PHASE II ENVIRONMENTAL ASSESSMENT
OF THE
AMERICAN BREWERY

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EXECUTIVE SUMMARY

As part of the State of Maryland's Brownfields Site Assessment Initiative, the Maryland Department of the Environment (MDE) conducted a Phase II Environmental Site Assessment of the American Brewery site located at 1701 North Gay Street in Baltimore, Maryland. The site assessment was conducted at the request of Struever Brothers, Eccles, and Rouse Inc. Struever Brothers, Eccles, and Rouse Inc. is considering the site for acquisition and redevelopment for office space or a retail/residential complex. Previously, a Phase I investigation was conducted by EA Engineering, Science, and Technology, Inc. (EA) in November 2001.

A sampling plan to characterize the open portions of the 1.89-acre site was prepared by MDE after site reconnaissance and a review of the Phase I investigation. On November 5, 2001 MDE met with Struever Brothers, Eccles, and Rouse Inc. It was decided that due to technical impracticability, the areas under the buildings and the underground lagering rooms would not be sampled nor considered part of the scope of this investigation. Therefore the investigation would be focused on accessible areas only.

The sampling of environmental media included the surface and subsurface soil, and the shallow groundwater media. Six surface (0-2') and four subsurface (4'-6') soil grab samples were collected and sent to the Phase Separation Science, Inc. (PHASE) laboratory to be analyzed for volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), Priority Pollutant List (PPL) metals (Appendix 1), pesticides, and polychlorinated biphenyls (PCBs). Perched groundwater was encountered at only one of the three proposed sampling locations. The temporary well yielded only enough groundwater for VOC analysis at PHASE.

A toxicological evaluation, assuming a residential scenario, was prepared by MDE for the American Brewery site utilizing the analytical data provided by PHASE. The residential scenario was used in order to establish a baseline for the minimum risk to human health posed to any population that may become exposed to contaminants found on site. Commercial use scenarios are expected to pose lesser levels of risk and should be evaluated to reflect appropriate land use scenarios.

In evaluating risk to human health, maximum concentrations of all chemicals detected in the sampling were compared to U.S. Environmental Protection Agency (EPA) Region III Risk Based Concentrations (RBCs) and assumed 100% bioavailability of each contaminant. The evaluation of groundwater was performed as if the water were being used as drinking water. Relevant toxicological data and RBC values from structurally similar compounds were used for some of the chemicals with no corresponding RBC value.

The toxicological evaluation failed to reveal an unacceptable risk to all residential populations. The only contaminant detected above benchmark values was arsenic. The concentrations at which arsenic was detected on site might be indicative of natural occurrence in soils.

I. INTRODUCTION

MDE conducted a Phase II Environmental Site Assessment of the American Brewery site utilizing the standards of the American Society for Testing and Materials (ASTM, 1998). The report addresses potential environmental conditions that may pose a risk to human health and the environment and impair the development of the property by Struever Brothers, Eccles and Rouse Inc. for a proposed retail/residential complex.

During the November 5, 2001 meeting with MDE and Struever Brothers, Eccles and Rouse Inc., it was decided that due to technical impracticability, the areas under the buildings and the underground lagering rooms would not be sampled nor considered part of the scope of this investigation. Instead, only the open space areas of the site were included in this site assessment.

Six surface soil and four subsurface soil grab samples were collected by direct push (Geoprobe®) technology and analyzed for the petroleum hydrocarbons benzene, toluene, ethylbenzene, and xylene (BTEX), cPAHs, PCBs, and metals concentrations using immunoassay and XRF techniques. Select soil samples were analyzed by PHASE for VOCs, SVOCs, PPL metals, cyanide, pesticides and PCBs. Due to the lack of shallow groundwater encountered during the investigation, only one groundwater grab sample was collected and analyzed by PHASE for VOCs.

II. BACKGROUND

A. Site Location

The 1.89-acre American Brewery site is located at 1701 North Gay Street in Baltimore City, Maryland. The site is located on the Baltimore East, quadrangle 7.5-minute topographic map at approximately 39° 18.06' North latitude by 76° 35.26ə West longitude (U.S.G.S., 1953 and figure 1). The Maryland grid coordinates are approximately 538,500 feet North by 912,875 feet East. The deed reference for the site is SEB/5174/468. The tax description is section 21, block 1471 lot 19, group 81. The use is exempt (figure 3).

B. Physical Setting

The relatively flat 1.89-acre site is situated approximately 120 feet above mean sea level. Regionally, topography slopes gently to the southeast. The site is situated in a densely populated residential section of central Baltimore City. The site is bordered along the south by residential row homes. To the east are Patterson Park Avenue and a vacant lot. North Gay Street forms the northwest border of the site and East Lanvale Street forms the northeast border (figure 2). Residential row homes are found along each road surrounding the site.

C. Site History and Land Use

The subject property was developed on vacant land leased from Charles Rogers in 1863 as the John F. Wiessner Brewery. Major expansions occurred at the site in 1873 and 1880 during which three-story deep stock cellars were constructed. In 1886, a new brew house, an engine and boiler room, and a new mansion were constructed on the site. The five-story brew house has a unique architecture style classified as Norman Gothic or "Circus Architecture." In 1892, a two-story brick and wood office building west of the mansion was constructed. In 1899, a three-story warehouse and a stable were constructed. In 1919, the brewery closed due to prohibition, but remained under the Wiessner's family ownership. The American Malt Company purchased the brewery in January 1931 and used the brewery to produce malt until the repeal of prohibition in March 1933. At that time, the company, operated by the Fitzsimmons family, changed its name to American Brewery, Inc. In 1973, the brewery closed and the site was listed on the National Registry of Historical Places. After the buildings stood vacant for 5 years, it was donated to the City of Baltimore, who in turn, leased the site to the East Baltimore Development Corporation who planned to redevelop the site. A series of arson fires in 1986 damaged several buildings and the plans for redevelopment were abandoned. As a result of the fire damage the refrigeration plant, the machine shop, and the boiler room were demolished between 1992 and 1994 (EA Engineering, 2001).

D. Adjacent Property and Land Use

Properties adjacent to the site are now primarily residential row homes. The 1890 land map depicted nearby properties as being vacant, with Standard Brewery just northeast of the site, and a bowling alley and hothouses north of the site. In 1906, the G. Bauernschmidt Brewery was located just south of the site (EA Engineering 2001).

E. Summary of Previous Assessments

The only other known environmental assessment was a Phase I Environmental Site Assessment conducted by EA in November 2001. A site reconnaissance, review of historic maps and information revealed the following potential hazards and impacts to the site:

- A vent pipe indicating the presence of an underground storage tank (UST).
- Two USTs, two boiler rooms and a machine shop identified on Sanborn maps.
- A small brick building identified on a 1982 historic map as containing transformers.
- A 55-gallon drum labeled 1,1,1-trichloroethene, an unlabelled 55-gallon drum, aged lighting fixtures likely containing mercury or PCBs, probable lead-based painted walls and asbestos containing building materials were observed in the warehouse.

III PHASE II ACTIVITIES

A. Scope of Assessment

After meetings and site visits conducted in October and November 2001, it was determined that further characterization of the site was required. As a result, on-site surface and subsurface soils, and groundwater grab samples would be collected and screened by MDE personnel and analyzed by PHASE.

Six surface soil and four subsurface soil grab samples were collected by Geoprobe® technology and analyzed for cPAHs, PCBs, and metals concentrations using immunoassay and XRF techniques. These ten soil samples were also analyzed by PHASE. Select soil samples were analyzed by PHASE for VOCs, SVOCs, PPL metals, cyanide, pesticides and PCBs. Due to the lack of shallow groundwater encountered during the investigation, only one groundwater grab sample was collected and analyzed for VOCs.

B. Field Explorations and Methods

Site visits were conducted by MDE in October and November 2001 prior to sampling. Reconnaissance of the site and potential sampling locations were determined at that time. The presence of nuisance dumping was observed. Physical hazards observed on the site included scattered broken glass, stray dogs, construction and demolition debris.

C. Sampling and Analytical Methods

1. Soil Sampling and Analysis

Six surface and four subsurface soil grab samples were collected during this investigation. Surface and subsurface soil samples were collected with disposable scoops and Geoprobe® technology. Six surface soil (0-2') and four subsurface soil (4'-6') samples were analyzed by field screening. Two surface soil samples were submitted to PHASE for analysis of VOCs, SVOCs, PPL metals, and cyanide. Eight other surface and subsurface soil samples also were sampled for the above parameters in addition to pesticides/PCBs. The samples were analyzed by PHASE using EPA methods.

Analysis by field screening techniques included immunoassay screening for cPAHs and PCBs using Strategic Diagnostics, Inc. (SDI) immunoassay test kits on a SDI RaPID Photometric Analyzer and XRF screening for metals on a Spectrace QuanX Analyzer System with an electronically cooled detector. MDE personnel conducted all field screening.

The metals analytical results from the fixed laboratory were compared to XRF metal screening results to test for correlation (see Table 1 and Appendix 3). A regression analysis that compared these results indicated an r^2 value of greater than 0.80 between

laboratory and XRF data. The field screening data was then corrected using the equation of the linear regression for the fixed laboratory data and XRF data of each analyte ($y = mx + b$), where y equals the corrected value, x equals the uncorrected value, m equals the slope of the linear regression, and b equals the y-intercept of the linear regression. The corrected XRF data was then used to further characterize the site by verifying the absence of contamination in samples analyzed only by XRF techniques. For metals where the fixed lab results were below the detection limits, data was determined to correlate if the XRF determined value was below the fixed laboratory detection limit for 80% of the samples. XRF data correlated at acceptable levels with the fixed analytical data for arsenic, lead, nickel, and zinc. The low or undetectable concentrations of antimony, cadmium, manganese, mercury, selenium, silver, and thallium revealed by XRF and fixed analytical data demonstrates agreement with MDE's field screened results and the analytical results from PHASE (refer to Table 1 and Appendix 3).

Table 1. Correlation for Metals Data

	S-1		S-1A		SS-1A		S-3		SS-3		S-4		SS-4		S-6		SS-6		S-7		R^2
	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	Field Screen	Fixed Lab	
SB	2.49	<2.5	ND	<2.5	ND	<2.5	.723	<2.5	.971	<2.5	ND	<5	ND	<5	1.07	<2.5	1.58	<2.5	.742	<2.5	*
AS	5.89	<2	6.53	3.1	6.3	<2	23.8	16	4.88	<2	4.69	<2	9.3	<2	4.24	2.2	4.77	4.1	4.17	<2	0.980
CD	.706	<2.5	ND	<2.5	.203	<2.5	.592	<2.5	.305	<2.5	ND	<5	ND	<5	ND	<2.5	.531	<2.5	ND	<2.5	*
CR	91.4	5.2	90.7	3.3	129.9	7	71	12	66.4	11	109.3	<4	113	<4	80.2	12	89.9	13	82.3	10	0.121
CU	12.2	9.2	8.04	<2.5	5.68	<2.5	15.8	9.6	23.1	13	31.3	30	25.9	33	35.2	26	16.6	15	26.1	22	*
PB	18.3	<2.5	14.7	<2.5	16.3	<2.5	10.1	8.1	32.7	6.7	19.7	7.2	19.3	8	64.6	71	17.5	23	52.7	52	0.789
HG	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	*
NI	25.6	<2.5	16.1	<2.5	19.3	<2.5	121.2	60	42.3	17	ND	<5	ND	<5	20.6	11	18.6	4.4	21.2	10	0.989
SE	.453	<2.5	ND	<2.5	ND	<2.5	.563	<2.5	ND	<2.5	.402	<5	.085	<5	.335	<2.5	ND	<2.5	ND	<2.5	*
AG	ND	<2.5	ND	<2.5	.049	<2.5	.782	<2.5	ND	<2.5	ND	<5	.714	<5	ND	<2.5	ND	<2.5	.867	<2.5	*
TL	.151	<2	.072	<2	.326	<2	ND	<2	.129	<2	ND	<2	ND	<2	.327	<2	ND	<2	ND	<2	*
ZN	28.5	6.1	18.4	<2.5	16.1	<2.5	151.3	88	85.2	33	19.8	<5	23.9	<5	118.7	87	33.6	16	95.3	83	0.833

*Asterisks indicate that XRF data and fixed laboratory data show low or undetectable concentrations for antimony, cadmium, copper, manganese, mercury, selenium, silver, and thallium and therefore demonstrate agreement. Chromium showed little correlation.

For cPAHs, PCBs, and hydrocarbons (BTEX), the immunoassay were determined to correlate if the fixed laboratory data was in agreement with the immunoassay determined concentration range for 80% of samples (see Tables 2, 3, 4, and Appendix 3). Eighty percent of cPAHs samples correlated, 100% of PCBs samples correlated, and 100% of BTEX samples correlated. Therefore, the field screening for PCBs, cPAHs, and BTEX correlated with the fixed laboratory data (refer to Tables 2, 3, 4, and Appendix 3).

Table 2. Correlation for cPAHs Immunoassay and Fixed Laboratory Data

	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	S-7
Total Field Screened cPAHs (µg/Kg)	10	ND	ND	ND	ND	77	ND	471	275	956
Calibration range 10-500 (µg/Kg)										
Fixed Lab SVOCs (µg/Kg)	ND	ND	ND	ND	ND	ND	ND	240	85	267
Correlation exists if concentrations occur in these ranges: ≤10; 10 - 500; >500 (µg/Kg)	yes	yes	yes	yes	yes	no	yes	yes	yes	no

Table 3. Correlation for PCBs Immunoassay Data and Fixed Laboratory Data

	S-1	SS-1A	S-3	SS-3	SS-4	S-6	SS-6	S-7
Total Field Screened PCB (µg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND
Calibration range 500-10000 (µg/Kg)								
Fixed Lab Results *No* PCBs detected	ND	ND	ND	ND	ND	ND	ND	ND
Correlation exists if concentrations occur in the following three ranges: ≤ 500; 500 - 10000; ≥ 10000 (µg/Kg)	yes	yes	yes	yes	yes	yes	yes	yes

Table 4. Correlation for BTEX Immunoassay Data and Fixed Laboratory Analysis

	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	S-7
Total Field Screened BTEX (mg/Kg)	ND	ND	ND	ND	ND	0.0ND	ND	0.11	ND	ND
Calibration range 0.9 to 30 mg/Kg										
Fixed Lab BTEX (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Correlation occurs if [ ] is <.9 mg/Kg	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Correlation between the field screened BTEX immunoassay data and fixed laboratory data exists because >80% (83%) of the samples were shown to correlate.

a. Surface

The six surface soil grab samples (see Figure 2 for sampling locations) were collected from 0-2' by direct push methods, hand trowels and disposable scoops. The surface soil samples, designated by the capital letter "S" were analyzed by PHASE for PPL metals, VOCs, SVOCs, and cyanide, utilizing EPA methods. Four of these samples were also tested for pesticides/PCBs. The surface soil samples were also analyzed for metals and cPAHs by XRF and immunoassay field screening techniques. Samples S-1 and S-1A were collected by the former gas pump, behind the bottling plant/warehouse. Location S-1 was abandoned due to geoprobe refusal at 3'. Samples S-2 and S-5 on the north sides of the brewery and the warehouse could not be collected because of utility line location uncertainty. Location S-3 was collected by the little brick building and transformer area behind the brewery. Location S-6 was collected in the area behind the former machine shop. Location S-4 was collected behind the former bottling plant/warehouse.

b. Subsurface

The four subsurface soil grab samples (see figure 2 for locations) were collected by direct push methods and trowels. The subsurface soil samples, designated by the capital letters "SS", were analyzed by PHASE for PPL metals, VOCs, SVOCs, cyanide, and pesticides/PCBs utilizing EPA methods. The subsurface soil samples, were also analyzed for metals, cPAHs, PCBs, and BTEX by XRF and immunoassay field screening techniques. The subsurface soil grab samples were collected at 4' to 6' at locations concurrent with the corresponding surface soil sample designations (refer to figure 2).

2. Groundwater Sampling and Analysis

Three groundwater samples plus a duplicate were proposed to be collected on site. However, groundwater was encountered at only one location. The twenty foot deep temporary well yielded only enough volume to fill two 40-ml vials. The groundwater sample was designated GW-3 and was collected using direct push (geoprobe) technology. The sample was analyzed by PHASE for VOCs utilizing EPA methods. No other groundwater was found at the site, as the site is situated on a topographic high.

3. Surface Water Sampling and Analysis

No surface water was available for sampling at or near the site.

4. Sediment Sampling and Analysis

No sediment samples were available for sampling at or near the site.

5. Other Sampling and Analysis

A lead paint survey was performed at the site on November 6, 2001 (Appendix 2). A magnetometer survey was run on January 18 in the vicinity of the gas pump in order to determine the location of a possible gasoline UST.

D. Decontamination Procedures

Samples were collected using disposable scoops and samplers changed gloves between samples. The Geoprobe® used disposable macro-core liners and equipment was decontaminated between borings using a mixture of Alconox® and water.

IV. EVALUATION AND PRESENTATION OF RESULTS

A. Subsurface Conditions

1. Geologic Conditions

The American Brewery site is situated on soils of the Urban Land Complex, which are characterized as areas where more than 80% of the surface is covered by asphalt, concrete, buildings, or other impervious structures and exhibit a 0-15% slope. The natural soil in this area is the Legore soil, which is a deep, well drained loam (EA Engineering, 2001). Structurally, the site lies on an erosional inlier or ancient channel carved into the Cambrian Baltimore Mafic Complex filled in by Cretaceous rift deposits (Maryland Geologic Survey, 1976). The Cretaceous sediments are younger in age toward the southeast and are older in age toward the northwest, reflecting an erosional surface rather than a transgressional/regressional sequence. The site sits on the Lower Cretaceous Patuxent Formation, a major water-bearing unit and aquifer in Maryland. The

Patuxent at the site is classified as the sandy facies, dips southeast, and becomes progressively thicker down-dip (Maryland Geological Survey, 1976).

2. Hydrogeologic Conditions

The site is in the area of outcrop of the Patuxent Formation and as such is in the recharge area for the Patuxent Formation. Aside from a minor 2' perched water zone discovered at SS-3, no other water was encountered. SS-4 went to 26.5' before refusal and no water was found. It is estimated that the potentiometric head in the area is approximately +40'. With the ground elevation being approximately 120', groundwater would be encountered at 70 to 80 feet below surface (Chapelle, 1985). The regional groundwater gradient is the same as the regional dip, e.g. to the southeast. Recharge of the aquifer occurs in what little ground surface is exposed. The majority of the surfaces at the site are covered by concrete, asphalt, and buildings with the slope being towards Gay street and somewhat towards Patterson Park/East Lanvale Street. The surface water runoff follows the slope and is discharged into the City storm drain system.

B. Analytical Data

1. Soil Sampling Results

Analytical results of the soil samples collected during this investigation revealed only one contaminant (arsenic) at levels above EPA's RBCs for residential soil (see Table 5-7). The analysis showed four samples (S-1A, S-3, S-6, and SS-6 [2.2 to 16 mg/kg]) with concentrations of arsenic above MDE Cleanup Standards of 2 (mg/Kg) for residential soil and 3.8 (mg/Kg) for non-residential soil. It should be noted that at these concentrations the arsenic might be indicative of natural occurrence in soils.

Table 5. Metals in Soil

Analyte (mg/Kg)	Commercial RBC	Residential RBC	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	S-7
Antimony	82	12	<2.5	<2.5	<2.5	<2.5	<2.5	<5	<5	<2.5	<2.5	<2.5
Arsenic	3.8	2	<2	3.1	<2	16	<2	<2	<2	2.2	4.1	<2
Beryllium	410	16	<2.5	<2.5	<2.5	<2.5	<2.5	<5	<5	<2.5	<2.5	<2.5
Cadmium	100	3.9	<2.5	<2.5	<2.5	<2.5	<2.5	<4	<4	<2.5	<2.5	<2.5
Chromium	NA	NA	5.2	3.3	7	12	11	30	33	12	13	10
Copper	8200	310	9.2	<2.5	<2.5	9.6	13	7.2	8	26	15	22
Lead	400	400	<2.5	<2.5	<2.5	8.1	6.7	<5	<5	71	23	52
Mercury	0.12	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	4100	160	<2.5	<2.5	<2.5	60	17	<5	<5	11	4.4	10
Selenium	1000	39	<2.5	<2.5	<2.5	<2.5	<2.5	<5	<5	<2.5	<2.5	<2.5
Silver	1000	39	<2.5	<2.5	<2.5	<2.5	<2.5	<5	<5	<2.5	<2.5	<2.5
Thallium	14	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	61000	2300	6.1	<2.5	<2.5	88	33	<5	<5	87	16	83
Cyanide	4100	160	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Highlighted values indicate concentrations above Residential RBC.

Table 6. VOCs in Soil

Analyte (mg/Kg)	Commercial RBC	Residential RBC	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	S-7
Acetone	20000	780	<10	<10	<10	<10	27	<10	<10	<10	<10	<10
Methylene chloride	760	85	11B	12B	11B	13B	12B	11B	11B	11B	12B	16B
Methyl tert-butyl ether	2700	650	4E	2E	3E	4E	3E	2E	<5	2E	1E	2E

B qualifier indicates suspected laboratory artifact. E qualifier indicates estimated values that are < quantitation limits.

Table7. SVOCs in Soil.

Analyte (mg/Kg)	Commercial RBC	Residential RBC	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	S-7
Fluoranthene	8200	310	<330	<330	<330	<330	<330	<330	<330	69E	44E	83E
Pyrene	6100	230	<330	<330	<330	<330	<330	<330	<330	65E	41E	80E
Benzo (a) anthracene	7.8	0.87	<330	<330	<330	<330	<330	<330	<330	39E	<330	47E
Chrysene	780	87	<330	<330	<330	<330	<330	<330	<330	47E	<330	57E

E qualifier indicates estimates values that are < quantitation limits.

2. Groundwater Sampling Results

Only one sample from a perched water table zone was collected. This perched zone provided enough water for a VOC sample only. No VOC contamination was detected in this zone (Table 8).

Table 8. VOCs in Groundwater

Analyte (ug/l)	GW-3
Methylene chloride	2B

B qualifier indicates suspected laboratory artifact.

3. Other Sampling Results

A lead paint survey was performed at the site on November 6, 2001 (Appendix 2). Out of 57 readings, 26 readings were above the 0.8 mg/cm^2 lead level, indicating the presence of lead paint within the buildings.

A magnetometer survey was run on January 18 in the vicinity of the gas pump in order to determine the location of a possible gasoline UST. Due to the abundance of non-ferrous/ferric metallic debris in the immediate area, the survey was inconclusive.

V. FINDINGS AND CONCLUSIONS

MDE prepared a toxicological evaluation of the American Brewery site (refer to Appendix 4) utilizing the analytical data provided by PHASE under a residential use scenario. The residential use scenario was used in order to establish a baseline for the minimum risk posed to any population that might become exposed to contaminants found on site. Commercial use scenarios are expected to pose lesser levels of risk and should be evaluated to reflect appropriate land use scenarios. In evaluating risk to human health, maximum concentrations of all chemicals detected in the sampling were compared to

medium-specific screening levels EPA Region III RBCs and assumed 100% bioavailability of each contaminant. The evaluation of groundwater was performed as if the water were being used as drinking water. Relevant toxicological data and RBC values from structurally similar compounds were used for some of the chemicals with no corresponding RBC value. The EPA directive recommending a soil screening level of 400 mg/Kg of lead for residential scenarios was used in the evaluation for soils and sediment.

Contaminants detected on-site overall were within MDE and EPA acceptable levels using the residential risk exposure assumptions. One contaminant, arsenic, however, was above the RBC. Due to no other evidence of contamination at the site and the widely varying natural concentrations of arsenic found in soil, it is assumed that the arsenic is naturally occurring. Because the toxicological evaluation failed to reveal unacceptable levels of risk to all residential populations, MDE has no further requirements for this site at this time. MDE does, however, reserve the right to require additional investigation if previously undiscovered or exacerbated levels of contamination are discovered.

VI. REFERENCES

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Department of the Environment, State of Maryland. August 2001. Cleanup Standards for Soil and Groundwater: Interim Final Guidance (Update No. 1), 45pp.

EA Engineering, Science, Technology, Inc. November 2001. Phase I Environmental Site Assessment Report, Former American Brewery, 1701 North Gay Street, City of Baltimore, Maryland 21213: Sparks, Maryland, 25pp.

United States Geological Survey. 1953, photo-revised in 1966 and 1974. Baltimore East Quadrangle, Maryland, 7.5 Minute Series topographic map.

VII FIGURES

Figure 1: Topographic Map

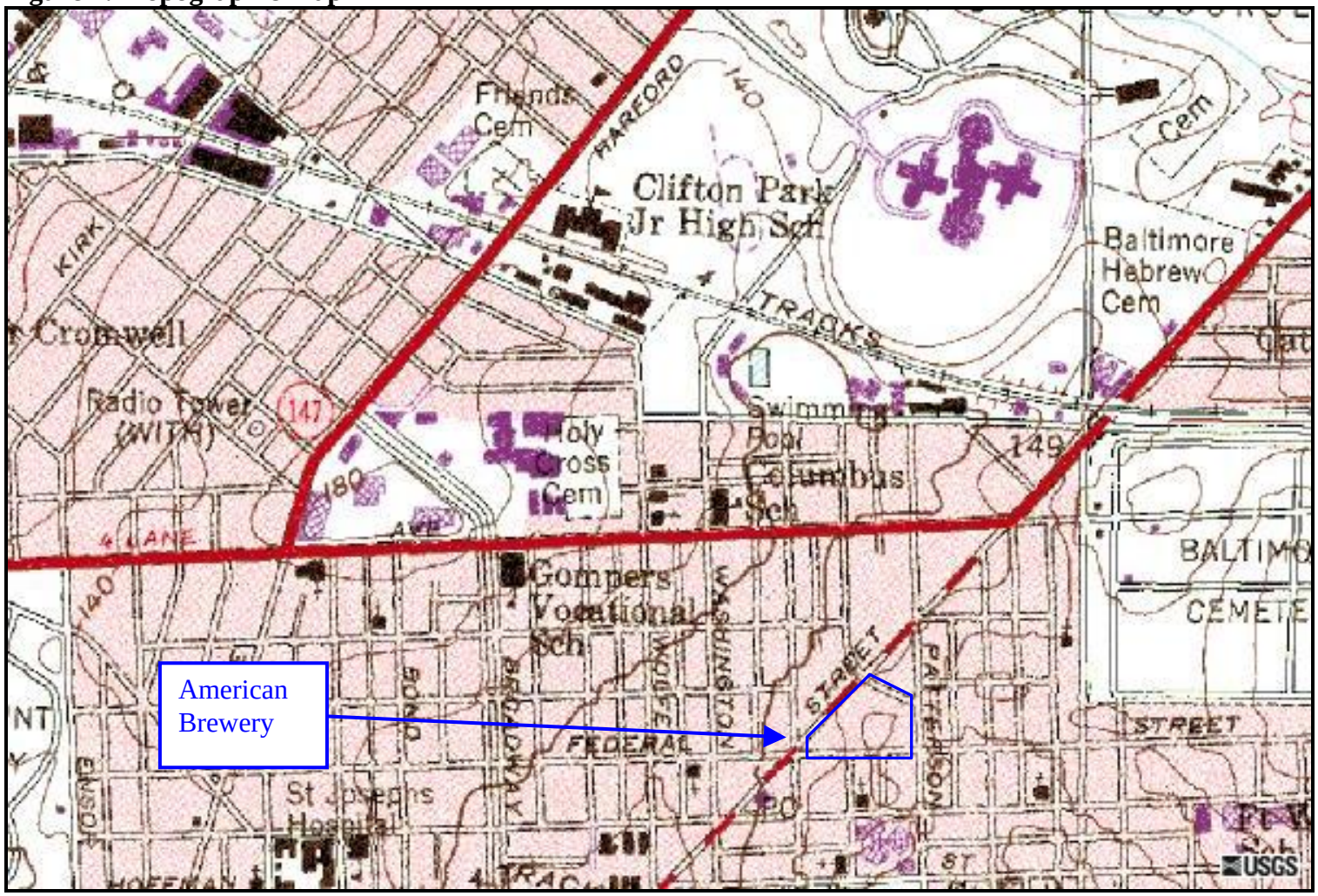
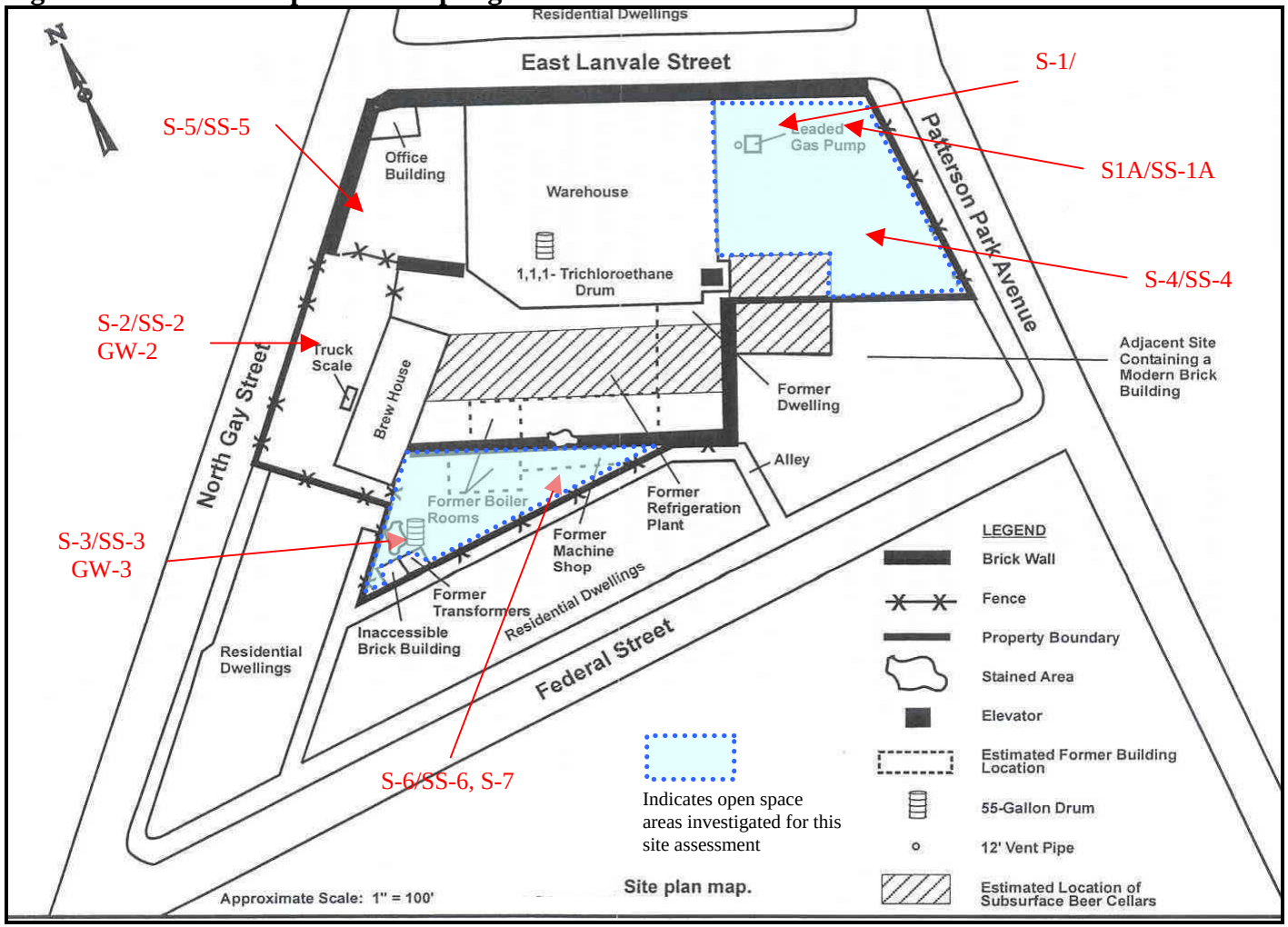


Figure 2. Site Plan Map With Sampling Locations



Note: S-2/SS-2 and S-5/-SS-5 near the sidewalk were not collected due to utilities conflict.

Figure 3: Real Property Tax Description

Real Property Information

Maryland Department of Assessments and Taxation
Real Property System

[Go Back] **BALTIMORE CITY** [Start Over]

WARD: 08 SEC: 21 BLOCK: 1471 LOT: 019

Owner Information

Owner Name: MAYOR & CITY COUNCIL
C/O THE PARK PLAZA

Use: EXEMPT

Mailing Address: SUITE 300
BALTIMORE MD 21201

Principal Residence: NO

Transferred From: MAYOR & CITY COUNCIL **Date:** 10/30/1995 **Price:** $0

Deed Reference: 1) SEB/ 5174/ 468
2)

Special Tax Recapture:
* NONE *

Tax Exempt: COUNTY AND STATE
CLASS: PUBLIC WORKS PROPERTIES

Location Information [Map unavailable for Baltimore City]

Premises Address:	Zoning:	Legal Description:
1701 N GAY ST BALTIMORE 21213	M022	1.891 ACRES

Map	Grid	Parcel	Subdiv	Sect	Block	Lot	Group	Plat No:
8				21	1471	19	81	Plat Ref:

Special Tax Areas

Town:
Ad Valorem:
Tax Class:

Primary Structure Data

Year Built:	Enclosed Area:	Property Land Area:	County Use:
0000			61712

Value Information

	Base Value	Current Value As Of 01/01/1999	Phase-In Value As Of 07/01/2002	Phase-in Assessments As Of 07/01/2001	Phase-in Assessments As Of 07/01/2002
Land:	123,550	123,550			
Impts:	125,000	125,000			
Total:	248,550	248,550	NOT AVAIL	248,550	NOT AVAIL
Pref Land:	0	0	NOT AVAIL	0	NOT AVAIL

Partial Exempt Assessments

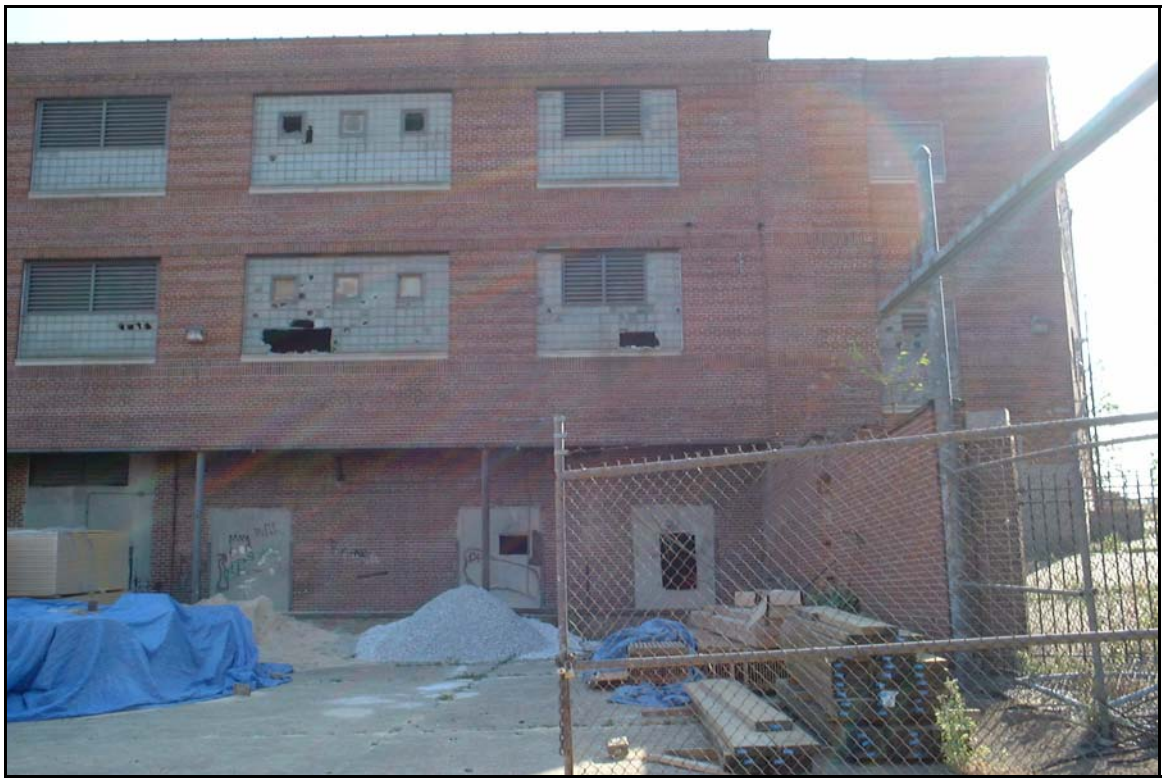
	Code	07/01/2001	07/01/2002
County	000	0	0
State	000	0	0
Municipal	000	0	0

[Go Back] [Start Over]

VIII PHOTOGRAPHS

Main brewery building.

View of the grounds behind the main brew house.



View of the front of the bottling house facing east.

View of the back of the bottling house from Patterson Park Ave. facing west.

Photograph of sampling location S-1/SS-1 facing west


Photograph of sampling location S-1A facing southwest.

Photograph of sampling location S-3/SS-3 facing south.

Photograph of sampling location S-4/SS-4 facing south

Photograph of sampling location S-6/SS-6 facing west.

APPENDIX 1 Priority Pollutant List Metals

Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

APPENDIX 2 MDE Lead Paint Survey

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: Maryland Department

Inspection Date: 11/06/01
Report Date: 11/26/2001
Abatement Level: 0.8
Report No. S#01565 - 11/06/01 12:59
Total Readings: 57
Job Started: 11/06/01 12:59
Job Finished: 11/06/01 15:38

Read No.	Rm No.	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
1		CALIBRATION								1.2	Std
2		CALIBRATION								1.1	Std
3		CALIBRATION								1.2	Std
4		CALIBRATION								0.0	Std
5		CALIBRATION								0.1	Std
6		CALIBRATION								0.0	Std
7	002	Tower 1 Fl	A	Wall	U Lft		P	Brick	N/A	3.0	QM
8	002	Tower 1 Fl	A	Tower Post	Ctr		P	Wood	N/A	0.0	QM
9	002	Tower 1 Fl	A	Str Strgr	Ctr		P	Wood	N/A	>9.9	QM
10	002	Tower 1 Fl	A	Porch Post	Ctr		P	Metal	N/A	>9.9	QM
11	002	Tower 1 Fl	A	Door	Ctr	U Ctr	F	Wood	N/A	>9.9	QM
12	002	Tower 1 Fl	C	Wall	U Lft		P	Brick	N/A	4.5	QM
13	002	Tower 1 Fl	D	Wall	U Lft		P	Brick	N/A	>9.9	QM
14	003	Tower 2 Fl	A	Wall	U Ctr		P	Brick	N/A	>9.9	QM
15	003	Tower 2 Fl	A	Window	Ctr	Lft casing	P	Wood	N/A	>9.9	QM
16	003	Tower 2 Fl	D	Wall	U Ctr		P	Brick	N/A	4.7	QM
17	003	Tower 2 Fl	D	Wall	U Ctr		P	Concret Bl	N/A	3.8	QM
18	003	Tower 2 Fl	B	Wall	U Ctr		P	Wood	N/A	2.1	QM
19	003	Tower 2 Fl	C	Door	Ctr	Lft casing	P	Metal	N/A	0.4	QM
20	003	Tower 2 Fl	A	Tank/vat	Ctr		P	Metal	N/A	0.8	QM
21	003	Tower 2 Fl	A	Pipe	Ctr		P	Metal	N/A	0.1	QM
22	004	Tower 3 Fl	C	Ceiling			P	Concrete	N/A	0.0	QM
23	005	Tower 4 Fl	A	Wall	U Lft		F	Brick	N/A	>9.9	QM
24	005	Tower 4 Fl	A	Post	Ctr		F	Metal	N/A	0.2	QM
25	006	Tower Fl 5	D	Wall	U Lft		P	Wood	N/A	>9.9	QM
26	006	Tower Fl 5	C	Wall	U Rgt		P	Brick	N/A	1.3	QM
27	006	Tower Fl 5	A	Post	Rgt		P	Wood	N/A	>9.9	QM
28	007	Bottlng Fl2	C	Wall	U Lft		P	Concrete	N/A	0.2	QM
29	007	Bottlng Fl2	B	Office	Lft		P	Drywall	N/A	-0.1	QM
30	007	Bottlng Fl2	B	Mid Office	Ctr		P	Brick	N/A	0.1	QM
31	007	Bottlng Fl2	B	Wall	U Ctr		P	Brick	N/A	0.0	QM
32	007	Bottlng Fl2	B	Rear Office	Ctr		P	Brick	N/A	0.1	QM
33	007	Bottlng Fl2	C	Rear Office	Lft		P	Brick	N/A	-0.2	QM
34	007	Bottlng Fl2	D	Window	Ctr	Apron	P	Wood	N/A	-0.4	QM
35	007	Bottlng Fl2	B	Door	Ctr	U Lft	P	Metal	N/A	6.6	QM
36	007	Bottlng Fl2	B	I-beam	Ctr		P	Metal	N/A	0.8	QM
37	007	Bottlng Fl2	D	Pipe	Ctr		P	Metal	N/A	0.2	QM
38	007	Bottlng Fl2	B	Floor			P	Concrete	N/A	0.0	QM
39	008	Bottlng Fl3	B	Column	Ctr		P	Metal	N/A	3.0	QM
40	008	Bottlng Fl3	D	Floor			P	Concrete	N/A	0.2	QM
41	008	Bottlng Fl3	D	Wall	U Ctr		F	Brick	N/A	0.2	QM
42	008	Bottlng Fl3	D	Pipe	Ctr		P	Metal	N/A	0.2	QM
43	008	Bottlng Fl3	D	Door	Ctr	U Ctr	P	Metal	N/A	6.0	QM
44	009	Office	D	Wall	U Lft		P	Plaster	N/A	0.8	QM
45	010	Roof	A	Vent	Lft		P	Metal	N/A	0.3	QM
46	011	Tower	C	Ramp	Rgt		P	Metal	N/A	8.3	QM
47	011	Tower	D	Wall	U Ctr		P	Brick	N/A	0.8	QM

1

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: Maryland Department

Read No.	Rm No.	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
48	011	Tower	C	Column		Ctr	P	Metal	N/A	0.8	QM
49	011	Tower	A	Wall	U	Ctr	F	Brick	N/A	-0.1	QM
50	011	Tower	B	Sign		Ctr	F	Brick	N/A	2.4	QM
51	004	Tower	A	Decor Post		Lft	P	Concrete	N/A	8.9	QM
52		CALIBRATION								1.2	Std
53		CALIBRATION								1.2	Std
54		CALIBRATION								1.1	Std
55		CALIBRATION								0.1	Std
56		CALIBRATION								0.0	Std
57		CALIBRATION								0.0	Std

---- End of Readings ----

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Maryland Department

Inspection Date: 11/06/01
Report Date: 11/26/2001
Abatement Level: 0.8
Report No. S#01565 - 11/06/01 12:59
Total Readings: 57
Job Started: 11/06/01 12:59
Job Finished: 11/06/01 15:38

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
Exterior Room 004 Tower									
051	A	Decor Post	Lft		P	Concrete	N/A	8.9	QM
Interior Room 002 Tower 1 Fl									
007	A	Wall	U Lft		P	Brick	N/A	3.0	QM
011	A	Door	Ctr	U Ctr	F	Wood	N/A	>9.9	QM
008	A	Tower Post	Ctr		P	Wood	N/A	0.0	QM
009	A	Str Strgr	Ctr		P	Wood	N/A	>9.9	QM
010	A	Porch Post	Ctr		P	Metal	N/A	>9.9	QM
012	C	Wall	U Lft		P	Brick	N/A	4.5	QM
013	D	Wall	U Lft		P	Brick	N/A	>9.9	QM
Interior Room 003 Tower 2 Fl									
014	A	Wall	U Ctr		P	Brick	N/A	>9.9	QM
015	A	Window	Ctr	Lft casing	P	Wood	N/A	>9.9	QM
020	A	Tank/vat	Ctr		P	Metal	N/A	0.8	QM
021	A	Pipe	Ctr		P	Metal	N/A	0.1	QM
018	B	Wall	U Ctr		P	Wood	N/A	2.1	QM
019	C	Door	Ctr	Lft casing	P	Metal	N/A	0.4	QM
016	D	Wall	U Ctr		P	Brick	N/A	4.7	QM
017	D	Wall	U Ctr		P	Concret Bl	N/A	3.8	QM
Interior Room 004 Tower 3 Fl									
022	C	Ceiling			P	Concrete	N/A	0.0	QM
Interior Room 005 Tower 4 Fl									
023	A	Wall	U Lft		F	Brick	N/A	>9.9	QM
024	A	Post	Ctr		F	Metal	N/A	0.2	QM
Interior Room 006 Tower Fl 5									
027	A	Post	Rgt		P	Wood	N/A	>9.9	QM
026	C	Wall	U Rgt		P	Brick	N/A	1.3	QM
025	D	Wall	U Lft		P	Wood	N/A	>9.9	QM
Interior Room 007 Bottlng Fl2									
031	B	Wall	U Ctr		P	Brick	N/A	0.0	QM
038	B	Floor			P	Concrete	N/A	0.0	QM
035	B	Door	Ctr	U Lft	P	Metal	N/A	6.6	QM
030	B	Mid Office	Ctr		P	Brick	N/A	0.1	QM
036	B	I-beam	Ctr		P	Metal	N/A	0.8	QM
029	B	Office	Lft		P	Drywall	N/A	-0.1	QM
032	B	Rear Office	Ctr		P	Brick	N/A	0.1	QM
028	C	Wall	U Lft		P	Concrete	N/A	0.2	QM
033	C	Rear Office	Lft		P	Brick	N/A	-0.2	QM
034	D	Window	Ctr	Apron	P	Wood	N/A	-0.4	QM
037	D	Pipe	Ctr		P	Metal	N/A	0.2	QM
Interior Room 008 Bottlng Fl3									
039	B	Column	Ctr		P	Metal	N/A	3.0	QM
041	D	Wall	U Ctr		F	Brick	N/A	0.2	QM

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Maryland Department

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
040	D	Floor			P	Concrete	N/A	0.2	QM
043	D	Door	Ctr	U Ctr	P	Metal	N/A	6.0	QM
042	D	Pipe	Ctr		P	Metal	N/A	0.2	QM
Interior Room 009 Office									
044	D	Wall	U Lft		P	Plaster	N/A	0.8	QM
Interior Room 010 Roof									
045	A	Vent	Lft		P	Metal	N/A	0.3	QM
Interior Room 011 Tower									
049	A	Wall	U Ctr		F	Brick	N/A	-0.1	QM
050	B	Sign	Ctr		F	Brick	N/A	2.4	QM
046	C	Ramp	Rgt		P	Metal	N/A	8.3	QM
048	C	Column	Ctr		P	Metal	N/A	0.8	QM
047	D	Wall	U Ctr		P	Brick	N/A	0.8	QM
Calibration Readings									
001								1.2	Std
002								1.1	Std
003								1.2	Std
004								0.0	Std
005								0.1	Std
006								0.0	Std
052								1.2	Std
053								1.2	Std
054								1.1	Std
055								0.1	Std
056								0.0	Std
057								0.0	Std

---- End of Readings ----

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: Maryland Department

Inspection Date: 11/06/01
Report Date: 11/26/2001
Abatement Level: 0.8
Report No. S#01565 - 11/06/01 12:59
Total Readings: 57 Actionable: 26
Job Started: 11/06/01 12:59
Job Finished: 11/06/01 15:38

Reading No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Color	Lead (mg/cm²)	Mode
Exterior Room 004 Tower									
051	A	Decor Post	Lft		P	Concrete	N/A	8.9	QM
Interior Room 002 Tower 1 Fl									
007	A	Wall	U Lft		P	Brick	N/A	3.0	QM
011	A	Door	Ctr	U Ctr	F	Wood	N/A	>9.9	QM
009	A	Str Strgr	Ctr		P	Wood	N/A	>9.9	QM
010	A	Porch Post	Ctr		P	Metal	N/A	>9.9	QM
012	C	Wall	U Lft		P	Brick	N/A	4.5	QM
013	D	Wall	U Lft		P	Brick	N/A	>9.9	QM
Interior Room 003 Tower 2 Fl									
014	A	Wall	U Ctr		P	Brick	N/A	>9.9	QM
015	A	Window	Ctr	Lft casing	P	Wood	N/A	>9.9	QM
020	A	Tank/vat	Ctr		P	Metal	N/A	0.8	QM
018	B	Wall	U Ctr		P	Wood	N/A	2.1	QM
016	D	Wall	U Ctr		P	Brick	N/A	4.7	QM
017	D	Wall	U Ctr		P	Concret Bl	N/A	3.8	QM
Interior Room 005 Tower 4 Fl									
023	A	Wall	U Lft		F	Brick	N/A	>9.9	QM
Interior Room 006 Tower Fl 5									
027	A	Post	Rgt		P	Wood	N/A	>9.9	QM
026	C	Wall	U Rgt		P	Brick	N/A	1.3	QM
025	D	Wall	U Lft		P	Wood	N/A	>9.9	QM
Interior Room 007 Bottlng Fl2									
035	B	Door	Ctr	U Lft	P	Metal	N/A	6.6	QM
036	B	I-beam	Ctr		P	Metal	N/A	0.8	QM
Interior Room 008 Bottlng Fl3									
039	B	Column	Ctr		P	Metal	N/A	3.0	QM
043	D	Door	Ctr	U Ctr	P	Metal	N/A	6.0	QM
Interior Room 009 Office									
044	D	Wall	U Lft		P	Plaster	N/A	0.8	QM
Interior Room 011 Tower									
050	B	Sign	Ctr		F	Brick	N/A	2.4	QM
046	C	Ramp	Rgt		P	Metal	N/A	8.3	QM
048	C	Column	Ctr		P	Metal	N/A	0.8	QM
047	D	Wall	U Ctr		P	Brick	N/A	0.8	QM
Calibration Readings									
Calibration Readings									

---- End of Readings ----

APPENDIX 3 FIELD SCREENING DATA

RAW XRF DATA

Analyte (mg/kg)	2704 (known)	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	SS-7
Sb	6.683	2.49	ND	ND	0.723	0.971	ND	ND	1.077	1.582	0.742
As	21.612	5.89	6.533	6.303	23.812	4.879	4.691	9.367	4.246	4.771	4.17
Cd	3.416	0.706	ND	0.203	0.592	0.305	ND	ND	ND	0.531	ND
Cr	144.454	91.416	90.783	129.953	71.008	66.477	109.328	113.066	80.269	89.993	82.352
Cu	99.919	12.241	8.406	5.68	15.826	23.085	31.376	25.916	35.278	16.688	26.092
Pb	168.275	18.35	14.721	16.314	10.067	32.765	19.766	19.382	64.634	17.561	52.709
Mn	544.01	57.705	62.658	64.438	1164.95	1446.229	57.667	ND	71.814	65.967	86.312
Hg	0.103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ni	29.95	25.635	16.087	19.31	121.261	42.331	ND	ND	20.644	18.652	21.278
Se	ND	0.453	ND	ND	0.563	ND	0.402	0.085	0.335	ND	ND
Ag	0.798	ND	ND	0.049	0.782	ND	ND	0.714	ND	ND	0.867
Ti	ND	0.151	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	462.279	28.567	18.473	16.131	151.536	85.257	19.847	23.993	118.785	33.617	95.303
V	94.695	94.886	79.41	84.432	70.693	105.288	112.551	162.27	181.589	87.132	163.105
Tl	0.512	0.151	0.072	0.326	ND	0.129	ND	ND	0.327	ND	ND
Ca	2.589	0.367	0.104	0.086	0.255	0.274	0.072	0.025	0.3	0.076	0.315
Fe	4.197	1.05	0.973	1.037	2.503	1.452	4.672	6.447	2.598	1.137	2.142

XRF ICP CORRELATION							
	R2	SLOPE	Y-INTERCEPT	ST DEV ICP	ST DEV XRF	STD ERROR	MEAN XRF
Sb	*				0.677		1.3
As	0.980	0.685	-0.389	6.480	5.948	1.639	7.5
Cd	*				0.208		0.5
Cr	0.121	0.175	-2.526	9.948	19.751	19.645	92.5
Cu	*	0.393	4.584	6.909	9.846	7.676	20.1
Pb	0.789	1.093	-6.702	28.342	18.059	12.215	26.6
Hg	*						
Ni	0.989	0.512	-2.462	22.540	35.546	5.389	35.6
Se	*				0.179		0.4
Ag	*				0.375		0.6
Tl	*						0.2
Zn	0.833	0.725	-9.780	38.067	49.389	21.893	59.2

Asterisks indicate that XRF and PHASE data revealed low or undetectable concentrations for antimony, cadmium, copper, mercury, selenium, silver and thallium. Therefore the data agree. Chromium demonstrated little correlation.

Highlighted elements correlated and the concentrations corrected as follows:

CORRECTED XRF DATA (mg/Kg)

SAMPLES ANALYZED BY FIXED LAB AND FIELD SCREENING XRF

	S-1	S-1A	SS-1A	S-3	SS-3	S-4	SS-4	S-6	SS-6	S-7
As	3.644	4.085	3.927	15.917	2.952	2.823	6.025	2.518	2.878	2.466
Pb	13.358	9.391	11.133	4.303	29.118	14.907	14.487	63.959	12.496	50.922
Ni	10.656	5.770	7.419	59.588	19.199	*	*	8.102	7.082	8.426
Zn	10.920	3.605	1.908	100.027	51.999	4.601	7.605	76.294	14.579	59.279

RAW IMMUNOASSAY FIELD SCREEN DATA

PCB IMMUNOASSAY

Site: AMERICAN BREWERY

DATE SAMPLES COLLECTED: 1/16/02

DATE ANALYZED: 1/17/02 ANALYST: MARK MANK

Calibration Results:

R^2=	0.9990
Slope	-0.794
Y-intercept	0.585

Sample ID	Diluent Final Volume (mL)	Sample Extract Diluent Volume (uL)	Dilution Factor	Concentration at Instrument(ppb)	Soil Concentration (ug/kg)
Control[1]	-	-	-	3.2	-
S-1*	25	25	2000	0.00ND	-
S-1A	25	25	2000	ND	-
SS-1A*	25	25	2000	0.03ND	-
S-3*	25	25	2000	0.05ND	-
SS-3*	25	25	2000	0.07ND	-
S-4	25	25	2000	ND	-
SS-4*	25	25	2000	0.03ND	-
S-6*	25	25	2000	0.04ND	-
SS-6	25	25	2000	ND	-
S-7*	25	25	2000	.03ND	-

Calibration range from 500 to 10000 ug/kg.

[1]Control sample actual concentration 3.00 ppb. 107% correlation.

*Analyte concentration below calibration range.

RAW IMMUNOASSAY FIELD SCREEN DATA

CPAH IMMUNOASSAY

Site: AMERICAN BREWERY 655W3

DATE SAMPLES COLLECTED: 1/16/02

DATE ANALYZED: 1/17/02 ANALYST: Mark Mank

Calibration Results:

R^2=	1.0000
Slope	-0.495
Y-intercept	0.112

Sample ID	Diluent Final Volume (mL)	Sample Extract Diluent Volume (uL)	Dilution Factor	Concentration at Instrument(ppb)	Soil Concentration (ug/kg)
Control[1]	-	-	-	2.21	-
S-1	10	200	100	0.1	10
S-1A	10	200	100	.4ND	-
SS-1A*	10	200	100	0.04ND	-
S-3*	10	200	100	0.00ND	-
SS-3*	10	200	100	0.02ND	-
S-4	10	200	100	0.77	77
SS-4*	10	200	100	0.00ND	-
S-6	10	200	100	4.71	471
SS-6	10	200	100	2.75	275
S-7**	10	200	100	9.56Hi	956

Calibration range from 10 to 500 ug/kg.

[1]Control sample actual concentration 2.00 ppb. 110% correlation.

*Analyte concentration below calibration range.

**Analyte concentration above calibration range.

RAW IMMUNOASSAY FIELD SCREEN DATA

BTEX/TPH IMMUNOASSAY

Site: AMERICAN BREWERY

DATE SAMPLES COLLECTED: 1/16/02

DATE ANALYZED: 1/17/02 ANALYST: MARK MANK

Calibration Results:

R^2=	1
Slope	-0.403
Y-intercept	1.29

Sample ID	Diluent Final Volume (mL)	Sample Extract Diluent Volume (uL)	Dilution Factor	Concentration at Instrument(ppm)	Soil Concentration (mg/kg)
Control[1]	-	-	-	2.52	-
S-1	5	500	10	ND	-
S-1A	5	500	10	ND	
SS-1A	5	500	10	ND	-
S-3	5	500	10	ND	-
SS-3	5	500	10	ND	-
S-4*	5	500	10	0.00ND	-
SS-4	5	500	10	ND	-
S-6	5	500	10	0.11	1.1
SS-6	5	500	10	ND	-
S-7*	5	500	10	0.00ND	-

Calibration range from 0.90 to 30 mg/kg.

[1]Control sample actual concentration 2.1 ppm. 120% correlation.

*Sample concentration below calibration range.