



# ecology and environment, inc.

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International Specialists in the Environment

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NAS PENSACOLA  
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July 19, 1991

Commanding Officer  
Attn: (Code 18211)  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive, P.O. Box 10068  
Charleston, SC 29411-0068

**RE:** Data Evaluation Summaries and Proposed Samples Location Changes, Phase I Site Groups F, G, J, R, M and N, Contamination Assessment/Remedial Activities Investigations, Naval Air Station (NAS) Pensacola, Florida, Contract No. N2467-88-C-0200, Modification No. 9.

Dear Sir:

Attached are two copies of the data evaluation summaries and proposed sample location changes prepared by Ecology and Environment, Inc., (E & E) for the above-referenced project. The summaries are a synopsis of the pre-sampling field work results and include E & E's recommendations for sample location changes. The summaries were originally sent to Southern Division by fax transmission during June and July 1991 and the sample location changes were verbally approved by Ms. Suzanne O. Sanborne (Southern Division) prior to initiating soil and/or groundwater sampling for each site.

If there are any questions or comments regarding these summaries or any other matters pertaining to the project, please do not hesitate to call me at (904) 435-8925 or Gerry Gallagher at (904) 877-1978.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

John D. Barksdale, P.G.  
Program Manager

JDB/mv/370

Enclosure

cc: J. Wilcox; E & E--Buffalo/Project File UH8000  
G. Gallagher; E & E--Tallahassee/Project File  
C. Tronolone; E & E--Buffalo  
B. Caldwell; E & E--Pensacola

**FIELD TASKS/DATA EVALUATION SUMMARY**  
**NAS PENSACOLA-SITE 3**

The following is a brief summary of field tasks conducted to date at Naval Air Station Pensacola Site 3 by personnel of Ecology and Environment, Inc. (E 6 E). Recommendations regarding amended sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 3 dating from 1951 to 1989 revealed the location of eight burn areas which might represent potential sources of contamination. These burn areas will be referred to by numbers 1 through 8, respectively, from north to south across the site. The photographs reveal that, based on darkened or stained appearance of the soil, the southernmost four burn areas (numbers 5 through 8) appear to have been in use from approximately 1968 to 1973. In addition, burn areas 3 and 4 appear to have been used from approximately 1964 to 1973. Burn areas 1 and 2 apparently have been in use from about 1973 to the present.

Site Reconnaissance

A site reconnaissance was performed across Site 3 which included the wooded areas and grassy field adjacent to the west side of Sherman Field Runway 19. Stressed vegetation and dark gray-black soil staining were observed at the locations of all eight burn areas. In addition, three sparsely vegetated areas of darkened soils (not revealed by the aerial photograph analysis) were observed near the southern boundary of the site. A shallow north-south oriented drainage ditch with storm water catchment basins transects the site approximately 250 feet west of Runway 19. It appears that storm water runoff in the drainage ditch flows northward from the two northernmost catchment basins (AA3M and

AA3L) and outfalls into a creek approximately 2,200 feet north of the site boundary. This creek appears to flow into Bayou Grande. The storm water in the four southernmost catchment basins at the site (LL1F, LL1E, LL1D, and LL1C) appears to flow southerly into a drainage ditch approximately 1,500 feet south of the drainage ditch south of the site boundary. It is uncertain where this drainage ditch flows. A petroleum-like sheen was observed on waters flowing in the drainage ditch.

In the vicinity of burn areas 1 and 2, soil staining extends eastward to the drainage ditch. Petroleum odors were noted in these two burn areas, and were accompanied with HNu readings of up to 20 ppm. Cockpit mock ups and aircraft debris are present in the five northernmost burn areas. In addition, an old tank trailer, portable foam tanks, aircraft frames and metal debris are present along the western edge of the grassy field bordering Runway 19 north of the dirt access road to the site. An area of soil staining was noted adjacent to an airframe located approximately 150 feet north of the access road entrance to the site.

#### Surface Emission Survey

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 3. Areas adjacent to burn areas 1 through 6 displayed OVA readings up to greater than 1,000 ppm above background. The drainage ditch area adjacent to the six northernmost burn areas exhibited elevated OVA readings from about one to approximately 20 ppm above background. In addition, methane was detected at concentrations from about one to 400 ppm in the vicinity of the six northernmost burn areas and in the vicinity of the drainage ditch opposite from and to the south of the six northernmost burn areas.

A Hini Ram particulate air monitoring device was used to determine whether the site represents a source of airborne particulates. As a result of the particulate survey, Site 3 does not appear to be a source of particulates.

### Habitat-Biota Survey

A habitat biota survey was conducted to assess on-site terrestrial habitats and to identify rare, threatened, and endangered species. A forested/scrub shrub wetland is present in the northwestern corner of the site. In addition, emergent wetland plant species were found existing in the drainage ditch area located west of Runway 19. The large-leaved joint weed Polygonella aacrophyla, a Florida threatened species, was found existing in the pine flat woods southwest of Site 3. In addition, the white top pitcher plant Sarracenia leucophylla, a Florida endangered species, was found existing in a sandy bog located west of the forested/scrub shrub wetland present in the northwest corner of the site. The site and the pine flat woods located to the west of the site also exhibited evidence of habitation by the gopher tortoise Gopherus polyphemus, a species of special concern in Florida.

### Geophysical Survey

A geophysical survey was performed over the site using an EM-31 electromagnetic terrain conductivity instrument and a G-856AX proton precession magnetometer.

The results of the survey indicate electromagnetic conductivity and magnetic anomalies are present within Site 3. Most of the anomalies are linear in nature, and are associated with underground utilities, the storm drainage system, and ferrous metallic debris located on the site. Monitoring wells and boreholes located near these areas may require slight shifting to avoid damage to underground pipes or utilities that may be present.

### Soil Headspace Survey

A soil headspace survey was conducted at Site 3 using a hand operated bucket auger or a small portable solid-stem auger rig, and an OVA. Soils were composited across five-foot intervals until the water table was encountered, and were screened for volatile organic compounds (VOCs). Groundwater was detected at approximately one to four feet below land surface at Site 3, resulting in the collection of one composite soil sample from most locations.

The results of the headspace survey indicate that VOCs may be present in the soils at Site 3, in the central and north central portions of the site. Headspace readings up to greater than 1,000 ppm were observed in an approximately 300 foot area in the north central portion of the site, and in an approximately 200 by 400 foot area in the central portion of the site.

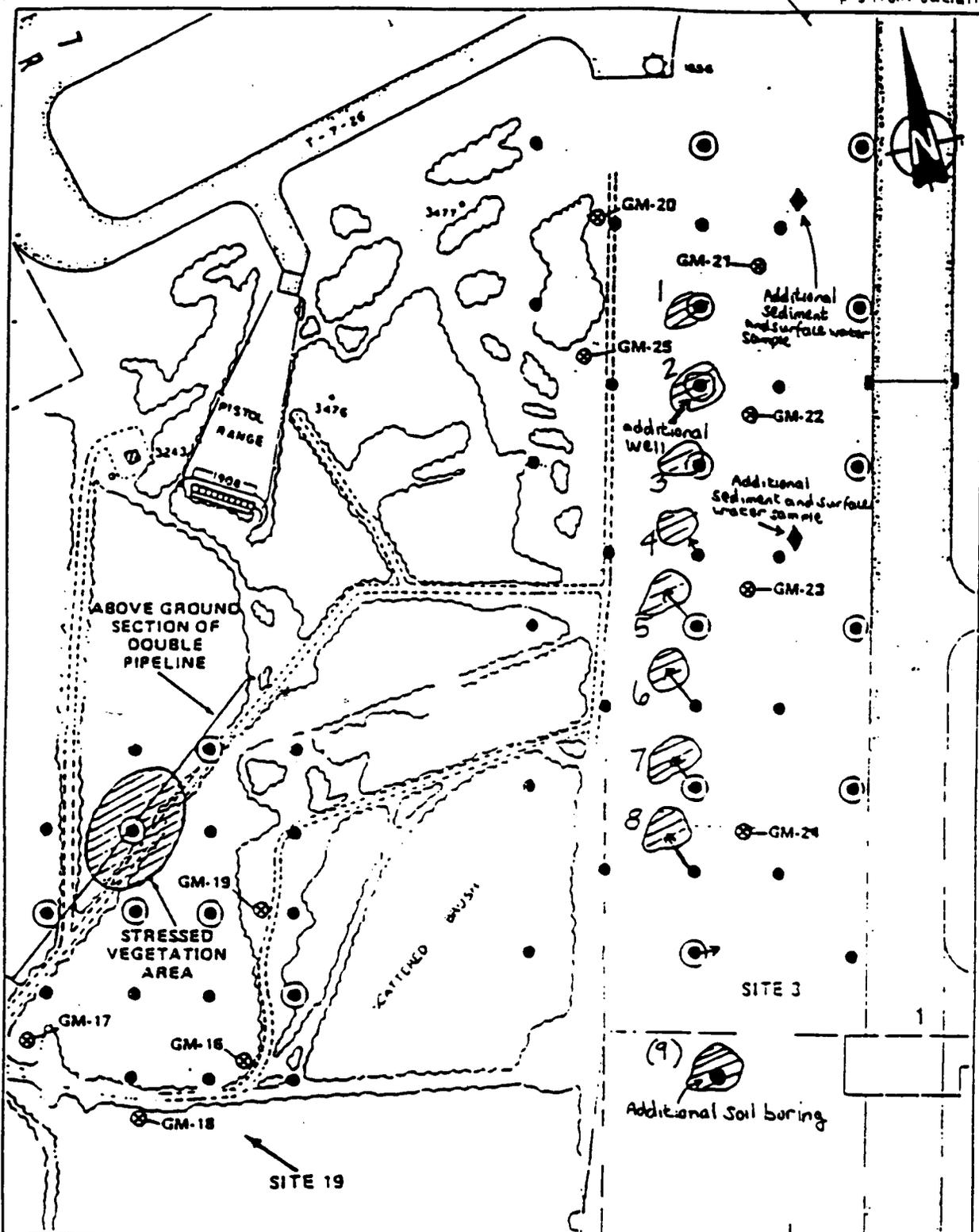
In general, the tentative Phase I sampling locations generally offer good coverage of these areas. However, as discussed below, one additional soil boring and temporary monitoring well, as well as sediment and surface water samples should be added to improve the coverage.

#### Recommendations

The results of the field tasks conducted to date indicate that several amendments to the original sample locations are necessary. As shown on the attached figure, six of the originally proposed soil borings and three temporary monitoring wells should be adjusted to be closer to the burn areas or areas having elevated headspace readings. In addition, one soil boring should be added at the southern end of the site in the area which may be a former burn area not previously identified (see figure). One temporary monitoring well should also be added in the north-central portion of the site near burn area number 2 (see figure). This area was determined to be potentially contaminated on the basis of high headspace readings. E & E also recommends the addition of four sediment samples (plus one duplicate sample) and four surface water samples (plus one duplicate sample) at the site to allow the evaluation of potential off-site contaminant migration from Site 3 via the storm water collection system at the site. One sediment and one surface water sample should be collected at each of the two outfalls located north and south of the site. Additionally, one sediment and surface water sample should be collected from a catchment basin on the northward-flowing storm water system, and one sediment and surface water sample should be collected from a catchment basin on the southward-flowing portion of the storm water system. These samples

should be collected from the catchment basins which appear to have been most impacted by activities at the site. Additional minor sampling location adjustments may be required in order to safely avoid any subsurface utilities located on the site.

Doc. Num. 536



SOURCE: U.S. Naval Air Station, Pensacola, Florida, 1987; and Geraghty and Miller 1984, 1986

- KEY:
- Tentative Soil Boring
  - Tentative Temporary Monitoring Well
  - ⊗ Existing Monitoring Well

- ◆ Tentative Sediment and surface water sample location
- ▨ Burn Areas
- ◆ Additional Sediment and surface water sample from outfall line

Figure 14-1 TENTATIVE SOIL BORING AND TEMPORARY MONITORING WELL LOCATIONS. SITES 3 & 19 - PHASE I

Proposed sample location changes for Site 3.

## FIELD TASKS/DATA EVALUATION SUMMARY

### NAS PENSACOLA - SITE 7

The following is a brief summary of field tasks conducted to date at Naval Air Station Pensacola (NASP) Site 7 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding amended sample locations follow the summary.

#### Aerial Photograph Analysis

A review of available aerial photographs of Site 7 dating from 1951 to 1989 did not reveal any significant areas which might represent potential sources of contamination for the site area.

#### Site Reconnaissance

During the site reconnaissance, visual inspections were made around Building 1713, the fire training tower, the possible former burn areas, and the remaining general vicinity. It was noted that Building 1713 is presently boarded-up to prevent entry. In addition, the possible former burn areas near the fire training tower and Building 1713 are grass covered and appear undisturbed. No stained soils or significantly stressed vegetation was observed at the site and all HNu readings taken on site were within background levels.

#### Surface Emission Survey

An OVA was used to monitor surface emissions across two gridded areas, Grids A and B on Site 7. Grid A covers former burn area B and the immediate surrounding areas. Grid B covers the area surrounding Building 1713 and former burn area A. Each grid was developed with 25 foot centers. All readings taken on each of the two grids were found to be at or near background levels (< 1.0 ppm).

A Mini-Ram particulate air monitoring device was used to determine whether the site represents a source of particulates in the air. As a result of the particulates survey, the site does not appear to be a source of particulates.

#### Habitat/Biota Survey

A habitat and biota survey was conducted to assess on-site terrestrial habitats and to identify rare, threatened, and endangered species. No significant findings resulted from the habitat and biota survey with the exception that former burn area B was noted to have sparse vegetation.

#### Geophysical Survey

A geophysical survey was conducted across Grids A and B at Site 7 using an EM-31 electromagnetic conductivity instrument and a G-856AX proton precession magnetometer. The results of this survey indicated that anomalous areas are present within the Grid A area. Most of the anomalies are linear in nature. A portion of these linear anomalies indicate the presence of buried pipelines or utilities while others are likely related to overhead power lines. A single area located approximately 50 feet east of former burn area B contained a non-linear anomaly which is indicative of a buried metallic object. Monitoring wells and boreholes located near these areas may require slight shifting to avoid damage to underground pipes or utilities that may be present.

#### Soil Head-Space Survey

A soil head-space survey was conducted across Grids A and B at Site 7 using a hand-operated bucket auger and an OVA. Soils were composited across five foot intervals until the water table was encountered and screened for volatile organic compounds (VOCs). Groundwater generally occurred 7 to 10 feet below land surface at Site 7, resulting in the collection of two composite soil samples from each location.

The results of the head-space survey indicate that VOCs may be present in the soils of both Grids A and B. Several areas of soil within Grid A had head-space readings ranging from 1 to 20 ppm above

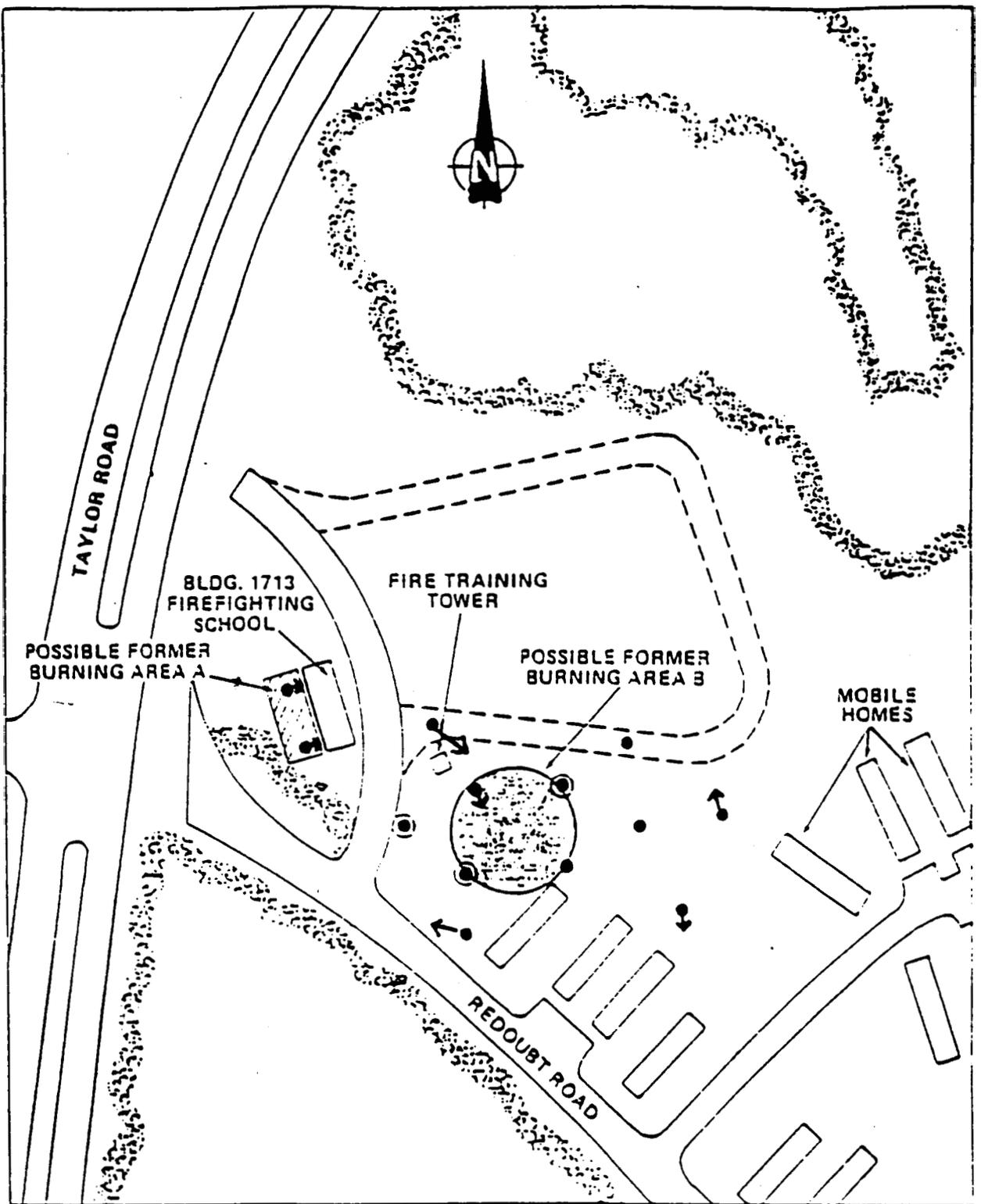
background across both the shallow and deep intervals sampled. The tentative Phase I sampling locations generally offer good coverage of these areas, however it is recommended that five soil boring locations each be moved a short distance (approximately 10 feet) in order to improve this coverage (see Figure 14-1).

Soils sampled within Grid B were also found to possibly contain VOCs with head-space readings ranging from 1 to 10 ppm above background across both intervals sampled. These soils were found primarily along the western edge of Building 1713. Based on this survey it is recommended that the two soil boring locations in burn area A each be shifted to the east approximately 10 feet in order to sample these potentially contaminated soils (see Figure 14-1).

#### Recommendations

The results of the field test conducted to date indicate that seven soil boring locations on Site 7 should be re-evaluated. Amendments are based on the results of the soil head-space survey conducted on Grids A and B and involve re-evaluation of one location (see Figure 14-1). Additional minor sampling locations may be required in order to further avoid any subsurface variations on the site.

Doc. Num. 513



SOURCE: U.S. Naval Air Station, Pensacola, Florida, 1988



KEY

- Tentative Soil Boring
- Tentative Temporary Monitoring Well

Figure 14-1 TENTATIVE SOIL BORING AND TEMPORARY MONITORING WELL LOCATIONS. SITE 7 - PHASE I

*Proposed Sample Locations  
+ C.T. 7*

**FIELD TASKS/DATA EVALUATION SUMMARY**  
**NAS PENSACOLA - SITE 9**

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 9 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 9 dating from 1951 to 1989 did not reveal any significant areas that might represent potential sources of contamination in the site vicinity. The site was observed to be partially covered with asphalt pavement in all of the aerial photographs from April 1976 to October 1989. It is apparent in the April 1970 photograph that the surface across the site was disturbed by trenching of the industrial sewer line.

Site Reconnaissance

During the site reconnaissance, visual inspections were made in the area west and southwest of Building 3460. The northern half of the site is covered by an asphalt-paved parking lot and cement sidewalks. The southern half of the site is covered with grass. An area less than 100 feet in diameter in the extreme southern portion of the site adjacent to the industrial road is covered with brown grass; however, the vegetation is not thought to be stressed as a result of contamination. An above-ground metal pipe, presumably for steam, is oriented north to south and located on the eastern portion of the site. Several electrical utility manholes and a sewer manhole were noted in areas around all of the corners of this asphalt parking lot except for the northeast corner.

### Surface Emissions Survey and Particulate Air Sampling

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 9. One reading was noted to be 0.5 part per million (ppm) above background. No other readings above background were noted on the site. A Hini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

### Radiation Survey

A radiation survey was conducted at Site 9 using an Eberline ESP-2 with a 2-inch Bicron sodium iodide gamma scintillation probe, as well as a Bicron Micro-R-meter. Slightly elevated readings above background were observed over several areas of the site. Specifically in the northern portion of the site in the northwestern part of the parking area and in the south-central portion of the site in the grass-covered area located east of Murray Road. However, the site does not appear to be a source of radioactivity.

### Recommendations

The results of the field tasks conducted to date indicate that no amendments to the sampling locations presented in the Site 9 work plan are required.

**FIELD TASKS/DATA EVALUATION SUMMARY**  
**NAS PENSACOLA - SITE 10**

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 10 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 10 dating from 1951 to 1969 did not reveal any significant areas which might represent potential sources of contamination for the site area. Culvert 751, located in the northwest portion of the site is apparent on the April 1970 photograph. Slash pines, which were planted on the eastern boundary of the site, were observed in the November 1986 photograph.

Site Reconnaissance

A site reconnaissance was performed over the site area south of Taylor Road and east of Hurray Road. The area is grass-covered with large live oak trees, and the soil is sandy. An asphalt drainage ditch is located along the northern boundary of the site, a concrete drainage ditch is located in the northwest corner of the site, and a brick culvert is located in the west portion of the site, and a brick culvert is located in the west portion of the site. The site surface slopes gently to the east-northeast, and surface run-off from Site 10 is directed into the concrete ditch east of the site.

Surface Emissions Survey and Particulate Air Sampling

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 10. One reading was observed to be 1 part per million

(ppm) above background in the northeast portion of the site. No other readings above background were noted on the site.

A Mini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

#### Habitat/Biota Survey

A habitat and biota survey was conducted to assess on-site terrestrial habitats and to identify rare, threatened, and endangered species. Sand live oak trees cover most of the site, and planted slash pine trees are located on the eastern boundary of the site. Common bird and small mammal species were observed to be abundant on the site. No rare, threatened, or endangered species were noted at the site.

#### Radiation Survey

A walkover radiation survey was performed over the site area using an Eberline ESP-2 with a 2-inch Bicron sodium iodide gamma scintillation probe, as well as a Bicron Micro-R-meter. Slightly elevated readings above background were observed in the northwest portion of the site along Murray Road in the area of the culvert and also the concrete drainage ditch. A few readings above background were observed in the northeast area of the site.

#### Geophysical Survey

A geophysical survey was performed over the site area using an EX-31 electromagnetic terrain conductivity instrument and a G-856AX proton precession magnetometer. The results of the survey indicate that linear EM-31 and magnetic anomalies observed along Murray Road are associated with utilities located in this area. A linear EM-31 and magnetic anomaly extending northeast from an electrical utility manhole is most likely associated with buried electrical lines. One linear EM-31 anomaly, however, does not have a corresponding magnetic anomaly along the west and south-central site area.

### Recommendations

The results of the field tasks conducted to date indicate that no amendments to the sampling locations presented in the Site 10 work plan are required.

## FIELD TASKS/DATA EVALUATION SUMMARY

### NAS PENSACOLA - SITE 21

The following is a brief summary of field tasks conducted to date at Naval Air Station Pensacola (NASP) Site 21 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding amended sample locations follow the summary.

#### Aerial Photograph Analysis

A review of available aerial photographs of Site 21 dating from 1951 to 1989 did not reveal any significant areas which might represent potential sources of contamination for the site area. However, it was observed that the amount of vegetation (grass) around most of the storage tanks varied from year to year. This feature is likely a result of seasonal fluctuations. In addition, the removal of the above ground storage tanks previously existing north of Radford Blvd. was noted in the April 1976 photograph.

#### Site Reconnaissance

A site reconnaissance was performed across Site 21 which included the grassy field north of Radford Blvd. as well as the other developed areas south of Radford Blvd. Areas were generally bare, but were noted at the former tank locations north of Radford Blvd. However, no odors, stains or vapors were observed in these areas. South of Radford Blvd., a small area of stained soils which had petroleum odors were observed 10 to 15 feet southeast of the fence near Tank No. 643. Overall, the grassy areas outside the storage tank fences appeared healthy.

### Surface Emission Survey

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 21. Areas adjacent to Radford Blvd. and the existing above ground storage tanks displayed OVA readings 2 to 5 ppm above background levels. In addition, methane was detected at concentrations of 2 to 6 ppm near an exposed sewer pipe located south of Tank No. 643. No other significant readings above background were noted on the site.

A Mini-Ram particulate air monitoring device was used to determine whether the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

### Habitat/Biota Survey

A habitat and biota survey was conducted to assess on-site terrestrial habitats and to identify rare, threatened, and endangered species. One plant which is protected by Florida Law, the Sea Oat, was found existing in the southern portion of a drainage ditch on Site 21 and also along the beach front area adjacent to the site.

### Geophysical Survey

A geophysical survey was performed over the site area using an EM-31 electromagnetic terrain conductivity instrument and a G-856AX proton precession magnetometer. This survey was conducted only on the Site 21 area located north of Radford Blvd. due to the widespread presence of steel reinforcement wire within concrete paved areas and buried utilities south of Radford Blvd.

The results of the survey indicate that the EM-31 and magnetic anomalies observed across several areas of Site 21 (particularly along Radford Blvd., Duncan Road and the northern edge of Site 21) are associated with underground utilities located on the site. The data from the two instruments were in good agreement concerning the location of these anomalies, further confirming the presence and probable metallic composition of these utilities. Monitoring wells and boreholes proposed near these areas may require slight location adjustments in order to avoid damaging the underground utilities.

### Soil Head-Space Survey

A soil head-space survey was conducted at Site 21 across areas both north and south of Radford Blvd. This survey was performed using a hand operated bucket auger or a small portable solid-stem auger rig, and an OVA. Soils were composited across five-foot intervals until the water table was encountered, and were screened for volatile organic compounds (VOCs). Groundwater was detected at approximately five to six feet below land surface at Site 21, resulting in the collection of one composite soil sample from most locations.

The results of the head-space survey indicate that VOCs may be present in the soils at Site 21, primarily south of Radford Blvd. Specifically, an approximately 100 by 100 foot area immediately south of Tank No. 643 had headspace reading up to 1,000 ppm. In addition, an approximately 150 by 150 foot area immediately south and east of Tank No. 644 had headspace readings up to 900 ppm. Also, east of Tank No. 356 was an approximately 50 by 100 foot area having headspace readings up to 900 ppm. A small thickness of free-product was detected in four borings, two north of Radford Blvd. and two south of Radford Blvd.; however only one of these borings had elevated headspace readings.

In general, the tentative phase I sampling location generally offer good coverage of these areas. However, as discussed below, a few additional soil borings and temporary monitoring wells should be added to improve the coverage.

### Recommendations

The results of the field tasks conducted to date indicate that, as shown on the attached figure, two of the originally proposed soil borings and temporary monitoring wells (south of Tank Nos. 643 and 644) should be moved approximately 30 feet. In addition, as shown on the attached figure, two soil borings and five temporary monitoring wells should be added. These recommended changes are based primarily on the soil headspace results and will generally result in samples being collected more directly in or downgradient from areas likely to be contaminated. Additional minor sampling location adjustments may be required in order to safely avoid any subsurface utilities located on the site.

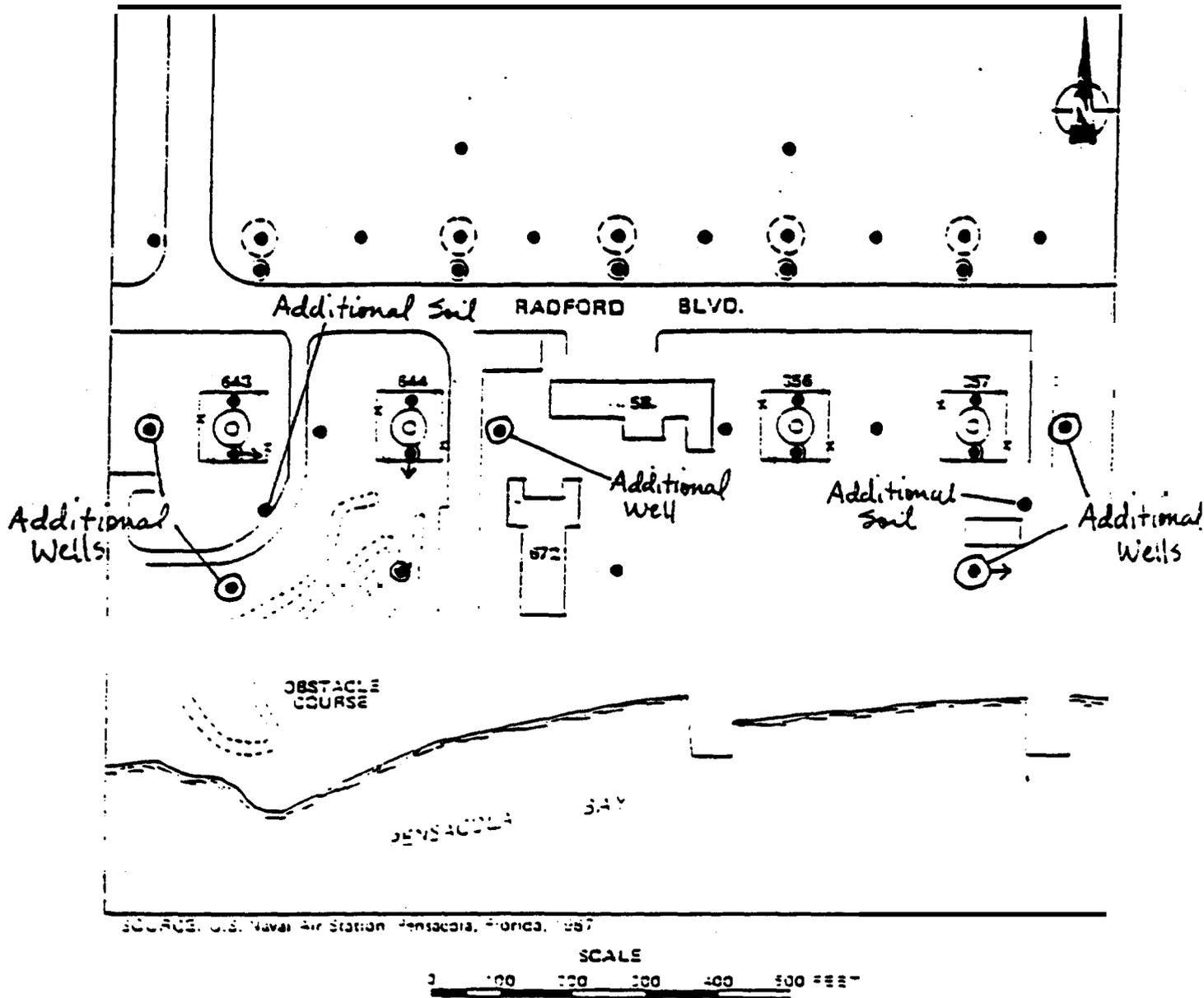


Figure 14-3 TENTATIVE SOIL BORING AND TEMPORARY MONITORING WELL LOCATIONS, SITE 21 - PHASE I

Proposed sample location changes for site 21

**FIELD TASKS/DATA EVALUATION SUMMARY**  
**NAS PENSACOLA - SITE 23**

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 23 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 23 dating from 1951 to 1989 did not reveal any significant areas that might represent potential sources of contamination in the site vicinity. Taylor Road was constructed across the north portion of the site prior to the January 1958 photograph. In the October 1961 photograph, a dark area apparent on the sand surface located west of the drainage ditch covers an area of approximately 50 by 100 feet. It is not clear if this area is stained or covered with low vegetation. Slash pine trees planted on the western portion of the site were observed as early as the March 1981 photograph, and planting continued until sometime prior to November 1986. In the April 1970 photograph, a scar from the trenching of the industrial sewer line was observed on the site surface across the southern boundary of the site and then north through the west-central area of the site.

Site Reconnaissance

A reconnaissance was performed over the site area around the west side of the Field and the area around the drainage system. The area is mostly - with sandy soil and some young slash pine trees

A concrete drainage ditch is located in the central area of the site and is oriented north-south. Four concrete culverts direct surface run-off from Chevalier Field, located east of the site, into the drainage ditch. Generally, the surface slopes gently toward the drainage ditch. During the site reconnaissance, the water was observed to move through the drainage ditch at a rate of approximately 20 feet per minute. A blue sheen was noted on the water surface in some areas of the ditch. Many concrete tiles that line the ditch were missing, and dark soil was observed seeping into the ditch.

A sanitary sewer manhole, located on the east-central area of the site, produced an HNu reading of 80 parts per million (ppm) above background. A 2-inch diameter plastic-covered cable was observed to be exposed at the surface in the southwest area. It is not known at this time if this cable is associated with any of the underground utilities in the area.

#### Surface Emissions Survey and Particulate Air Sampling

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 13. One reading was observed to be 2 ppm above background in the northeast portion of the site. There were three readings observed to be 0.5 ppm above background on the west-central area of the site.

A Mini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site appears to be a minor source of particulates.

#### Habitat Survey

A habitat and biota survey was conducted to assess on-site aquatic and terrestrial habitats and to identify rare, threatened, and endangered species. Planted slash pine trees are located on the west area of the site. An open water wetland is associated with the drainage ditch. Snakes, turtles, frogs, and fish were observed around or in the drainage ditch. No rare, threatened, or endangered species were noted at the site.

### Geophysical Survey

A geophysical survey was performed over the site area using an EM-31 electromagnetic terrain conductivity instrument and a G-856AX proton precession magnetometer. The results of the survey indicate that large linear EM-31 and magnetic anomalies observed along Industrial Road and also in the central portion and along the western boundary of the site are associated with utilities located in this area. A large EM-31 and magnetic anomaly in the southwest area of the site may be associated with the industrial sewer system or other utilities that are located in the southern portion of the site and may turn north in this area and traverse along the western site boundary.

### Recommendations

The results of the field tasks conducted to date indicate that no amendments to the sampling locations presented in the Site 23 work plan are required; however, slight adjustments may be made in order to safely avoid any utilities located on the site.

**FIELD TASKS/DATA EVALUATION SUMMARY  
NAS PENSACOLA - SITE 25**

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 25 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding amended sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 25 dating from 1951 to 1989 did not reveal any significant areas which might represent potential sources of contamination for the site area.

Site Reconnaissance

During the site reconnaissance visual inspection made around Building 780 and in the helicopter scrap yard east of the building. A storage area north of Building 780 contains several 55 gallon drums containing hazardous materials." One soil sample will be placed in this area to check for leaks or spills from these drums. Due to the obstructions (large helicopter parts in the scrap yard. the two proposed monitoring wells may have to be shifted slightly. No other changes in sampling locations based on the site reconnaissance are recommended.

Surface Emissions Survey and Particulate Air Sampling

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 25. Based on this survey, no changes in sampling locations are recommended. A Hi-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

### Radiation Survey

A walkover radiation survey was conducted at Site 25 using an Eberline ESP-2 with a 2-inch Bicron sodium iodide gamma scintillation probe, as well as a Bicron Micro-R-meter, was used to conduct the survey. An area west of the northwest corner of Building 780 was determined to have radiation levels 2 to 3 times background with the ESP-2. E & E recommends that a temporary monitoring well be installed in this area. One other radiation reading of 2 times background was detected near the southwest corner of the grid. The soil boring proposed in this area should be shifted approximately 10 feet south to this area of elevated radiation. No other radiation readings detected during the survey indicate a change in sampling locations.

### Recommendations

The results of the field tasks conducted to date indicate the need for some amendments to the sample locations presented in the Site 25 work plan. E & E recommends relocating the soil boring proposed for the northwest corner of the scrap yard to the northwest corner of the radioactive material storage area near Building 780. The originally proposed location of this boring was beneath a wooden storage shed and would probably be inaccessible. E & E also recommends moving the westernmost temporary monitoring well approximately 75 feet north to the area where radiation readings were 2 to 3 times background. The soil boring originally proposed near this new monitoring well location on the northwest portion of the site should be moved to the previous location of this well (see Figure 1). E & E further recommends shifting the southwesternmost soil boring approximately 10 feet south to the southernmost area of elevated radiation levels discussed above. Other sample locations at Site 25 may have to be shifted slightly in order to avoid obstructions. E & E believes that the proposed amendments in the sampling locations will be more useful in locating possible contaminated areas at this site. All other sampling locations presented in the work plan for Site 25 appear to be in locations suitable for the Phase I assessment.

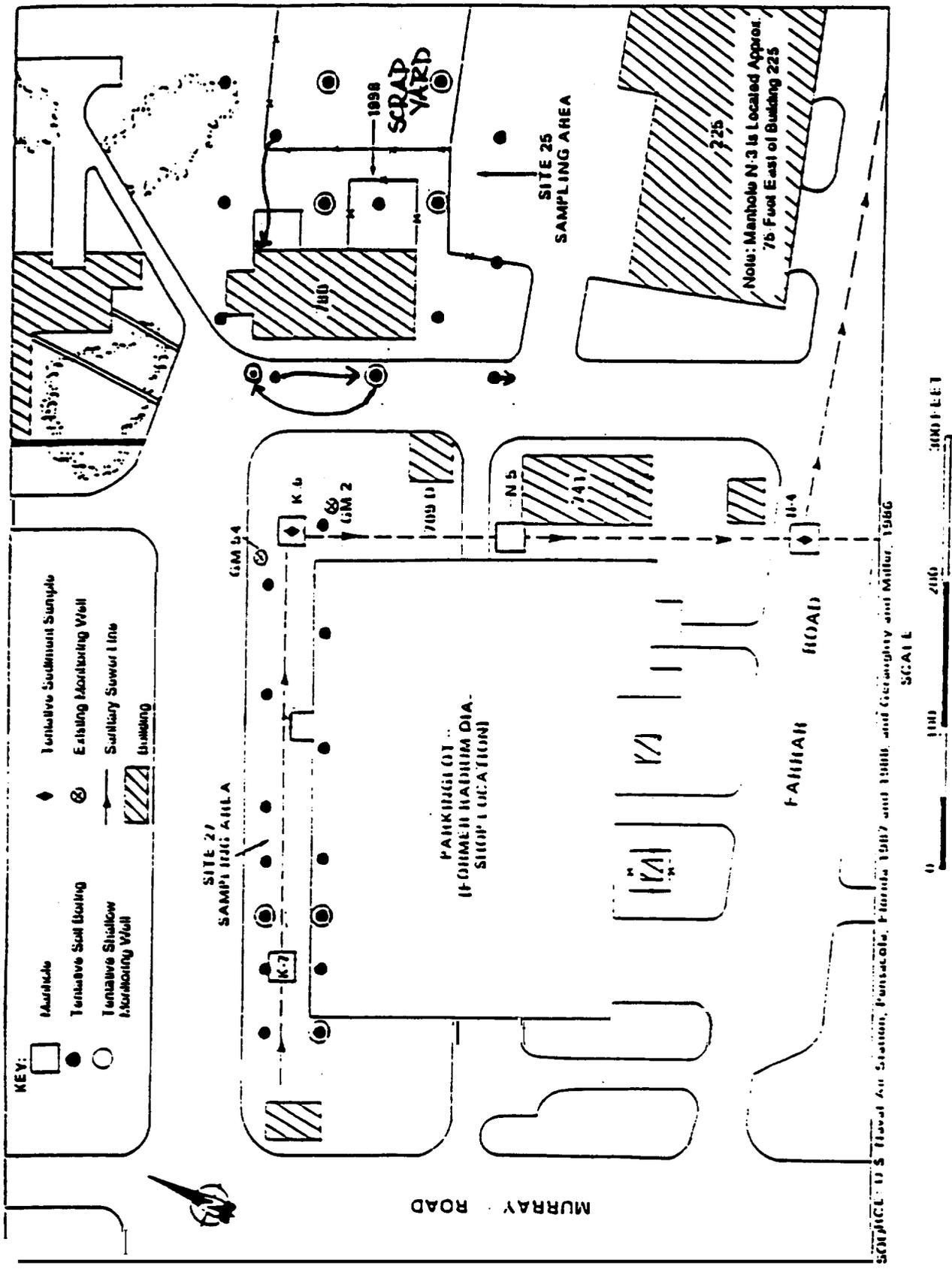


Figure 14 1 TENTATIVE SOIL BORING AND TEMPORARY MONITORING WELL AND SEDIMENT SAMPLING LOCATIONS, SITES 25 AND 27 - PHASE I

PROPOSED SITE 75 SAMPLE LOCATION CHANGES

## FIELD TASKS/DATA EVALUATION SUMMARY

### NAS PWSACOLA - SITE 27

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 27 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding amended sample locations follow the summary.

#### Aerial Photograph Analysis

A review of available aerial photographs of Site 27 dating from 1951 to 1989 did not reveal any significant areas which might represent potential sources of contamination for the site area.

#### Site Reconnaissance

During the site ss , visual inspections were made on and around the bui foundation of former building 709. Ba on the results of the reconnaissance, no changes in sample locations a  
r

#### Surface Emission Survey and Particulate Air Sampling

An OVA was used to monitor surface emissions at Site 27. Based on this survey, no changes in sample locations are recommended.

A Hini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of this survey, the site does not appear to be a source of particulates.

#### Radiation Survey

A walk-over radiation survey was conducted at Site 27 using an Eberline ESP-2 with a two-inch Bicron sodium iodide gamma scintillation

probe as well as a Bicorn Micro-R-Meter was used to conduct the survey. Based on the results of this survey, two areas of elevated radiation readings were detected. One area (3-4 times background) is located north of the building foundation in the north-central portion and encompasses an approximately 600 square foot area. One of the soil borings proposed near this area should be adjusted slightly to be within this area of elevated readings. The second area of elevated radiation (up to 25 times background) is located south of the building foundation in the south-central portion of the site. This area also encompasses approximately 600 square feet. No soil borings or monitoring wells were previously proposed for this area. E & E recommends that one temporary monitoring well and one soil boring should be added in this area.

#### Recommendations

The results of the field tasks conducted to date indicate the need for some amendments to the sample locations presented in the Site 27 work plan (see the attached Figure 14-1). One soil boring in the north-central portion of the site should be adjusted slightly to be in the northernmost area of elevated radiation readings. In addition, one soil boring and one temporary monitoring well should be added to the south-central portion of the site in the southernmost area of elevated radiation readings. The number of borings and monitoring wells originally proposed for the northern portion of the site appears to be the minimum required to assess contamination in that area. Thus, E & E recommends adding one well and one boring in the southern area of the site rather than relocating samples from the northern area. E & E believes that the proposed amendments in the sampling locations will be more useful in locating possible contaminated areas at this site. All other sampling locations presented in the work plan for Site 27 appear to be in locations suitable for the Phase I assessment.

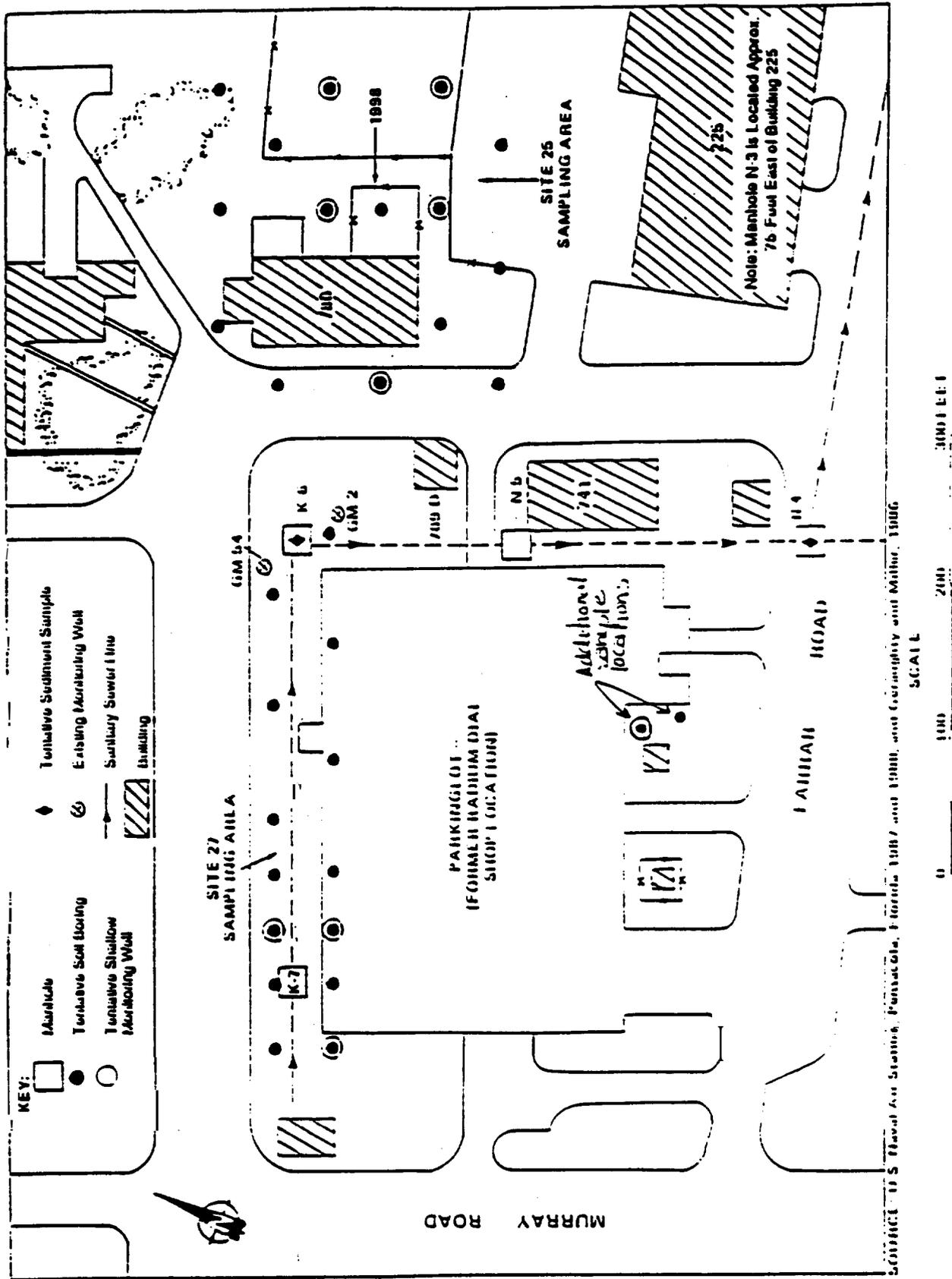


Figure 14-1 TENTATIVE SOIL BORING AND TEMPORARY MONITORING WELL AND SEDIMENT SAMPLING LOCATIONS, SITES 25 AND 27 - PHASE I

PROPOSED SITE 27 SAMPLE LOCATION CHANGES

**FIELD TASKS/DATA EVALUATION SUMMARY**  
**NAS PENSACOLA - SITE 29**

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 29 by personnel of Ecology and Environment, Inc. (E 6 E). Recommendations regarding amended sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 29 dating from 1951 to 1989 did not reveal any significant areas that might represent potential sources of contamination in the site vicinity. The site was observed to be completely paved in all of the aerial photographs.

It is apparent in the April 1970 photograph that the surface across the site was disturbed by trenching of the industrial sewer line. Construction of Building 3460 occurred after May 1973 and was completed by April 1976.

Site Reconnaissance.

During the site reconnaissance, several inspections were made in the vicinity of Building 3460. The entire site area is paved with asphalt etc. An industrial waste sewer line manhole is located immediately south of the southeast corner of Building 3460; an HNU indicator of 1 part per million (ppm) was detected in it. Several small areas of staining were observed on the concrete surface. A faint paint odor was observed to emanate from Building 3460.

Surface Emissions Survey and Particulate Air Sampling

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 29. No readings above background were detected.

A Mini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

#### Habitat/Biota Survey

A habitat and biota survey was conducted to assess on-site aquatic and terrestrial habitats and to identify rare, threatened, and endangered species. No such habitats or species are present on Site 29.

#### Recommendations

The results of the field tasks conducted to date indicate that no amendments to the sample locations presented in the Site 29 work plan are required.

## FIELD TASKS/DATA EVALUATION SUMMARY

### NAS PENSACOLA - SITE 31

The following is a brief summary of activities conducted to date at Navel Air Station (NAS) Pensacola, Site 31 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding Site 31 follow the summary.

#### 1 Photograph Analysis

A review of available aerial photographs of Site 31 dating from 1051 to 1089 did not reveal any significant activities or areas which might represent potential sources of contamination for the site area.

#### Site Reconnaissance

During the site reconnaissance visual inspections were made around Building 648. An area of soil which appears to be stained from paint or paint sludge is located approximately 100 feet north of Building 648 just inside of the fence. One soil boring and temporary monitoring well was originally proposed near this area and will be adjusted slightly, if necessary, to be located in this stained area. No other adjustments in sampling locations based on the site reconnaissance are recommended.

#### Radiation Survey

A walk-over radiation survey was conducted at Site 31 using an Eberline ESP-2 with a 2-inch Bicron sodium iodide gamma scintillation probe, a Bicron Micro-R-meter, and a Surveyor-M ratemeter with an attached PGH probe. As a result of the radiation survey, the site does not appear to be a source of radioactivity.

#### Surface Emission Survey and Particulate Air Sampling

An OVA was used to monitor surface emissions at Site 31. Based on

this survey, the site does not appear to be a source of organic vapor emissions.

A Hini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

#### Biota Survey

A ta and biota survey was : to assess site ti and terrestrial habitats a to identify rare, threatened, n ; i speci . As a resul of the survey, no dangered species or t areas are believed to exi on or near the site area.

#### Recommendations

Based on aerial photographic interpretation and the field casks conducted to dace at Site 31. E & 2 recommends no changes to the proposed soil boring or temporary aonitoring well locations presented in the Site 31 vork plan.

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## FIELD TASKS/DATA EVALUATION SUMMARY

### NAS PENSACOLA - SITE 34

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 34 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding amended sample locations follow the summary.

#### Aerial Photograph Analysis

A review of available aerial photographs of Site 34 dating from 1951 to 1989 did not reveal any significant areas that might represent potential sources of contamination in the site vicinity. Construction of Building 3557 was begun between May 1973 and May 1976 and completed between May 1976 and March 1981. Tanks are visible north of Building 3557 on the March 1981 photograph, and the site area south of the tank farm has been paved.

#### Site Reconnaissance

During the site reconnaissance, visual inspections were made in the vicinity of Building 3557 and the tank farm. The area south of the tank farm is paved with concrete. No evidence of leaks was observed in the tank farm area or along the solvent line. Several 55-gallon drums were observed near the northern wall of Building 3557, but no evidence of leaks or spills was observed. A sanitary sewer manhole is located near the southeast corner of the tank farm area: an HNu reading of 30 parts per million (ppm) was recorded at this location.

#### Surface Emissions Survey and Particulate Air Sampling

An organic vapor analyzer (OVA) was used to monitor surface emissions at Site 34. A reading of 3 ppm above background was noted near a grate located in the south central area of the site north

of Building 3557. A reading greater than 100 ppn was observed inside this grate. No other readings were observed above background during the survey.

A Mini-Ram particulate air monitoring device was used to determine if the site represents a source of particulates in the air. As a result of the particulate survey, the site does not appear to be a source of particulates.

#### Habitat/Biota Survey

A habitat and biota survey was conducted to assess on-site aquatic and terrestrial habitats and to identify rare, threatened, and endangered species. No such habitats or species are present on Site 34.

#### Recommendations

The results of the field tasks conducted to date indicate that no amendments to the sample locations presented in the Site 34 work plan are required; however, some slight adjustments may be made prior to drilling to clear underground lines and pipes.

**FIELD TASKS/DATA EVALUATION SUMMARY**  
**NAS PENSACOLA - SITE 36**

The following is a brief summary of field tasks conducted to date at Naval Air Station (NAS) Pensacola, Site 36 by personnel of Ecology and Environment, Inc. (E & E). Recommendations regarding sample locations follow the summary.

Aerial Photograph Analysis

A review of available aerial photographs of Site 36 dating from 1951 to 1989 provided some information on the developmental history of Site 36, but did not reveal any areas where leaks might have occurred.

Site Reconnaissance

A site reconnaissance was performed over the entire approximately 24,000-foot length of Site 36. The routes of the main sewer line and all branches were traced, and the locations of all manholes were identified. No evidence of leaks was observed.

Surface Emissions Survey

An organic vapor analyzer (OVA) was used to monitor surface emissions along Site 36. Excluding measurements taken at manholes or surface gratings, only slightly elevated readings ( $\leq 4$  parts per million [ppm] above background) were recorded at just 10 locations. In contrast, readings as high as 530 ppm above background were recorded at various manhole and surface grating locations.

Radiation Survey

A radiation survey was performed along Site 36. The most elevated readings (greater than 10,000 counts per minute [cpm]) were recorded on the south side of Building 642, near a storm drain; in manhole B-8A;

between buildings 71 and 104, about **20** feet **east** of the sever line; near the **northwest** corner of Building **627**; and vest of Building **624**. Readings greater than **6,400** cpm (i.e., **two** times the background level) **vere** also recorded **along** line segments south of Building **642**; vest of Building **225**; southwest of Building 3460; vest-northwest of Building **627**; east, southeast, south, and southwest of Building **604**; between buildings **71** and **104**; and vest of Building **624**.

#### Habitat/Biota Survey

A habitat and biota survey vas conducted **to** assess terrestrial habitats and **to** identify rare, threatened, and **endangered** species in areas of **Site 36** not encompassed by other **NAS** sites **where** this activity **has** previously been performed (e.g., the sever line **runs** through large portions of sites 11 and 30). **No** such habitats **or** species were observed in these areas.

#### Soil-Gas Survey

Soil-gas samples vere collected and analyzed with an OVA in survey mode at 322 locations along Site 36. Elevated OVA readings vere most prevalent along the northwest segments of the site (near buildings 648, 649, **753**, 3220, and 3450) anti along the southeast segments **or** the site (between Pensacola Bay and buildings 604 and 636). **An** area of elevated readings **vas** also detected along a 600- to 900-foot section of the main sever line **near** the northwest corner **or** Chevalier **Field**; however, these locations also **exhibited** a large methane component. Elevated readings vere sporadically recorded at locations along the remainder of Site 36.

#### Recommendations

**The** results of the field tasks conducted to date indicate that **no** amendments to the sampling protocol presented in **the** Site 36 **vork** plan are required. **Sample** locations **will** be **keyed** to locations where elevated soil-gas readings vere recorded and then distributed outward from these base points **to** effect full coverage of **Site 36**.