor trench, a combination of wells and a trench, or a slurry wall, and operation of the pump-and-treat system at Naval Air Station Fort Worth Landfills No. 4 and No. 5.

A more detailed description of the selected remedy follows. It should be noted that certain aspects of the selected remedy may change during remedial design. The costs of the selected remedy are

Capital Cost	\$ 7,753,000
Present Worth of O&M Costs	1,166,000
Present Worth of Monitoring Costs	1,199,000
Total Present Worth of Alternative 3	<u>\$10,118,000</u>

Capital costs are assumed to occur within the first year and include installation of groundwater extraction wells, purchase of surfactants, installation of an air-stripping treatment system and a catalytic oxidation unit to treat the air discharged from the air stripper, piping from the treatment system to the discharge point, electrical connections, and installation of additional monitoring wells. O&M costs include electrical requirements, water sampling for compliance, and equipment maintenance and replacement. Monitoring costs are annual costs that include obtaining samples from monitoring wells and laboratory analysis of those samples.

Extraction of groundwater from the East Parking Lot Plume will be from approximately 10 extraction wells operating at one time with each well estimated to pump 5 gal/min. Only a small area of the East Parking Lot Plume will be remediated at a time to ensure better control of the surfactant injection and extraction processes. The initial assumption is that an area being remediated would have 10 injection and 10 extraction wells.

Monitoring will be conducted to track contaminant levels in the Terrace Alluvial flow system (includes the East Parking Lot Plume, North Plume, and West Plume) and potentially affected surface waters. The location of monitoring wells, number of monitoring wells, and frequency of sampling in the North Plume and the West Plume will be established to provide early detection of contamination before it migrates off site at levels that exceed MCLs of the contaminants.

The locations of monitoring wells, number of monitoring wells, and frequency of sampling in the East Parking Lot Plume will be established to monitor remedial action in the Window Area

... could also be reactivated if remediation goals are not being met. Also, the Air Force, with the concurrence of the EPA and the State of Texas, may use other technologies such as permeable treatment walls to mitigate contamination moving off Federal boundaries.

The following assumptions for monitoring are based on a preliminary plan. The final monitoring plan, to be developed during remedial design, will be more detailed and may be slightly different.

- Contamination levels in the DNAPL remediation area of the East Parking Lot Plume will be monitored with analysis of samples from wells located near the edge of the suspected DNAPL area and within the Window Area. Monitoring will be performed as needed during DNAPL remediation (estimated at 15 years), semiannually at a minimum, and then annually after the remediation is completed.
- Contamination levels along the perimeter of the East Parking Lot Plume and the boundaries of Plant 4 and Naval Air Station Fort Worth will be monitored with analysis of samples from wells located to allow detection of contamination before it can migrate off Federal boundaries. Samples will be taken semiannually during remediation of the DNAPL area and then may be taken annually if contamination levels remain relatively steady and are not increasing.
- Contamination levels in the West Plume will be monitored with analysis of samples from wells near the boundary of Plant 4. Sampling will be conducted semiannually for at least 5 years and then may be performed annually if contamination levels remain relatively steady and are not increasing.
- Contamination levels in the North Plume will be monitored with analysis of samples from wells near the boundary of Plant 4. Sampling will be conducted semiannually for at least 5 years and then may be performed annually if contamination levels remain relatively steady and are not increasing.
- Contamination levels in the surface waters of Lake Worth, Farmers Branch Creek, and the West Fork of the Trinity River will be monitored with analysis of samples from several locations. Sampling points will be located where the surface water is most likely to be affected by contaminated groundwater discharge. Sampling will be conducted semiannually, except for annual sampling of the West Fork of the Trinity River.
- Sampling of the North Plume, the West Plume, and the perimeter areas of the East Parking Lot Plume will be discontinued when it can be demonstrated that the contamination is

WP-07 Excavations - Area 3



Label from drum

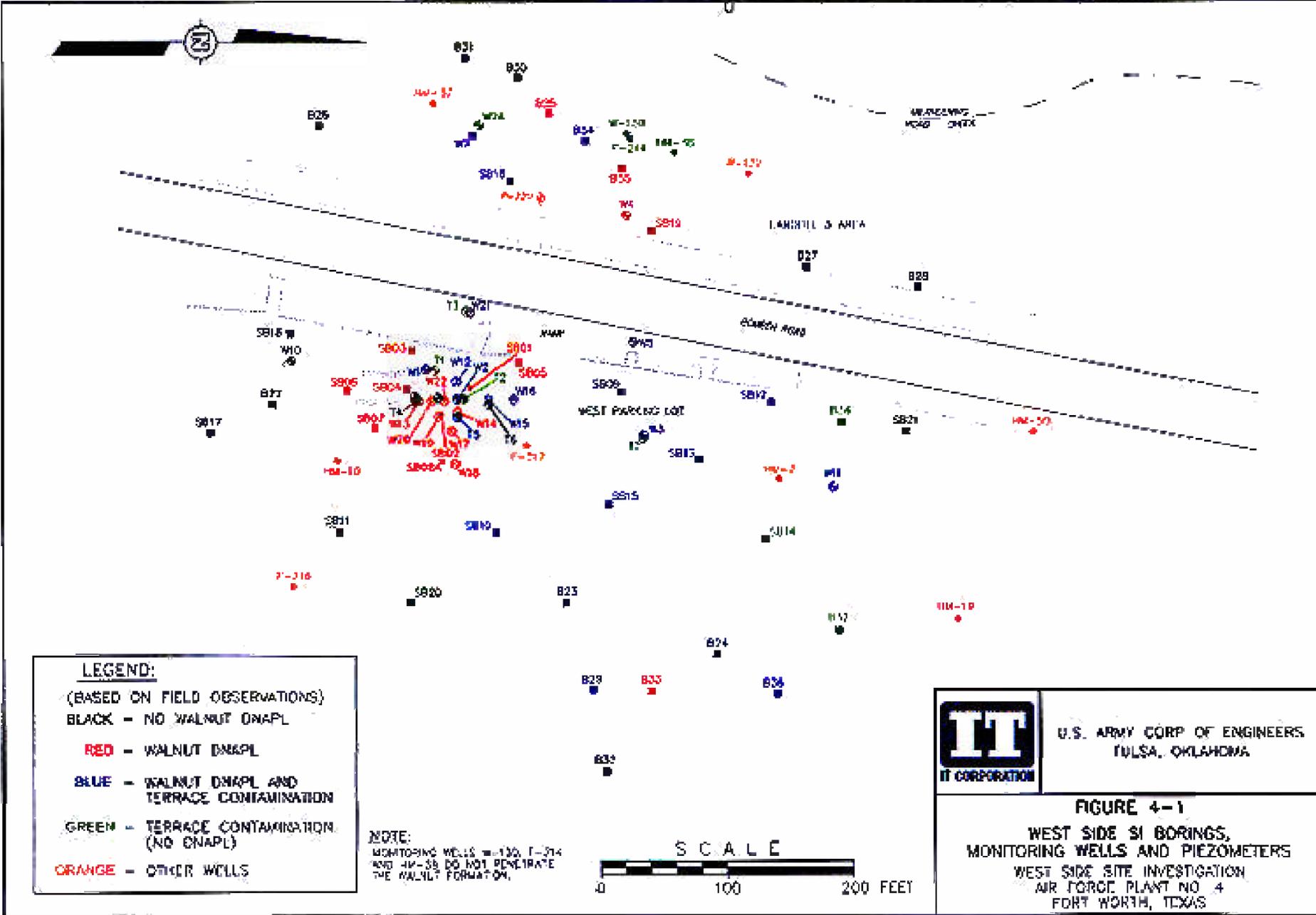


Area 3 Drum 2 with liquid



Plot Date/Time: 01/13/01 09:30am
 Format Revised: 12/15/99

OFFICE FYNBUSH PA	DRAWN BY R.L.M.	CHECKED BY GRV	APPROVED BY P.W.	DRAWING NUMBER 784148-A30
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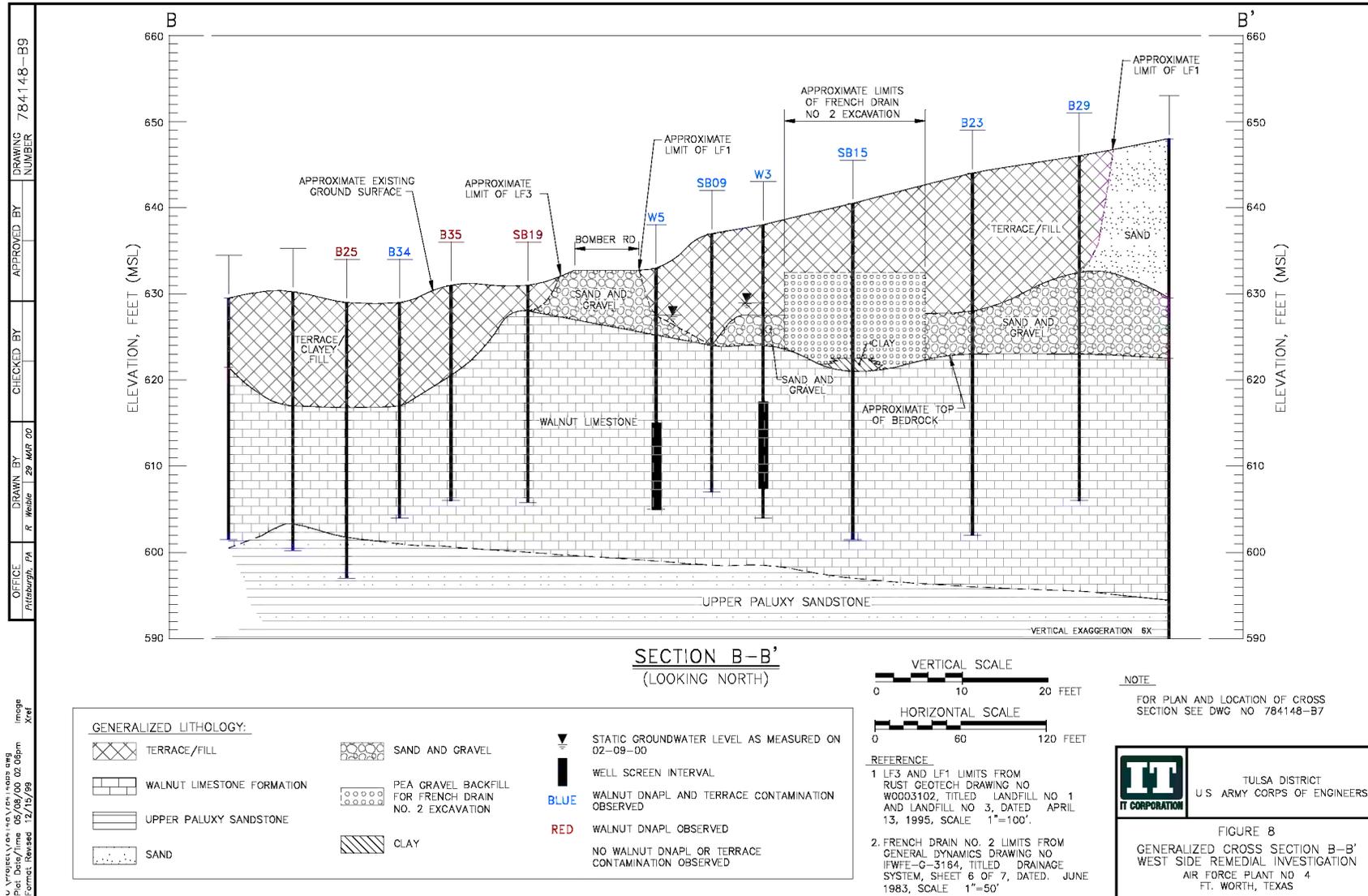


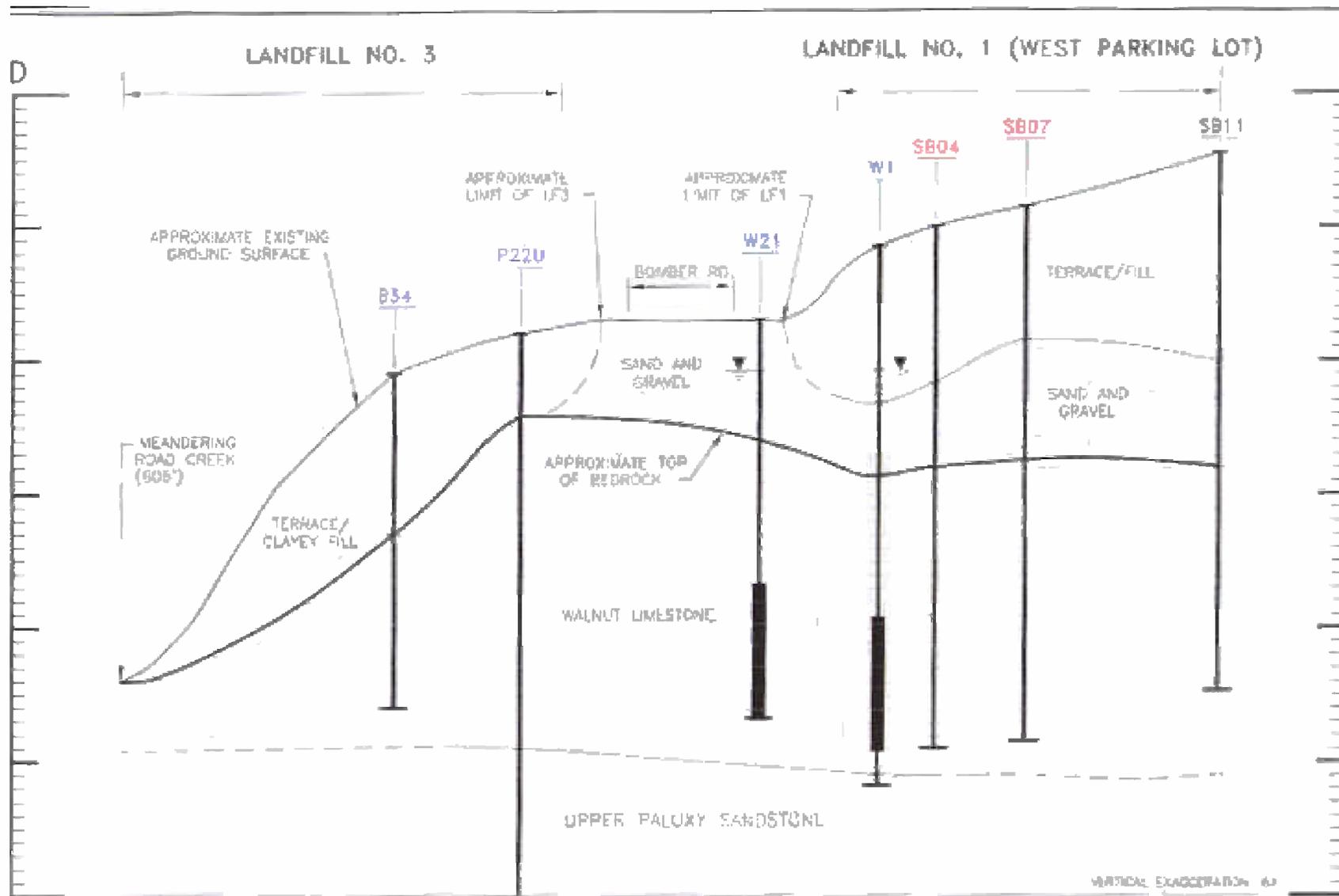
LEGEND:
 (BASED ON FIELD OBSERVATIONS)
 BLACK - NO WALNUT DNAPL
 RED - WALNUT DNAPL
 BLUE - WALNUT DNAPL AND TERRACE CONTAMINATION
 GREEN - TERRACE CONTAMINATION (NO DNAPL)
 ORANGE - OTHER WELLS

NOTE:
 MONITORING WELLS W-130, T-214
 AND W-38 DO NOT PENETRATE
 THE WALNUT FORMATION.



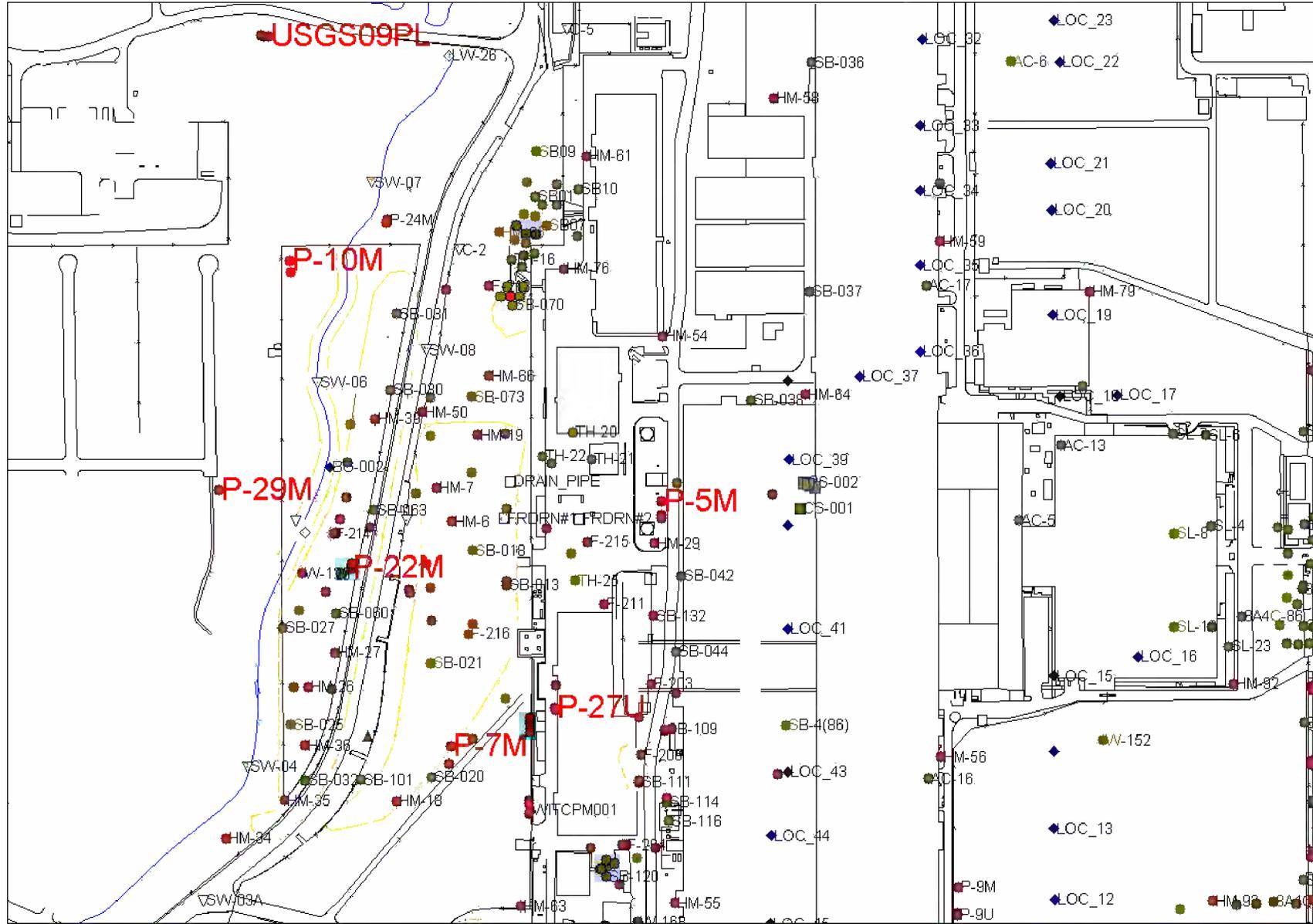
	U.S. ARMY CORP OF ENGINEERS FULSA, OKLAHOMA
	FIGURE 4-1 WEST SIDE SI BORINGS, MONITORING WELLS AND PIEZOMETERS WEST SIDE SITE INVESTIGATION AIR FORCE PLANT NO. 4 FORT WORTH, TEXAS



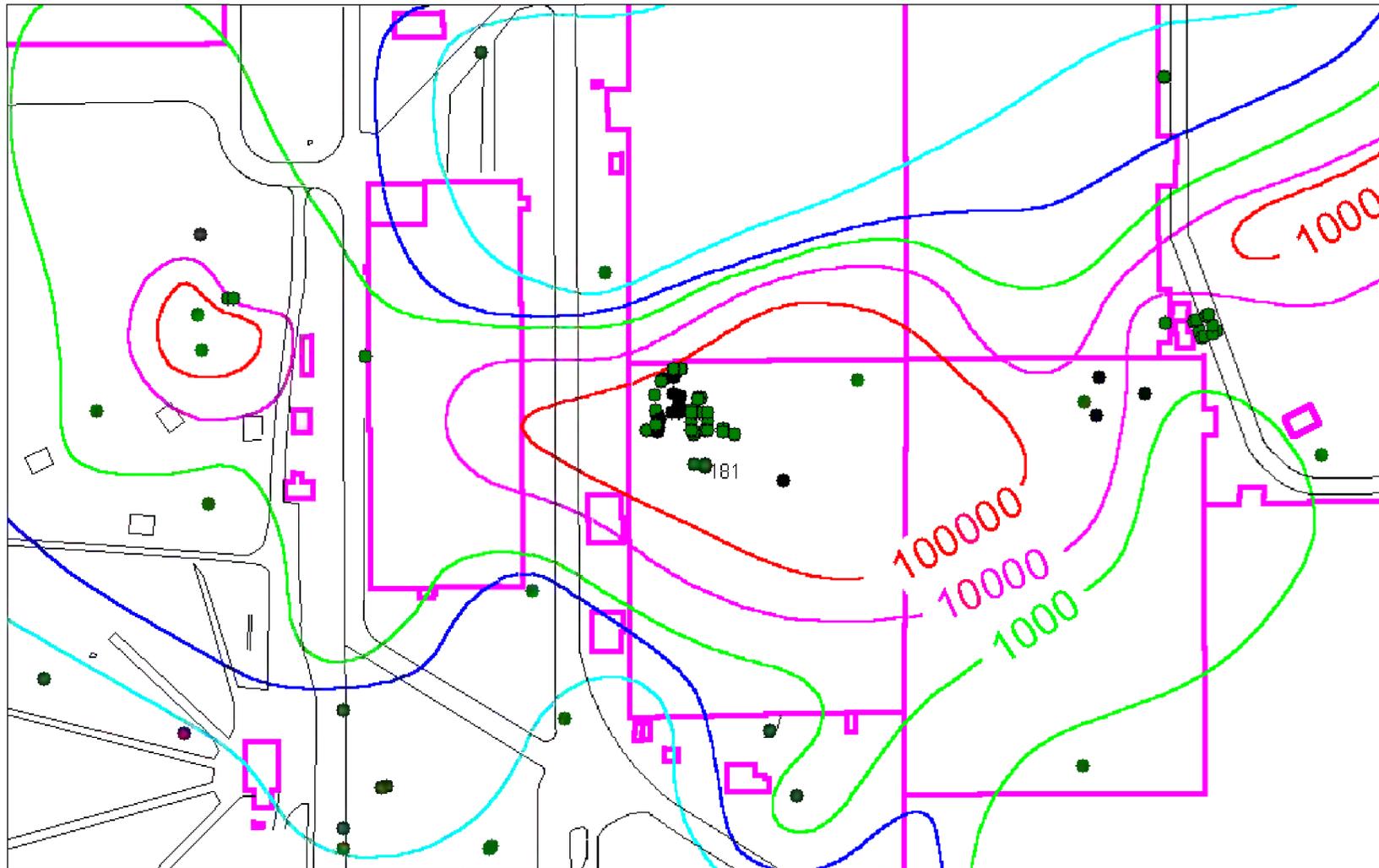


SECTION D-D'
(LOOKING NORTH)





Building 181 Soil Vapor Extraction and SPH

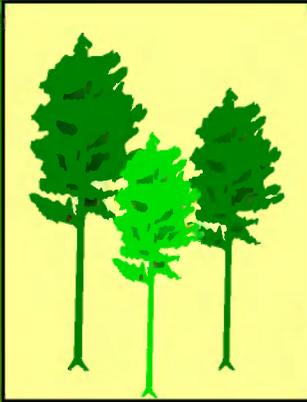


Bldg 181 - Six Phase Heating Pilot study



AWAIT REPORT - DUE NOW!!





Project Objective

To generate cost and performance data from field-scale investigations of the use of poplar trees to help cleanup shallow chlorinated-solvent-contaminated ground water for the purpose of technology transfer.

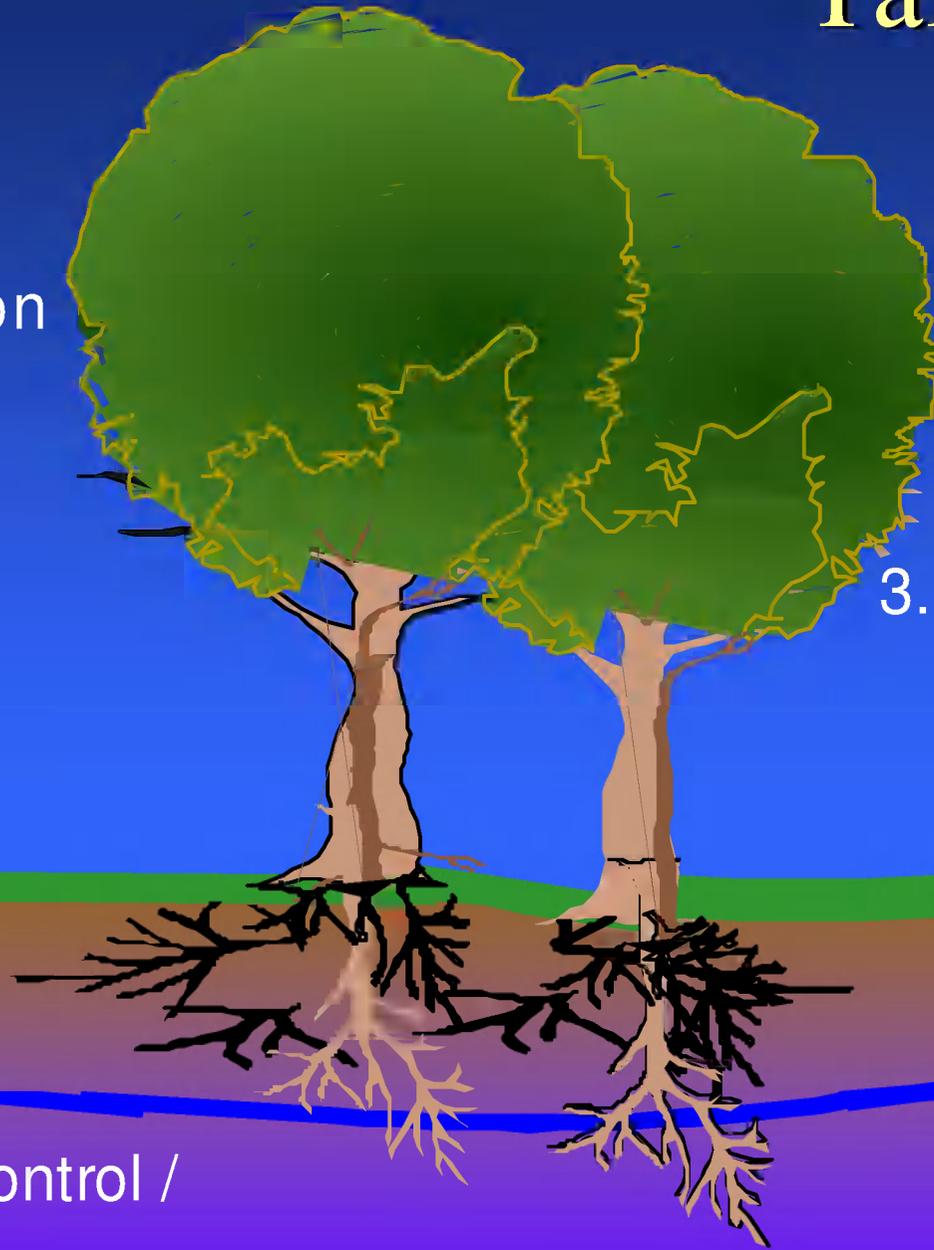
Talk Outline

4. Volatilization

3. Enzymatic
Degradation /
Mineralization
Within Vegetation

1. Hydraulic Control /
Influence

2. In-Situ Biodegradation



FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE