Weiss Associates Environmental and Geologic Services

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March 14, 1996

Mr. Scott O. Seery
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: **Workplan Addendum**
Shell Service Station
WIC #204-6852-1404
1784 150th Avenue
San Leandro, California
WA Job #81-0422-80

Dear Mr. Seery:

On behalf of Shell Oil Products Company (Shell), Weiss Associates (WA) has prepared this letter in response to your letter to Shell engineer Jeff Granberry, dated January 24, 1996 and our meeting on February 22, 1996. The following are some clarifications and modifications to our scope of work.

Rationale for a Soil Vapor Survey (SVS): A Risk Based Corrective Action (RBCA) evaluation will be used to assess the risk associated with the fuel leak at the above referenced Shell service station. A preliminary review of the existing data indicates that the contaminants in ground water exceed the Tier 1 Risk Based Screen Levels (RBSLs), assuming the most conservative, non-site specific exposure scenarios. Therefore, further site investigation is needed to incorporate more realistic site-specific data and assumptions and to develop an appropriate corrective action plan under a Tier 2 RBCA evaluation.

WA believes that soil vapor data can eliminate the uncertainties involved in the RBCA vapor transport model and, therefore, offer a more direct and reliable estimation of attenuation of contaminants with time and distance. Specifically, potentially complete exposure pathways may include inhalation of vapors migrating from contaminated ground water and/or soils to offsite locations. The Tier 2 recommended calculation methods require estimating a concentration in soil vapor and then modeling migration to the receptor location. Use of actual SVS data will eliminate the need for estimating soil vapor concentrations.

Sampling Techniques: A SVS was selected because of its ease of performance and because of the high probability of collecting usable data that can be used for a RBCA analysis. Specifically, concentrations of chemicals of concern in the soil vapor at subsurface locations are likely to be higher (since they are nearer to the source) than concentrations at the ground surface, resulting in a higher probability of obtaining analytic results above the detection limit. A surface flux chamber approach was not selected because i) it was deemed likely that concentrations of COCs in vapor flux from the ground surface might be below the detection limits in air, and ii) site conditions preclude good access to appropriate sampling locations (surface flux samples typically require a surface with no pavement or vegetation). A SVS sampling protocol is attached in Attachment A.

Sample Collection: SUMMA canisters were selected for sample collection based on their ease of use and transport and the low detection limits achievable from whole air samples. Also, the passivation process used in canister preparation eliminates some of the (minor) concerns associated with sample integrity in Tedlar bags. Sorbent sampling techniques typically result in inadequate detection limits.

Analysis Methodology: The SVS samples will be sent to a California certified analytical laboratory. All samples will be analyzed using EPA Method TO-3 for volatile organic compounds (VOCs) and BTEX. The TO-3 methodology is chosen because it is an EPA-approved method with good repeatability for whole air samples and typical detection limits are quite low (1 parts per billion by volume for BTEX).

Sampling QA/QC Plans: WA's sampling QA/QC plan is in Attachment B.

Sample Locations: Our recommended SVS sample locations are presented in the attached Figure 1. Shell has opted to move the sample locations originally proposed on the property adjacent to the Shell station to the station property (Figure 2). Shell will then avoid the potentially time-consuming process of securing a right-of-entry agreement with the adjacent property owner.

Field Work Schedule: WA will commence sampling once we obtain your agency's approval of this scope of work. Also, to obtain the most conclusive results, WA will schedule the work after several days of dry weather.

Please call us if you have any questions.

Sincerely,
Weiss Associates

Thomas Fojut
FOR
Yi-Ran Wu
Staff Engineer

Carolyn J. Atwood, REA
Senior Project Manager

Enclosures: Attachment A - SVS sampling protocol
Attachment B - QA/QC Plan
Figure

cc: R. Jeff Granberry, Shell Oil Products Company
Jun Makishima, Acting Director
Gil Jensen, Alameda County District Attorney's Office
Kevin Graves, RWQCB
Ravi Arulanantham, RWQCB
Jim Ferdinand, Alameda County Fire Department

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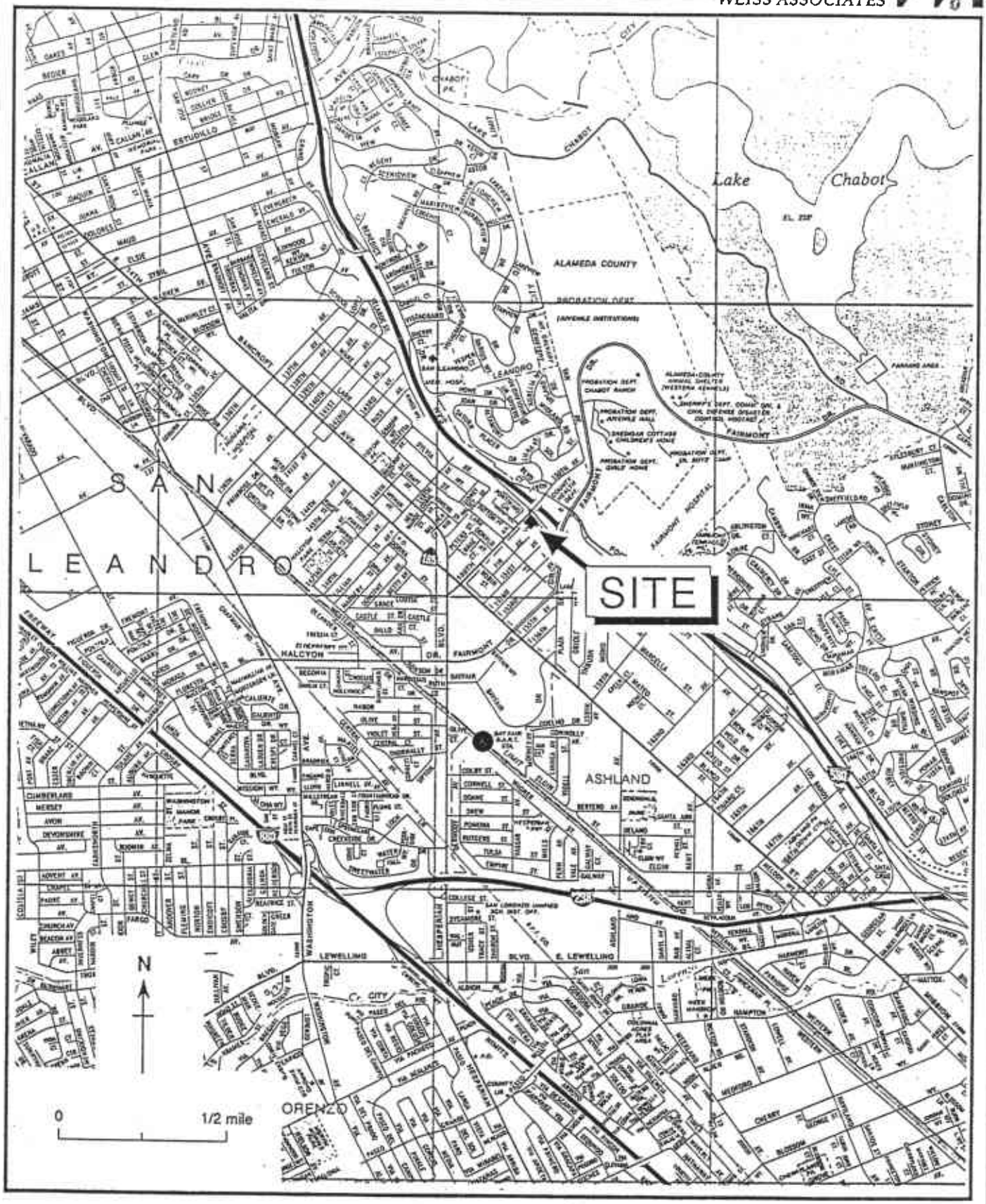

Figure 1. Site Location Map - Shell Service Station WIC #204-6852-1404, 1784 150th Avenue, San Leandro, California

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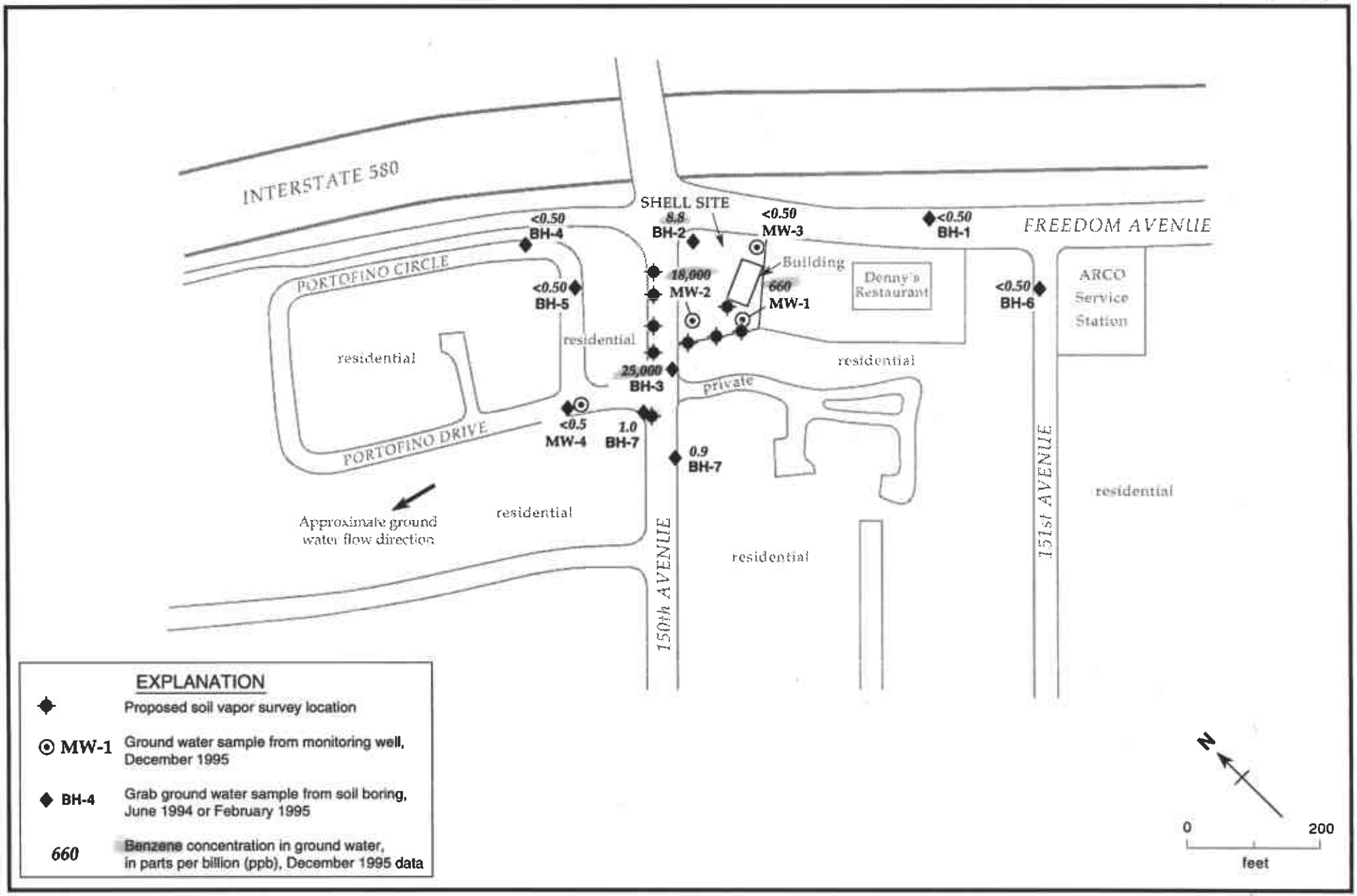

Figure 2. Proposed Soil Vapor Sample Locations - Shell Service Station WIC #204-6852-1404, 1784 150th Avenue, San Leandro, California

ATTACHMENT A

SVS SAMPLING PROTOCOL

I. Probe Placement

A) A clean probe (3/4-inch galvanized steel pipe) is removed from the "clean" storage tube.

B) The soil gas probe is placed in the jaws of a hydraulic pusher/puller mechanism.

C) A sampling drive point is inserted into the bottom of the probe.

D) The hydraulic pushing mechanism is used to push the probe into the ground.

E) If the pusher mechanism will not push the probe into the ground to a sufficient depth for sampling, a hydraulic hammer is used to pound the probe into the ground.

II. Soil Gas Sample Extraction

A) An adapter (Attachment 1) is attached to the top of the soil gas probe.

B) A vacuum pump is attached to the adapter via polyethylene tubing.

C) The vacuum pump is turned on and used to evacuate soil gas.

D) Two to five probe volumes are evacuated before a sample is collected. Since the flow rate is dependent on resistance to flow, the evacuation time is adjusted to ensure the proper volume is extracted.

E) A gauge on the vacuum pump, which measures the resistance to flow in inches of mercury, is continually monitored to make sure there is an adequate flow of gas from the soil. The gauge must read at least 2 inches of mercury less than the maximum vacuum of the pump in order to obtain a valid soil gas sample.

III. Soil Gas Sample Collection

A) With a vacuum pump running, a stainless steel hypodermic syringe needle attached to a 10 milliliter (mL) glass syringe is inserted through the silicone rubber, which acts as a seal, and down into the metal tubing of the adapter (Attachment 1). Tracer Research Corporation's (Tracer Research's) specially designed adapter eliminates the possibility of exposing the sample stream to any part of the adapter and associated tubing.

B) Gas samples only contact metal surfaces and never contact potentially sorbing materials (i.e., tubing, hose, pump diaphragm).

C) The syringe is purged with soil gas. Then, without removing the syringe needle form the adapter, a 2 to 10 mL soil gas sample is collected.

D) The syringe and needle are removed from the adapter and the end of the needle is plugged.

E) If necessary, a second 2 to 10 mL sample is collected using the same procedure.

IV. Deactivation of Sampling Apparatus

A) The vacuum pump is turned off and unhooked from the adapter.

B) The adapter is removed and stored.

C) Using the hydraulic puller mechanism, the probe is removed from the ground.

D) The probe is stored in the "dirty" probe tube.

E) The probe hole is backfilled and capped, if required.

V. Logbook and U.S. EPA Field Sheet Notations for Sampling (Attachments 2-5)

A) Time (military notation)

B) Sample number

C) Location (approximate description - i.e., street names)

D) Sampling depth

E) Evacuation time before sampling

F) Inches of mercury on vacuum pump gauge

G) Probe number

H) Number of sampling points used

I) Observations (i.e., ground conditions, concrete, asphalt, soil appearance, surface water, odors, vegetation, etc.)

J) Backfill procedure and materials, if used

VI. Other Record Keeping

A) Client-provided data sheets are filled out, if required.

B) Sample location is marked on the site map.

VII. Determination of Sample Locations

A) Initial sample locations are determined by client (perhaps after consultation with Tracer Research personnel) prior to start of job.

B) Remaining sample locations may be determined by:

1) Client
   a) Entire job sample locations set up on grid system.
   b) Client decides location of remaining sample locations based on results of initial study, or
2) Client and Tracer research personnel decide location of remaining sample locations based on results of initial sample locations.

ATTACHMENT B

QA/QC PLAN

The following are QA/QC procedures for soil vapor survey:

I. Syringe Blanks

1. Each 10 µL syringe is blanked before use.
2. 1-cc and 2-cc glass syringes are blanked if ambient air concentrations are elevated(greater than or equal to 0.01 ug/L) for components of interest.
3. If ambient air concentrations are greater than or equal to 0.01 ug/L for components of interest, a representative sample of at least two syringes are blanked at the beginning of each day. If representative syringes have no detectable contamination, remaining syringes need not be blanked. If any of representative syringes show contamination, all 1-cc and 2-cc syringes must be blanked prior to use.
4. Syringe blanks are run with nitrogen.
5. If it is necessary for any syringe to be used again before cleaning, it is blanked prior to its second use.

II. System Blanks

1. System blanks are samples of ambient air that are drawn through the probe and complete sampling apparatus (probe adapter and 10-cc syringe) and analyzed by the same procedure as a soil gas sample. The probe is above the ground.
2. One system blank is run at the beginning of each day and compared to a concurrently sampled air analysis.
3. If a probe must be reused before cleaning, It is blanked prior to its second use.

III. Ambient Air Samples

1. Ambient air samples are collected and analyzed at least twice daily to monitor safety of the work environment and to establish site background concentrations, if any for contaminants of interest.
2. All ambient air samples are documented.