PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP)
TRANSPORTATION GARAGE - PLANT 20

SOUTH OYSTER BAY ROAD
HAMLET OF BETHPAGE
NASSAU COUNTY, NEW YORK

Prepared for:

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EXCERPT FOR SOIL GAS INVESTIGATION FROM PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER NWIRP PLANT 20, BETHPAGE, NEW YORK SECTION 46- BLOCK G P/O LOT 9

April 15, 2003

Scope:

Two leaching pools (LP-3 and LP-12) were closed under the UIC program, leaving residual volatile organic compound (VOC) contamination in-place at substantive depths below grade (18-24 feet bgs and 15-17 feet bgs). Furthermore, the study site has been confirmed to be a NYSDEC State Inactive Hazardous Waste Registry (Site No. 130003). A petition for delisting has been submitted by the Navy. The NYSDOH has required that the exposure pathway of inhalation of vapors from the closed UIC structures be evaluated in order to delist the subject property. **Three soil gas samples were collected from three feet underneath concrete pavement, between the building and former pools (LP-3 and LP-12), and analyzed for Volatile Organic Compounds (VOCs) as per NYSDOH requirements to provide data relative to this concern**;

2.0 Phase II Site Investigation

The Phase II site investigation activities are documented in the provided photographic log. Table 1 has been prepared which provides a detailed summary of the field data regarding each individual site feature either screened or sampled during the Phase II. Table 1 also provides a summary of the analytical testing suite per sampling location.

The screening and sampling of the suspect existing or former site features identified above was performed using a combination of exploratory/investigatory technologies. The majority of subsurface sampling was performed using a Geoprobe drilling system. A Geoprobe is a vehicle-mounted machine that utilizes push technology to drive sampling tools into the subsurface to collect representative and discrete soil and groundwater samples. Where necessary, a rotary core drill or hand held rotary hammer drill was used to penetrate concrete pavement in order to obtain samples representative of the areas to be investigated. Hand augers were used to procure shallow samples or bottom sediments from open leaching structures such as the stormwater drywells. Due to a depth to groundwater in excess of 75 feet below grade surface (bgs) and several thick clay layers, a hollow stem auger rig was required to be mobilized to install temporary monitoring wells at two of the four groundwater sampling locations. Sampling of soil gas at a depth of 3 feet bgs was performed

at three locations proximate to two former UIC leaching pools. These samples were collected from within a small diameter sealed borehole installed via a rotary drill.

All drilling equipment was decontaminated prior to use and in between sampling locations by a physical scrub using municipal potable water and an alconox-detergent. Sampling equipment (mill slot Geoprobe well screen, stainless steel auger, etc.) was either decontaminated as described or laboratory-decontaminated dedicated sampling equipment was used (e.g., new polyethylene bailers/rope or poly-acetate Geoprobe tubes, etc.). The hollow stem augers were decontaminated via pressure/steam washing prior to use on site and physical decontamination on-site in between boreholes.

Sampling of Soil Gas in Area between the Building and Former UIC LP-3 and LP-12

The due diligence for the subject property revealed that a delisting petition submitted by the Navy to the NYSDOH had raised the issue of potential soil gas migration from the remaining VOCs residing at depths in excess of 18+ feet bgs at two former UIC structures (LP-3 and LP-12). The NYSDOH correspondence (see Appendix A) had cited a requirement for the evaluation of the concrete paved area between the building and the location of the former UIC structures. The former leaching structures were field located based upon as-built site plans and plotted in spray paint. A soil gas sampling location was selected directly in line with each of these two features (SG-1 and SG-3), within the middle of the first twenty foot portion of concrete pavement located to the west of the former pools. A third location (SG-2) was selected directly in the middle of these two soil gas sampling locations. It was noted that one of these locations, SG-1 was located proximate to No. 2 fuel oil UST (Tank No. 20-10-14), a removed tank (Tank No. 20-01-10) and an abandoned UST (Tank No. 20-01-05). The presence of these tanks may affect the test results.

A concrete core drill was used to excavate a very small (one inch diameter) borehole to a depth of three feet bgs. The drill was moved up and down to ensure that the interior drill cuttings were removed and a clean unobstructed borehole was present. A dedicated length of open-ended new teflon tubing was used and installed into the bottom of the borehole. The tubing was inserted in a new rubber plug which was inserted into the top of the small diameter borehole within the concrete. The area around the plug was sealed with a fast setting hydraulic cement (Dry Loc) used to seal out vapors such as in radon applications. A dedicated vacuum pump was connected to the teflon tubing and an independent calculation was made for each pump to pre-determine the amount of time required to move a minimum of one liter of air through each sorbent tube. The sorbent tubes were then attached and the pumps activated.

Dependent upon each of the pumps measured flow rate (between approximately 58 and 108

cubic feet minute [cfm]), between 1.9 liters and 3.8 liters of soil gas were moved through the sorbent tubes. This information was supplied to the laboratory (H2M Laboratory, Inc.) performing the analysis. The test method, EPA Method TO -17 allows a flowrate from 10 cfm to 400 cfm and up to 4 liters to be collected. The NYSDOH correspondence requested a flow rate not significantly faster than 100 cfm. Method TO-17 was selected as the constituents of concern, 1,3-dichlorobenzene, chlorobenzene, 1,2,4-trimethylbenzene, 1,3, 5- trimethylbenzene, trichlorobenzene, xylenes, etc. and their associated detection limits are achievable with this method.

3.0 Summary of Analytical Testing Data

A copy of the summary analytical testing data is provided as an attachment..

In order to evaluate the soil gas sampling results, comparison was made to the NYSDEC Division of Air Resources, Bureau of Stationary Sources, Guidelines for Control of Ambient Air Contaminants (DAR-1), formerly Air Guide-1, July 12, 2000. These guidelines were developed to protect the public and the environment from the adverse effects of exposure to toxic air contaminants. Specifically, short term guideline concentrations (SGCs, one hour) and annual guideline concentrations (AGCs) were developed to protect the general population from adverse inhalation exposures at off-site industrial properties. The guideline values were derived from the most recently available toxicological data, including the American Conference of Industrial Hygienists (ACGIH) TLVs and Short Term Exposure Limits (STELs) for the year 2000. A summary of those constituents detected and/or quantified above 10 ug/m^3 detection limit is provided on Table 7.

Soil Gas Sample Analytical Testing Results

Detections of soil gas at the three sampling locations were compared to the NYSDEC DAR Bureau of Stationary Sources Annual and Short Term Guidance Concentrations (AGC/SGC).

The soil gas sampling data was evaluated for specific VOCs related to the former LP-3 and LP-12. The overall purpose of these guidelines are for the permitting and calculation of allowable air emission sources. Therefore, the use of these guidelines values for comparison to the soil gas samples at three feet of depth below the concrete paving, approximately 20 feet away from the building, allows for only a limited evaluation of these data with respect to allowable indoor air concentrations. This evaluation is further qualified by the fact that a vacuum pump was used to actively collect the sample, possibly increasing overall concentrations, on a time-weighted basis.

No VOCs were reported above the TO-17 method detection limit (10 ug/m^3) at either of the

two soil gas sampling locations, SG-1 or SG-3 installed directly in line with the former UIC closed leaching pools of concern (LP-3 and LP-12).

Six VOCs (ethylbenzene, benzene, toluene, total xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene) were present however above 10 ug/m^3 at the middle soil gas sampling location, SG-2. Although present above detection, all concentrations were notably very low (within one order of magnitude of the MDL and were below their respective SCG/SCG with the exception of benzene at 12 ug/m^3). The concentration of benzene reported was significantly lower than its short term guidance concentration of 1,300 ug/m^3 but higher than its extremely conservative annual guidance value(AGCs) of 0.13 ug/m^3. It was noted in the field that this sampling location was proximate (as compared to other sampling locations) to the location of the former, abandoned and recently in-service USTs (removed Tank No. 20-01-10, abandoned Tank No. 20-01-05 and recently in-service Tank No. 20-01-14). (See Table 7)

4.0 Summary and Conclusions

The Phase II ESA identified recognized environmental conditions and/or remaining potential environmental concerns associated with the subject property as summarized below:

Soil Gas Sample Analytical Testing Results

No VOCs were reported detected at either of the two soil gas sampling locations, installed directly in line with the UIC leaching pools of concern (LP-3 and LP-12) in order to evaluate a potential exposure pathway of VOC vapor migration. This testing was cited as required by the NYSDOH for purposes of delisting of the subject property. Based upon a review of this data, it is anticipated that the data would be supportive of a delisting petition.

Six VOCs were present at very low concentrations at a third sample collected in between the other sampling locations. Only one compound (benzene) was present above a guidance value, a very conservative concentration established as an annual exposure guidance. This sampling location is known to be proximate to several former or existing UST locations. Based upon this fact and no VOC detections at the other two sampling locations, it can be concluded that no evident VOC vapor migration is occurring in the subsurface relative to the residual VOCs present at depth in former LP-3 and LP-12. Incidental VOCs present in soil gas at the SG-2 location are most likely related to the proximate presence of the aforementioned tanks. The low concentrations of soil gas reported at SG-2 are not indicative of a significant release of petroleum product at this location. Furthermore, as only one minor exceedance of an AGC for one compound was detected, the sampling location is approximately 20 feet from the edge of the building and the concrete floor/slab is in good condition, no adverse impacts to the interior of the building are projected. These findings should be confirmed with the NYSDOH and NYSDEC.

5.0 Regulatory Compliance

Based upon a review of the soil gas data, no subsurface vapors were detected as emanating from the former UIC closed leaching pools (LP-3 and LP-12) at concentrations of concern

relative to the indoor air quality of the main building at Plant 20. A third sampling location reported several VOCs at low concentrations and only one above a guidance value. Same appear related to the proximity of several former and existing underground storage tanks but do not appear to evidence a significant release of petroleum product due to the low concentrations reported. It would be prudent to receive and review the integrity test data from the adjoining Tank No. 20-01-14 in order to ascertain if a relationship exists between the soil gas VOCs and the current tank status. An evaluation of the soil gas data was made based upon comparison to applicable guidance values, with respect to the sampling location, and the good condition of the concrete slab floor of the building. Based on the aforementioned, the soil gas data does not indicate a likelihood for adverse impacts to the indoor air quality. These data and conclusions should be provided to the NYSDEC and NYSDOH for confirmation.

Table 7
Summary of Volatile Organic Compounds (VOCs) Detected at Soil Gas Sampling Locations

Parameter (ug/m^3)	SG-1	SG-2	SG-3	SCGs	ACGs
Ethylbenzene	ND	16	ND	54,000	1,000
Benzene	ND	**12**	ND	1,300	.13
Toluene	ND	74	ND	37,000	400
m+p xylene	ND	73	ND	4,300	700
o-xylene	ND	27	ND	4,300	700
1,2,4-Trimethylbenzene	ND	35	ND	---	290
1,3,5-Trimethylbenzene	ND	42	ND	---	290

ND - Not Detected.
Bold # indicates detected concentration exceeds either or both of the NYSDEC DAR SGCs/AGCs.

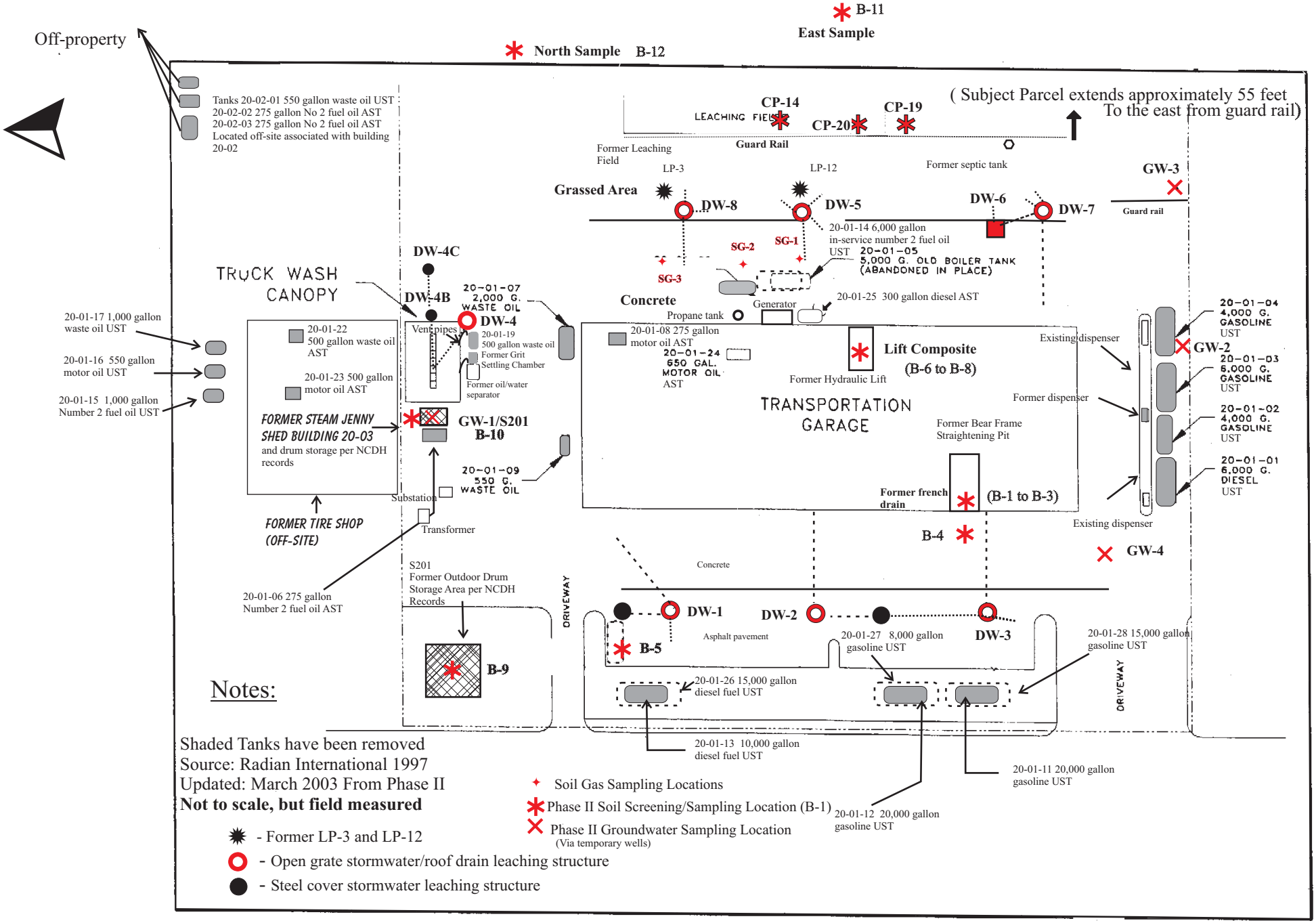

Figure 1 - Phase II Environmental Site Assessment Screening/Sampling Locations