UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

01.02- 10/05/88-00260

IN REPLY REFER TO:

6280/9
FAC

OCT 05 1988

From: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542-5001
To: Commander, Atlantic Division, Naval Facilities Engineering Command, Norfolk, Virginia 23511-6287 (Code 114)

Subj: INSTALLATION RESTORATION PROGRAM: HADNOT POINT INDUSTRIAL AREA RECOMMENDED INTERIM ALTERNATIVES

Ref: (a) "Feasibility Study for Hadnot Point Industrial Area", Prepared by Env Science & Eng Inc of May 88

Encl: (1) CO, NavHosp ltr 6280 371 of 25 Aug 88

1. Request your evaluation of the enclosure and any recommended revisions to the reference document. As indicated by the Hospital, the work place monitoring requirements recommended by the Hadnot Point Feasibility Study exceed the capabilities of the hospital industrial hygiene staff. In order to implement the interim recommendations, other alternatives must be considered.

2. Please evaluate the possibility of contracting for work place monitoring during the Health Risk Assessment currently being planned for the Hadnot Point Area. POC for this matter is Bob Alexander, autovon 484-3034.

T. J. Dalzell

T. J. DALZELL
By direction

Copy to:
CO, NavHosp
CMC-LFL

DOC. NO.: CCET - 00260 - 1.02 - 10/05/88

6280/9

5280
NREAD
AUG 1 1988

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Assistant Chief of Staff, Facilities
Commanding Officer, U. S. Naval Hospital
Assistant Chief of Staff, Manpower

Subj: INSTALLATION RESTORATION PROGRAM MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

Ref: (a) AC/S, Facilities/LANTDIV meeting of 26 July 88 relative to Feasibility Study by Environmental Science and Engineering (ESE)

Encl: (1) Excerpt from Installation Restoration Contract Report by Environmental Service Engineering of May 88

1. During the reference, a report of the subject study was presented to the Camp Lejeune Complex personnel. Five interim alternatives to deal with immediate health risk in the Hadnot Point area of the base were provided by Environmental Science and Engineering (ESE). The AC/S, Facilities has scheduled a meeting at 0900, 2 August 88 and 0900, 5 August 88 at building 1 conference room to further address the Interim Alternatives prior to a 9 August 88 meeting with the Technical Review Committee.

2. Accordingly, it is requested the Natural Resources and Environmental Affairs Officer (NREAO), Assistant Chief of Staff, Facilities, take Interim Alternative 3.1, Water Supply Well Assessment, 3.4, Continued Groundwater Monitoring and 3.5, Cessation of Continuing Sources of Contamination for action. This assignment should include a written review of ongoing NREAD capabilities and ongoing activities, new Installations Restoration Program requirements, and additional NREAD resources required (i.e. funds, personnel, equipment).

3. Commanding Officer, Naval Hospital, Preventive Medicine Unit, in conjunction with AC/S, Manpower Safety Officer, is requested to take Interim Alternative 3.2, Ambient Air Monitoring (see enclosure (1)) for action. A written report for the 2 August 88 meeting mentioned in paragraph 1 above is desired. The report should address ongoing ambient air monitoring of harmful volatile compounds listed in paragraph 3.2 for two Hadnot Point sites depicted on page 2-6 of the enclosure; new Installation Restoration Program monitoring requirements and additional resources required (i.e. funds, personnel, equipment).

DOC. NO.: CLET-00260-1.02-19/05/88

Subj: INSTALLATION RESTORATION PROGRAM MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

4. AC/S, Manpower, Safety Officer is requested to take Installation Restoration Study Interim Alternative paragraph 3.3 of enclosure (1) Underground Work Space Monitoring for action. A written assessment of this requirement for the 2 August 88 meeting arranged by paragraph 1 above, including ongoing monitoring for organic vapors and gases and other problem addressed in paragraph 3.3 of the report, new installation Restoration Program requirements and additional resources required (i.e. funding, personnel, equipment, etc) is desired.

T. J. DALZELL
By direction

3.0 DESCRIPTION OF INTERIM ALTERNATIVES

Five interim alternatives for HPIA were considered to ensure the protection of human health and the environment. The main objective of these options is to reduce immediate health risks. These alternatives differ from the long-term alternatives evaluated by not reducing the groundwater contamination. For this reason, the interim alternatives have not been compared and evaluated for the selection of one best option. All five alternatives prove to be reasonable options, and each should be considered individually.

3.1 WATER SUPPLY WELL ASSESSMENT

Interim Alternative 1 involves the sampling of drinking water wells in HPIA, as well as those nearby which have the potential for contamination. Several water supply wells have been tested previously and shut down; alternative wells have been selected for drinking water use. Interim Alternative 1 entails monitoring potentially contaminated water supply wells, in addition to the routine water treatment plant effluent monitoring which currently takes place. It is recommended that water supply wells are monitored semi-annually specifically for purgeable compounds, MEK, methyl iso-butyl ketone, and xylene. Recommended water supply wells (currently operating) to be resampled include Wells No. 642 and 603. If contamination is found in any of the water supply wells, an evaluation of the water treatment plant would be required to determine if contaminants would be reduced to acceptable levels.

3.2 AMBIENT AIR MONITORING

Interim Alternative 2 involves air monitoring of areas with the potential for high levels of harmful volatile compounds. These areas may include the interiors of buildings near "hot spots" of contaminated groundwater or high levels registered during soil gas analysis (see Appendix C). Compounds which may potentially be detected during air monitoring include

benzene, toluene, and xylene in the fuel farm area; and TCE, T-1,2-dichloroethene, and vinyl chloride directly south of the fuel farm. These compounds can be detected using an HNU photoionizer, an organic vapor analyzer (OVA), or detector tubes. Ambient air monitoring serves the purpose of detecting harmful pollutants which personnel working in HPIA may be exposed to on a regular basis. Sampling should be conducted during varying climatic conditions (i.e., during a dry and rainy period). In the event of compounds being detected above the threshold limit value (TLV) acceptable to humans, immediate measures, such as forced ventilation, should be taken to reduce health risks until permanent remediation measures can be taken.

3.3 UNDERGROUND WORK SPACE MONITORING

Prior to conducting or installing new underground sewer pipes or electrical cables, underground cavities and work spaces should be monitored for the presence of organic vapors and oxygen content (Interim Alternative 3). Three instruments which should be used for monitoring underground work spaces are an explosimeter, an oxygen detector, and a photoionization detector (PID). The explosimeter will determine the level of organic vapors and gases present as a percentage of the lower explosive limit (LEL). The oxygen detector will determine the oxygen percentage (which must be between 19.5 and 23.5 for breathing without supplied air), and the PID will detect organic vapor concentrations. In the possible event of oxygen or organic vapor concentrations being unacceptable, appropriate mitigation measures should be taken.

3.4 CONTINUED GROUNDWATER MONITORING

Interim Alternative 4 consists of continued monitoring of groundwater from the 35 monitor wells, as well as the abandoned drinking water wells. The wells should be monitored for the chemical parameters listed in Section 3.1. Existing monitor wells should be sampled twice per year to more accurately assess the groundwater contaminant plume characteristics.

To date, 29 shallow (25 ft), 3 intermediate (75 ft), and 3 deep (150 ft) monitor wells exist at HPIA (excluding water supply wells). In addition, water supply Wells No. 602, 608, 630, 634, 637, and 652 should be resampled.

3.5 CESSATION OF CONTINUING SOURCES OF CONTAMINATION

Interim Alternative 5 involves the evaluation and discontinuation of practices at HPIA which may result in contamination of the soil and groundwater in a particular area. Examples of practices or existing conditions which may be included in this category are outdated chemical disposal techniques, industrial operations potentially involving spillage of hazardous materials, and abandoned underground storage tanks containing fuel, oil, or hazardous chemicals (i.e., TCE). All practices involving the use of hazardous materials at HPIA should be evaluated for environmental contamination potential, and updated procedures should be instituted. In addition, locations of all underground storage tanks should be identified, and abandoned tanks should be leak tested or abandoned using approved methodologies. Any leaks identified during testing should result in removal of the stored material and cleanup of the contamination.

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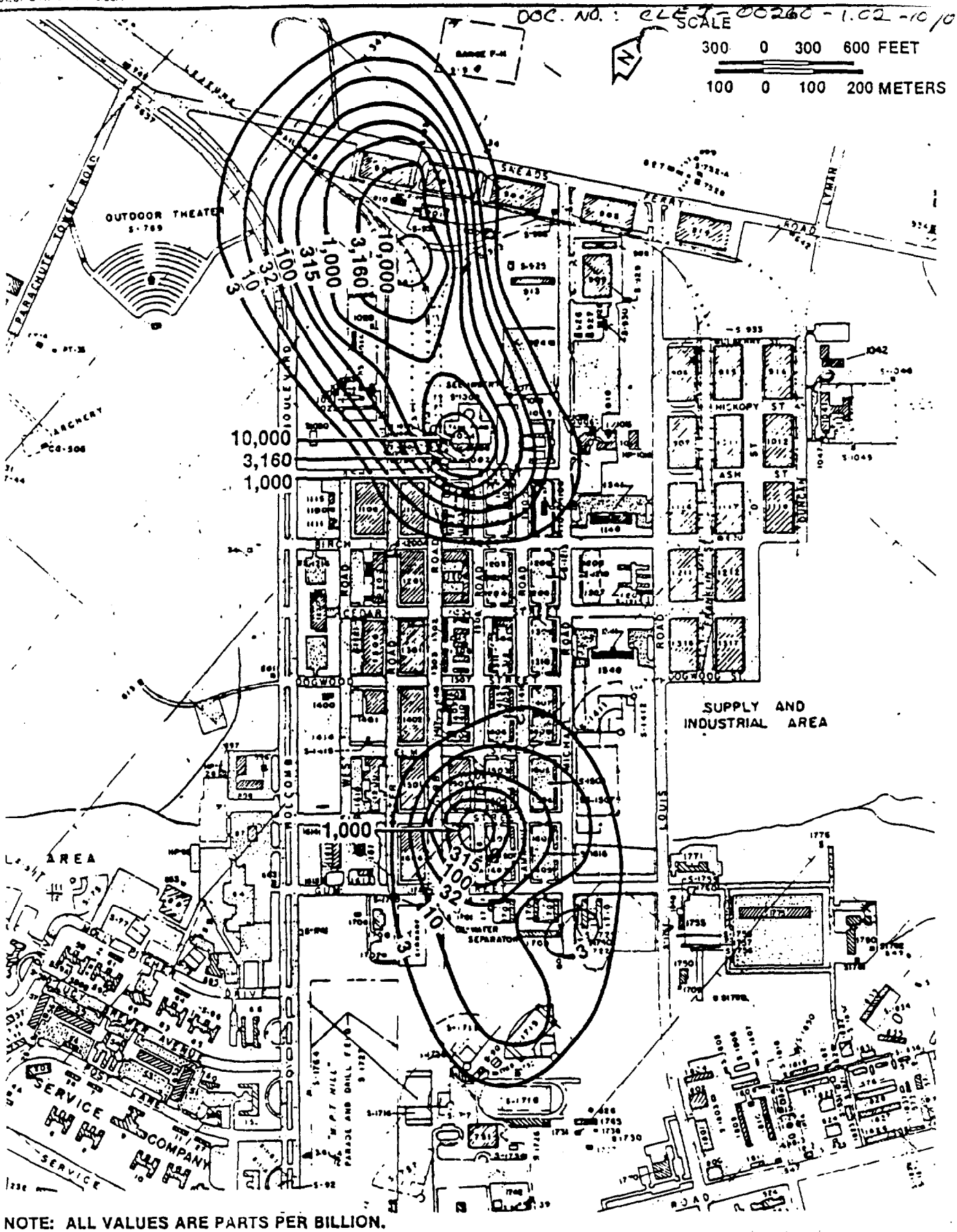

NOTE: ALL VALUES ARE PARTS PER BILLION.

Figure 2-3
TOTAL VOLATILE ORGANIC COMPOUND ISOPLETH MAP — HADNOT POINT INDUSTRIAL AREA

SOURCE: ESE, 1988.

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

DOC. NO.: CLEJ-00260-1.02-10/05/88

DEPARTMENT OF THE NAVY
NAVAL HOSPITAL
CAMP LEJEUNE, NORTH CAROLINA 28542-5008

IN REPLY REFER TO
6280
371
25 Aug 88

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, NC 28542

Subj: INSTALLATION RESTORATION PROGRAM, MARINE CORPS BASE, CAMP LEJEUNE, NC

Ref: (a) Yr ltr 5200 NREAD dtd 1 Aug 88
(b) Environmental Science and Engineering (ESE) Feasibility Study for Hadnot Point Industrial Area, Camp Lejeune, NC (ESE No. 86-601-2000-2150) dtd May 1988
(c) OPNAVINST 5100.23B

Encl: (1) Copy of OH/PM Department Point Paper on the same subject

1. The Naval Hospital cannot perform the Interim Alternative 3.2 Ambient Air Monitoring as you had requested in your letter (reference (a)). We are recommending that monitoring be contracted out.

2. Our decision is based on the information and findings in enclosure (1) which estimates that five (5) additional personnel would be required to complete the monitoring within a one year period. This requirement is one half of the current Industrial Hygiene staff which is 50% below the recommended OPNAV staff levels. Performance of this monitoring would seriously affect their ability to meet the primary mission of baseline/ annual industrial hygiene survey support to the Marine Corps Base and Marine Corps Air Station mandated by reference (c).

3. To support the restoration program, the Naval Hospital can provide technical assistance in contract review and Quality Assurance. Also, if the ambient air monitoring results are excessive, the Naval Hospital would perform actual worker exposure monitoring and/or medical surveillance.

4. My points of contact on this subject are either LCDR R. J. Ellis, MSC, USN (Head, OH/PM Department) or Ms. J. Stegall (Supervisory Industrial Hygienist) at extensions 5707/2707.

H. P. Scott

H. P. SCOTT

ENCL: (1)

DOC. NO.: CLEJ-00260-1.02 -10/05/85

Installation Restoration Program,
Marine Corps Base, Camp Lejeune, NC

I. Objective of Concern:

- Feasibility of the Industrial Hygiene (IH) Branch to perform Ambient Air Monitoring (Interim Alternative 3.2) proposed by contractor study (ESE No. 86-601-2000-2150 dtd May 88) as part of the MCB Installation Restoration Program.

II. Problem-Issue-Concern:

- Determination of air contaminant levels in the interiors of buildings near areas which have chemical contamination of the ground water and/or soil.

III. Background:

- Five (5) interim alternatives were proposed by the contractor to deal with the immediate health risks associated with contaminated ground water and soil gas in the Hadnot Point Industrial Area.

- Ambient Air Monitoring (Interim Alternative 3.2) was requested by MCB to be performed by Industrial Hygiene.

- Interim Alternative 3.2 recommends air monitoring for benzene, toluene, xylene, trichloroethylene, Trans-1, 2-dichloroethene and vinyl chloride in the interiors of buildings near "hot spots" of contamination under varying climatic conditions.

- The Industrial Area involves about 133 buildings; 14 buildings have been identified for initial monitoring.

IV. Alternatives:

A. Naval Hospital IH perform the monitoring

1. Advantages:

- Local, qualified professionals (industrial hygienists/technicians) familiar with MCB personnel and areas.

- Quality of work controlled in-house

- Equipment/consumables for initial monitoring available

- Professional personnel already trained/knowledgeable in monitoring procedures and equipment

- Information gathering useful for future IH work (baseline surveys)

2. Disadvantages:

- Inadequate IH staffing available (current staff of ten (10) IH/technicians at less than 50% of required amount)

- Severely handicap the primary IH mission (as directed by OPNAVINST 5100.23B and MIDLANT) to perform baseline/annual surveys of 100 MCB/MCAS activities. (Projected completion of these surveys already extended into 1991).

- Insufficient transportation (vehicles) available

- Reduce the ability of the IH staff to respond to hazardous substance incidents, employee complaints (unsafe conditions), training, and routine IH survey requests, workplace monitoring needs, health hazard evaluations, etc.

- Other IH committments or emergencies could delay/negatively impact project participation and/or timely completion.

B. Base Maintenance Industrial Hygienist perform the monitoring:

1. Advantages:

- Local, qualified professional familiar with MCB personnel and areas.

- Quality of work controlled in-house

2. Disadvantages

- Limited resources (only one person available; no suitable ambient air monitoring equipment; no certified technicians; no consumables available)

- Not trained in the operation of monitoring equipment

- Other committments for IH/Safety services for Base Maintenance would be inhibited.

C. Base Safety perform the monitoring:

1. Advantages

- Local, safety professionals familiar with MCB personnel and areas.

2. Disadvantages:

- Quality of work not controlled in-house

- Limited resources (no IH/technicians; no suitable ambient air monitoring equipment or consumables available).

- Not trained in operation of monitoring equipment.

- Other committments for safety services inhibited.

D. Contractor Perform the monitoring:

1. Advantages:

- Full-time, dedicated services available (no other interferring committments).

- Adequate resources (staff, equipment, supplies, transportation, etc.) to complete the monitoring.

- Timely results

- Trained staff

2. Disadvantages:

- Time delay due to contracting process

V. Action/Recommendation:

- Perform Alternative D - contractor to perform air monitoring

VI. Confirmation:

- Inhibit performance of primary mission(s) in alternatives A through C.

- Limited resources available to Alternatives A through C;

- Training needed for Alternatives B and C.

- Excessive delay in obtaining qualified staffing.

VII. Implementation Plan

- Plan and requirements to accomplish an initial assessment of the hazards through ambient air monitoring are provided in Attachment (A).

- The plan consists of three steps: (1) Information gathering (2) Two stage air monitoring/data gathering (3) Corrective actions

- Estimated resource requirements (equipment, personnel, time, etc) are identified in Attachment (B).

- 14 buildings in the Hadnot Point Industrial Area identified as having the greatest potential for personnel exposure to the chemicals identified in the feasibility study.

VIII. Approval:

Approved/~~Disapproved~~

H. P. SCOTT
Commanding Officer
Naval Hospital
Camp Lejeune, NC

DOC. NO.: CLEJ-00260-1.02-10/05/88

Implementation Plan

Reference (a): Feasibility Study for Hadnot Point Industrial Area, Camp Lejeune, NC, ESE No. 86-601-2000-2150 dtd May 88

I. Introduction: After reviewing reference (a), it was determined that the following procedures would have to be accomplished in order to complete an initial assessment (ambient air monitoring) of the interiors of buildings for the following underground contaminants: benzene, toluene, xylene, trans-1, 2-dichloro-ethene, vinyl chloride and trichloroethylene.

II. Phase One - Information gathering

A. Identification of maximum risk areas/buildings

B. Area (ft^2) of each location identified as maximum risk

C. Identification of Occupant/Owner of each maximum risk area/building

D. Number of occupants at each location

E. Point of contact for each location

F. Type of operation/process conducted at each location

G. Hazardous Material Inventory and related data (MSDS, HMIS, information, usage rates, methods of use, workers involved, disposal procedures, etc.)

H. Evaluation of Hazardous Material Information

I. Walk-through/Site Visit

III. Phase Two - Ambient Air Monitoring/Sampling Strategy

A. Ambient air monitoring of maximum risk locations utilizing direct reading instruments-minimum sampling should be as recommended in Attachment (B). This initial monitoring should define any areas which might be at increased risk of exposure to the contaminants.

Note: Sampling results should be compared to OSHA standards or other recommended standards (NIOSH, ACGIH, etc.), as appropriate, for general area grab samples rather than to EPA air quality standards. This is based on sampling performed in workspaces for worker exposure rather than in the outdoor environment for general air exposure levels.

B. Personal and general area sampling for 8-hour time-weighted average worker exposures should be conducted in any area which reveal ambient air concentration of the contaminants above one-half of the applicable exposure standards. This

monitoring will provide documentation of any actual employee exposure levels.

IV. Phase Three - Corrective Action. Recommendations for corrective actions to minimize/eliminate the hazard and protect any workers identified at risk based on the sampling data will be formulated and forwarded to the responsible command.

V. Comments.

A. Based on soil gas data and the recommendations from reference (a), fourteen buildings in the Hadnot Point Industrial Area have been identified as having the greatest potential for personnel exposure to the chemical contaminants identified in the feasibility study. The fourteen buildings/areas and pertinent information are identified in Attachment (B).

B. The estimated resource requirements (equipment, supplies, personnel, time, etc.) are also identified in Attachment (B).

Note: If the initial air monitoring of the building interiors exceed 1/2 of the applicable exposure standard, the Naval Hospital, Industrial Hygiene Branch would have to perform additional, extensive personal sampling of personnel working in these buildings.

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Sampling Strategy/Resource Requirement

I. Chemicals To Be Measured:

Benzene
Toluene
Xylene
*Trans-1, 2-dichloroethene
Vinyl Chloride
Trichloroethylene

*Isomer of 1,2-dichloroethylene; measure as 1,2-dichloroethylene

II. Sampling Strategy/Resource Requirements

A. Sampling Strategy:

Bldg	Sq FT	(a) No. Sampling Locations	(b) No. Measurements Required	(c) Manhours Required
1202	51,134	24	720	1800
1601	62,165	24	720	1800
1502	61,940	24	720	1800
1602	4,396	2	60	150
1100	698	1	30	75
1300	45,120	20	600	1500
1004	860	1	30	75
1302	6,240	4	120	300
1002	798	1	30	75
1102	5,040	4	120	300
1709	9,560	4	120	300
901	22,872	12	360	900
902	64,800	24	720	1800
653	108	1	30	75
Total	335,731	146	4380	10950

Table Key:
(a) See B. Sampling Location/Number Table (below)
(b) Number samples x 30.
Note: 5 measurements/readings of each chemical. Readings taken at rate of 1 measurements per 3 minute interval. Total of 15 minutes per chemical. Six chemicals measured.
(c) Number measurements x 2.50 hr Time Required per sample - travel, equipment calibration/checks, analysis, evaluation, report writing, typing, copying, etc.

B. Sampling Location/Number Table

Sq Ft	* No. of Samples
2,500	1
2501 - 5,000	2
5001 - 10,000	4
10,001 - 20,000	8
20,001 - 30,000	12
30,001 - 40,000	16
40,001 - 50,000	20
50,000	24

* Approximately 1 sample per 2500 ft of floor area

III. Resource Requirements:

A. Equipment/Supplies for 1st Stage Monitoring

*Miran IB
Vehicle
PPE appropriate to workspaces monitored (Hard hat, goggles/safety glasses, safety shoes, muffs, etc.)
Admin Supplies

* Or other suitable portable IR or GC equipment such as the HNU Photo Ionization Detector, Miran 1B2, Foxboro Century OVA 128 GC etc.)

B. ** Equipment/Supplies 2d Stage Monitoring.

Loflow personal sampling pump kits (Gilian, SKC, Dupont, etc.)
Charcoal Adsorbent Tubes 100/50 (SKC, etc.)
Tube breakers
Admin Supplies
Vehicle
Primary Autoflow Calibrator (Sensidyne EZCAL1 Digital Flowmeter, Mini Buck Calibrator etc.)

**Detailed list would be developed based on 1st stage monitoring results.

C. Manpower: Based on the estimated man-hours, 5 personnel would be required to complete the first stage of the project within one year. Subsequent monitoring (second stage) requirements would be based on the results of the initial ambient air monitoring. Staff recommended include:

2 - Industrial Hygienist
2 - Technician
1 - Clerk Typist