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From: Commander, Western Division, Naval Facilities Engineering Command
To: Distribution

Subj: SUBMITTAL OF ERRATA SHEETS TO FINAL AIR SAMPLING PLAN

Ref: (a) Department of Health Services ltr of 28 Oct 88

Encl: (1) Errata Sheets to Final Air Sampling Plan

1. Reference (a) provided the Department of Health Services (DOHS) comments on the final Air Sampling Plan for the Installation Restoration Program at Naval Station, Treasure Island, Hunters Point Annex. Based on the DOHS comments, we have revised six pages of Sections 5.2.1 and 6.2.1 of the Final Air Sampling Plan. The revised pages are provided as errata sheets (enclosure (1)) for substitution into the Final Air Sampling Plan.

2. Should you have any questions regarding this matter, the point of contact is Commander, Western Division, Naval Facilities Engineering Command (Attn: Ms. Louise T. Law, Code 1811, (415) 877-7509).

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HUNTERS POINT
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FINAL WORK PLAN VOLUME 2E,
AIR SAMPLING PLAN

DATED 22 JULY 1988

IS ENTERED IN THE DATABASE AND FILED AT
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5.2.2 SOCs

Sampling and analysis for SOC's will be similar to the procedure described by Lewis (1982) and a modification of EPA Test Method T0-13 (EPA, 1988). Samples will be collected using high-volume (200 to 280 liters per minute) sampling techniques. Sampling media will consist of a system of glass-fiber filters to collect the particulate matter and a combination of polyurethane foam (PUF) and XAD-2 resin to trap the vapor phase components. The entire sampling media will be soxhlet extracted in 500 ml of 5 percent diethyl ether in hexane at 3 cycles per hour for 18 hours. The extract is then concentrated to 1 ml, and analyzed by GC/MS procedures. The target compounds are listed in Table 4.

5.2.3 Metals

Airborne particulate matter will be collected on a glass-fiber filter using a high-volume sampler. The filter will be analyzed for the compounds listed in Table 5 using graphite furnace atomic absorption (GFAA). Although this procedure will yield lower detection limits, it deviates from the procedure developed by EPA's Environmental Monitoring Systems Laboratory (EPA, 1983). If problems arise with the GFAA technique, then the filters will be analyzed by the EPA ICAP methodology.

5.2.4 Asbestos

Sampling and analysis for asbestos will be according to procedures outlined in NIOSH Method 7300 (NIOSH, 1984). Samples will be collected on a mixed cellulose ester filter and examined by TEM. The dimensions of each fiber are recorded. If the fiber appears to be asbestos, it is examined by Selective Area Electron Diffraction (SAED) to confirm that its crystalline structure creates a diffraction pattern matching one characteristic of some form of asbestos. A smaller fraction of those structures confirmed by SAED is further evaluated by Energy Dispersive Spectroscopy (EDS), which determines the ratio of the elements present in the structure.

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6.2 Sampling Procedures

6.2.1 VOCs

Two sampling units are required for each sampling location. One sampling unit will employ two cartridges (a primary and a backup) containing CMS adsorbent and the other unit will employ two cartridges (a primary and a backup) containing Tenax GC adsorbent. Two pre-calibrated personal pumps with built-in rotameters and pre-set flow rates will be affixed to a metal stake such that the inlet is 4 to 6 feet (breathing zone) above ground level. Using clean latex gloves, the technician will attach the appropriate cartridge to the pump via Teflon tubing, Teflon ferrules, and swagelok fittings. The pump will then be started and the following information recorded in the sampling data sheet (Appendix B) and placed in the field notebook: location, sampler identification, analyses to be performed, time, ambient temperature, barometric pressure, relative humidity, rotameter reading, and flow rate. The sampler will be allowed to operate for three hours. The flow should be checked at least once about midway through the sampling and the above parameters again recorded. At the end of the sampling period, the above parameters will be recorded and the unit turned off. Using clean latex gloves, the technician will remove the cartridge from the sampling unit and place it in the appropriate culture tubes. The culture tube will be labeled according to the procedures described in Appendix A. The sealed culture tubes will then placed in a friction-top metal can. Using the data recorded in the field notebook, the average flow rate (Q_A) for each cartridge will be computed according to the following equation and recorded:

half (sample side inward), placed in a labeled envelope, and then placed inside a zip-lock bag.

6.2.4 Asbestos

Battery-operated personal pumps (such as manufactured by MSA, Gillian, or SKC) in conjunction with a cellulose ester membrane filter housed in a conductive cassette will be employed for asbestos sampling. Samples will be affixed to a metal stake driven into the ground at an elevation of 4 to 6 feet above ground level. The cassette will be attached to the pump inlet via Teflon tubing. Pumps will be calibrated prior to the initiation of sampling and flow rate adjustments will be made. The cassette cap will then be removed and the pump started. The following parameters will be recorded in the data sheet and placed in the field log book: location number, sampler number, analyses to be performed, time, rotameter reading, flow rate, temperature, and barometric pressure. Periodic checks should be made and the above data again recorded. At the end of the sampling period, final readings will be made and the pump turned off. Cassettes will be capped, removed from the sampling assembly, and placed in labeled zip-lock bags, and stored upright.

Average sampling rates and corrected sampling volumes will be calculated according to procedures discussed earlier.

and early evening westerly winds. Thus, the sampling will coincide with the potential maximum emissions of particulates.

Metals

As is the case for SOCs, established methodology for sampling and analysis of metals is not available. The NIOSH procedure originally proposed was unacceptable to DHS because the detection limits that could be achieved were not conservative enough. In the National Air Monitoring System (NAMS) and in the Inhalable Particulate Network (IPN) studies, the EPA has employed a high-volume sampler and glass-fiber filter for the collection of trace elements in particulate matter (EPA, 1983). A similar sampling methodology will be used at HPA and the glass-fiber filter will be analyzed by modified procedures outlined in that document.

Asbestos

Procedures for the sampling and analysis of asbestos will be according to NIOSH Method 7402 and are described in Section 4 of this sampling plan.

Sampling Duration

DHS has suggested that the air sampling be conducted over a 24-hour period. However, as demonstrated for the VOCs, technical limitations prevent the collection of a 24-hour composite sample. Therefore, the approach taken in calculating the duration of the sampling is to have the sampling coincide with potential maximum concentrations. If sampling were to continue after the decrease of ambient concentrations, the sample would be diluted. This is contrary to the intended goals of the air sampling. For example, summer meteorological patterns consist of winds that are at their maximum between early afternoon (12:00-1:00 p.m.) and late evening (8:00-9:00 p.m.); air samples

Table 5. Target Metals

Metal	Approximate Detection Limit (ng/m ³)*
Silver (Ag)	0.44
Arsenic (As)	0.88
Barium (Ba)	0.44
Beryllium (Be)	0.22
Cadmium (Cd)	0.44
Cobalt (Co)	0.88
Chromium (Cr)	0.44
Copper (Cu)	0.88
Mercury (Hg)	4.4
Molybdenum (Mo)	0.88
Nickel (Ni)	1.78
Lead (Pb)	0.88
Antimony (Sb)	0.88
Selenium (Se)	0.88
Thallium (Tl)	0.44
Vanadium (V)	3.56
Zinc (Zn)	0.44

* Based on analysis by graphite furnace atomic absorption; alternatively, inductively coupled argon plasma (EPA, 1983) may be used if laboratory complications arise.

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Table 2. Summary of Sampling and Analytical Methodologies

Analyte	Sampling			Shipment	Analyses				Target Compounds
	PUMP	Pumping Rate, (l/min)	Filter/Adsorption Medium		Method	Extraction Medium	Analytical Instrument	Detection Limits	
VOC	Low flow	0.4	DMS	On dry ice	T0-2	Thermal desorption	GC/MS ²	0.07-0.10 ug/m ³	VOCs with boiling points less than 80°C (Table 3)
	Low flow	0.1	Tenax	On dry ice	T0-1	Thermal desorption	GC/MS	0.28-0.56 ug/m ³	VOCs with boiling points greater than 60°C (Table 3)
SOC	High-volume	250	Glass-fiber filter and XAD-2/PUF	On dry ice	--	5% diethylether in hexane	GC/MS	0.02-0.1 ug/m ³	SOC, Pesticides and PCBs (Table 4)
Metals	High-volume	1,500	Glass-fiber filter	--	Modified EPA 1983	Nitric and Perchloric Acids	GFAA ⁵	0.22-4.4 ng/m ³	Metals (Table 5)
Asbestos	Medium flow	2.0	NCEF ³	--	NIOSH ⁴ 7402	N/A	TEM ⁶	0.005 fiber/cc	Asbestos

NOTES:

- 1 Liters per minute
- 2 Gas Chromatograph/Mass Spectrometer
- 3 Mixed cellulose ester filter
- 4 National Institute of Occupational Safety and Health
- 5 Graphite Furnace Atomic Absorption
- 6 Transmission Electron Microscope