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July 26, 2010

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Subject: Report of Findings
Evaluation of On-Site Vapor Intrusion Potential
Former IBM Facility, Owego, New York

Reference: 6NYCRR Part 373 Hazardous Waste Management Permit
7-4930-00095/00005

Dear Mr. Czuhanich:

The enclosed report presents the findings of an evaluation of the potential for intrusion of volatile organic compound (VOC) vapors into buildings at the former IBM Owego facility (Site) located in Owego, New York. IBM Corporation (IBM) has prepared this report to respond to a January 26, 2010 request from the New York State Department of Environmental Conservation and New York State Department of Health that IBM evaluate the potential for VOC vapor intrusion into buildings at the Site.

Should you have any questions concerning this report, please contact me at 703-257-2582 or at whalen@us.ibm.com.

Sincerely,

K Whalen

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Enclosure

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Corporate Environmental Affairs

Report of Findings
Evaluation of On-Site Vapor Intrusion Potential
Former IBM Facility
Owego, New York

Prepared for:

IBM Corporation
Manassas, Virginia

July 26, 2010

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EXECUTIVE SUMMARY

This report presents the findings of an evaluation of the potential for intrusion of volatile organic compound (VOC) vapors into buildings at the former IBM Owego facility (Site) located in Owego, New York. IBM Corporation (IBM) has prepared this report to respond to a January 26, 2010 request from the New York State Department of Environmental Conservation and New York State Department of Health that IBM evaluate the potential for VOC vapor intrusion into buildings at the Site. The evaluation included a review of Site hydrogeologic conditions and shallow groundwater chemistry beneath building areas, compilation and review of building information, and review of the results of indoor air and ambient air sampling performed between March 2005 and February 2010 by the current property owner, Lockheed Martin Corporation.

Based on the findings of the evaluation, the potential for vapor intrusion of VOCs into human-occupied building space at the Site is considered to be low. Hydrogeologic conditions beneath Site buildings are expected to be unfavorable for subsurface VOC vapor migration by diffusion due to the high degree of water saturation in fine-grained soils beneath the majority of the Site buildings. Vapor intrusion potential is likely to be further limited by HVAC air exchanges required to maintain adequate ventilation within Site manufacturing buildings and Site operations that likely include frequent opening and closing of doors associated with loading/unloading of raw materials and manufacturing products.

In aggregate, the indoor air data are believed to be indicative of background concentrations typically found in industrial buildings and do not suggest the presence of significant vadose zone or groundwater sourcing beneath Site buildings that might contribute to a vapor intrusion condition. The low concentrations and spatial variability of the indoor data are more suggestive of typical industrial background conditions rather than vapor intrusion sourced from VOCs in groundwater.

1 INTRODUCTION

This report presents the findings of an evaluation of the potential for intrusion of volatile organic compound (VOC) vapors into buildings at the former IBM Owego facility (Site) located in Owego, New York. The report has been prepared by Groundwater Sciences Corporation (GSC) at the request of International Business Machines Corporation (IBM). IBM has prepared this report to respond to a January 26, 2010 request from the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) (collectively, the Agencies) that IBM evaluate the potential for VOC vapor intrusion into buildings at the Site.

The Site was initially developed by IBM as a manufacturing facility in the 1950's. In 1978, IBM began a voluntary investigation and cleanup program to assess the groundwater quality underlying the Site. Various investigations were subsequently completed, including identification of Solid Waste Management Units (SWMUs) and assessments of groundwater, surface water, soil, and indoor air. Corrective action requirements were addressed by IBM under a 6 NYCRR Part 373 Hazardous Waste Management Permit (Part 373 permit). In March 2010, the Part 373 permit was renewed (NYSDEC Permit No. 7-4930-00095/00005). As indicated in the current Part 373 permit, the approved final remedy for corrective action at the Site consists of hydraulic containment, collection, and treatment of contaminated groundwater and a semi-annual groundwater monitoring program to evaluate the effectiveness of the corrective action remedy.

The Site is currently owned and operated by Lockheed Martin Corporation (Lockheed) for industrial manufacturing activities. Over the past six years, Lockheed has completed sampling of indoor and ambient air for VOC vapors as part of its occupational health and safety program. This evaluation of on-Site vapor intrusion potential is based on a review of information and data from IBM's historical investigation and groundwater corrective action activities, and a review and analysis of the six years of indoor and ambient air monitoring data collected by Lockheed. The evaluation of the potential for vapor intrusion and this report are subject to the limitations provided in Appendix A.

1.1 Purpose and Objectives

The purpose of this report is to present the findings of an evaluation of the potential for VOC vapor intrusion into buildings at the former IBM Owego facility. The report is intended to summarize information and data pertinent to the evaluation of vapor intrusion potential including: site hydrogeologic conditions; the nature and extent of VOCs in groundwater; building characteristics; locations of former solvent usage and storage; and results of six years of indoor and ambient air sampling and analysis. The specific objectives of this work are to review the above-listed information and data and to assess whether VOCs identified in indoor air reflect: (1) background conditions attributable to historical Site operations and/or ambient air conditions, (2) possible intrusion of VOC vapors from the subsurface, or (3) a combination of background conditions and vapor intrusion.

1.2 Scope of Work

The scope of this vapor intrusion evaluation included the following tasks:

- Review of hydrogeologic conditions in the area of Site buildings;
- Review of recent groundwater monitoring data proximate to various building areas;
- Compilation and review of historical information regarding SWMUs located within or beneath various Site buildings;
- Review of Site building information provided to IBM by Lockheed; and
- Review and analysis of the indoor and ambient air sampling data provided to IBM by Lockheed.

1.3 Organization of Report

The remainder of this report is organized into six sections. Section 2 provides an overview of pertinent Site background information and Section 3 describes subsurface conditions believed to be relevant to the evaluation of vapor intrusion potential at the Site. Section 4 provides information for the Site buildings included in Lockheed's indoor air sampling program. Section 5 describes the results of the indoor air sampling and GSC's analysis of the data. Section 6 includes an assessment of potential vapor intrusion conditions for various Site buildings. References are provided in Section 7.

2 BACKGROUND

This section provides an overview of Site background information concerning the setting, corrective action history, and results of two previous vapor intrusion evaluations for the Site and properties located adjacent to the northwest portion of the Site.

2.1 Site Setting

The former IBM Owego facility is located in a rural portion of southern Tioga County, New York, between State Route 17C and Bodle Hill Road, approximately one mile southeast of the village of Owego. A Site Location Map is provided as Figure 2-1. The Site covers 183 acres, with 26 acres occupied by buildings constructed on a low hill in the northern portion of the property (main manufacturing building complex). The Site's industrial waste treatment facilities and locations of former industrial waste treatment lagoons are located in the northwestern and western portions of the Site. The southern portion of the Site is less developed and contains a man-made lake (Mirror Lake) and a large relatively new manufacturing/integration building. An Aerial Site Map showing locations of buildings, roadways, parking lots, and undeveloped portions of the property is provided as Figure 2-2.

The southern and western portions of the Site are located within the valley bottom of the Susquehanna River and its tributary, Barnes Creek. The Site currently consists of a large manufacturing facility operated by Lockheed that is principally involved in the manufacture of computer systems for military applications. The surrounding parcels are currently used for a combination of light industrial, commercial, and utility right-of-ways, with the nearest residential area located adjacent to and southeast of the Site.

2.2 Corrective Action History

The Site was initially developed by IBM as a manufacturing facility in the 1950's. In June 1978, IBM began a voluntary investigation and cleanup program to assess the groundwater quality underlying the Site. Results of numerous Site investigations identified two general areas of the Site that appear to have caused, or contributed to, the presence of halogenated VOCs in Site groundwater.

The two areas consist of:

(1) The Waste Management Area (WMA), located in the western portion of the Site; and

(2) The Tank Farm Area of the Chemical Distribution Facility (CDF), located in the north-central portion of the Site, northeast of the main manufacturing building complex.

Approximate locations of the WMA and the Tank farm Area are shown on Figure 2-2. The potential sources of contamination in the WMA include past landfill activities, industrial drain lines, and surface impoundments, both lined (RCRA-regulated) and unlined. The primary constituents of concern detected in the WMA are trichloroethene (TCE) and 1,1,1-trichloroethane (111-TCA). The contents of the landfill in the WMA were removed in 1979. During the early 1980s, the industrial drain lines in the northern area of the site were replaced and installed within a tunnel, which includes a leak detection and collection system. In the late 1970's, the unlined surface impoundments in the WMA were replaced and reconstructed as lined impoundments, and the liners of several impoundments were replaced in 1983 and 1984. All surface impoundments were closed in 1988. Based on a 2006 Contained-In Demonstration, the surface impoundments are considered clean-closed and require no further remediation or post-closure care.

Prior to 1980, solvent releases may have occurred during handling operations in the Tank Farm Area of the CDF. Releases may also have occurred due to leaks from General Rinse industrial drain lines or handling of solvent in the southern portion of manufacturing building B002. These potential releases resulted in two groundwater plumes of halogenated volatile organics, primarily TCE and 111-TCA. One plume currently extends from the Tank Farm Area near Power House Drive into the Parking Lot 001 Area. The second plume extends from the area of the southern portion of B002 to Tower View Drive and the western portion of the Site. Locations of the Tank Farm Area, Power House Drive, Parking Lot 001, and Tower View Drive are noted on Figure 2-2.

The existing groundwater collection and treatment system is designed to remediate the elevated levels of VOCs in the groundwater in the vicinity of the Waste Management Area, the Tank Farm Area and the Parking Lot 001 Area. The corrective measures implementation plan requires pumping and treating contaminated groundwater in the Waste Management Area, Parking Lot 001 Area, and Tank Farm Area to stabilize and reduce contaminant concentrations in the plumes. The corrective action groundwater monitoring network is described in detail in the site's current Groundwater Monitoring Plan (GMP)

approved by NYSDEC in 2007. The GMP includes a description of the groundwater treatment process, the wells, the sampling frequency, the Site-specific parameter list, provisions for additional monitoring parameters, and the semiannual and annual reporting requirements.

2.3 Previous Vapor Intrusion Evaluations

Previous vapor intrusion evaluations performed by IBM at the request of the Agencies include: (1) an evaluation of potential indoor air impacts at the Site from contaminated groundwater in accordance with USEPA's *Documentation of Environmental Indicator Determination* for the RCRA Corrective Action Program; (2) off-site soil vapor sampling in the Route 17C cloverleaf area south of the Site; and (3) an evaluation of off-Site vapor intrusion potential for the Moore Tire and Victory Plaza properties, located northwest of the Site. A brief summary of each vapor intrusion evaluation is provided in the following subsections.

2.3.1 Environmental Indicators Evaluation of Vapor Intrusion

IBM evaluated potential indoor air impacts at the Site from contaminated groundwater using the Johnson & Ettinger (J&E) vapor intrusion model. Results of the J&E vapor intrusion model were used as a basis to develop an Indoor Air Monitoring Work Plan[1], and to select appropriate locations for sampling indoor air. Based on the J&E modeling results, only Building 309 (B309) and Building 002 (B002) were identified as having potential exposure risks from 1,1-dichloroethene (1,1-DCE) for office workers. No other chemicals present in groundwater were identified as posing an unacceptable risk to human receptors in any building at the Site. Based on a comparison of the nearest groundwater quality data and a review of the J&E modeling results, B309 showed relatively more potential for vapor intrusion. It was decided that B002 would only be sampled if the sampling results from B309 showed a potential impact to indoor air.

[1] IBM Corporation and Groundwater Sciences Corporation, December 29, 2000, *Indoor Air Monitoring Work Plan for Building 309 – Former IBM Owego Facility*.

The scope and findings of the indoor air sampling of B309 were summarized in a March 29, 2001 report prepared by GSC[2]. Results of the indoor air sampling did not detect the presence of 1,1-DCE. Only three of the 15 Site-specific target VOCs - dichlorodifluoromethane (Freon 12), trichlorofluoromethane (Freon 11), and methylene chloride - were detected in the indoor air samples. The Freon 12 concentrations in indoor air were comparable to the concentrations in the ambient (outdoor) air samples and were more than 100 times lower than the equivalent $1x10^{-6}$ risk concentration. The Freon 11 concentrations were approximately 1000 times lower than the equivalent $1x10^{-6}$ risk concentration. Methylene chloride was detected in all the indoor and outdoor air samples at concentrations lower than the $1x10^{-6}$ risk concentration. On the basis of these findings, VOCs in groundwater were not considered a source of indoor air exposure at the Site. As a result of the B309 sampling, the Agencies indicated[3] that NYSDEC would update the USEPA's Environmental Indicator form CA-725 "to indicate a positive determination that current human exposures from subsurface contamination are under control."

2.3.2 Soil Vapor Sampling in the Route 17C Cloverleaf Area

In March 2006, IBM completed a program of soil vapor sampling and analysis near existing monitoring wells located in the vicinity of the Route 17C cloverleaf south of the Site (Cloverleaf Area). The field work included drilling, installation, and sampling of temporary soil vapor implants and sampling of groundwater from existing monitoring wells. Results of the analyses were reviewed along with hydrogeologic data and historical groundwater chemistry data for the southern portion of the Site. The findings of the sampling and data review are summarized in a May 2, 2006 report prepared by Sanborn, Head & Associates, Inc. (SHA) on behalf of IBM.

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[2] Groundwater Sciences Corporation, March 29, 2001, *Indoor Air Sampling Report for the Former IBM Owego Facility*, prepared for IBM Corporation.

[3] New York State Department of Environmental Conservation and New York State Department of Health, January 14, 2002, Letter from Denise Radtke of NYSDEC and Gerald McDonald of NYSDOH to Mitchell E. Meyers of IBM re: Indoor Air Sampling Report.

Overall, results of the soil vapor and groundwater analyses indicated a limited presence of halogenated VOCs in soil vapor that is not consistent with sourcing from the Site. Specifically, the data indicated relatively modest concentrations of VOCs in soil vapor with a predominance of tetrachloroethene (PCE), which was not found in groundwater sampled from adjacent monitoring wells. SHA indicated the presence of PCE in soil vapor may reflect shallow groundwater or soil quality conditions. Based on their review, SHA indicated that the soil vapor conditions in the Cloverleaf Area were not attributable to groundwater migration from the Site. In a letter dated June 14, 2006, the NYSDEC concurred with this conclusion.

2.3.3 Evaluation of Off-Site Vapor Intrusion Potential

The evaluation of off-Site vapor intrusion potential for the Moore Tire and Victory Plaza properties included a review of physical data and an analysis of graphical historical trends in groundwater chemistry for wells that monitor the free water surface from which volatilization could contribute to the potential for vapor intrusion. Results of the evaluation are summarized in a July 9, 2009 report prepared by GSC for IBM. Based on the findings of the evaluation, GSC concluded that the potential for vapor intrusion to occur at the Moore Tire property is low for the following reasons:

- The presence of fine textured vadose zone soils beneath the Moore Tire slab-on-grade building are likely to have a high degree of saturation that would limit diffusion and decrease the potential for vapor intrusion.

- Groundwater extraction operations since the early 1990s have resulted in significant improvements in groundwater quality in the area of the Moore Tire property. It is likely that TCE and other VOCs in groundwater beneath the Moore Tire building are near or below New York State Groundwater Quality Standards of 5 micrograms per liter (µg/L).

- Based on the nature of the Moore Tire business operations, the slab-on-grade building is expected to have significant exchanges between outdoor and indoor air due to frequent opening and closing of the garage bay doors.

Although IBM at one time occupied buildings within Victory Plaza, IBM's activities were only office-related and no manufacturing activities took place on this property during IBM's occupancy. The groundwater contamination found to be present at Victory Plaza is distinctly separate from the plumes

being remediated by IBM and does not originate from releases of these substances on the former IBM Owego property. Therefore, the report did not speculate on the source of the contamination or its significance with respect to possible vapor intrusion into structures on the Victory Plaza property.

In a letter dated December 7, 2009[4], the Agencies agreed with the report's conclusions and stated they "believe that there is no significant potential for IBM-related soil vapor contaminants to adversely impact the properties." The Agencies also indicated that they "have determined that IBM does not need to take actions related to the potential for vapor intrusion at these properties."

[4] New York State Department of Environmental Conservation, December 7, 2009, Letter from Alex G. Czuhanich of NYSDEC to Kevin Whalen of IBM re: Evaluation of Off-Site Vapor Intrusion Potential, Former IBM-Owego, Owego, New York, EPA ID No. NYD986874501, NYSDOH Site No. 754006.

3 SITE SUBSURFACE CONDITIONS

Site subsurface conditions pertinent to assessment of vapor intrusion include Site hydrogeology and the nature and extent of VOCs in groundwater. A review of this information proximate to building areas has been conducted to develop a Site conceptual model of the mechanisms relevant to the potential for migration of VOC vapors beneath different building areas at the Site. GSC's understanding of Site subsurface conditions is based on a significant amount of data and information collected at the Site since 1978, when IBM first discovered hazardous constituents in soil and groundwater. Much of this data and information is included in past Site investigation reports and annual corrective action status reports, previously submitted to NYSDEC in accordance with the requirements of IBM's Part 373 Hazardous Waste Management Permit.

3.1 Site Hydrogeology

The hydrogeology of the former IBM Owego Site consists of three primary geologic zones or units: (1) shale bedrock; (2) sediments of glacial origin consisting of a dense mixture of clay, silt, sand, gravel, and boulders, known as "till"; and (3) other unconsolidated sediments of various depositional origins, including alluvium, glaciolacustrine silt, glacial outwash (primarily sand and gravel) and fill. The shale bedrock generally is weathered to varying degrees on its upper surface, although this zone of weathered bedrock is very thin or absent in some areas. The till and other unconsolidated sediments are discontinuous units that vary greatly in thickness and hydraulic conductivity across the Site. Where present, the zone of alluvium and glaciofluvial deposits (primarily outwash sands and gravels) is the principal shallow water-transmitting unit and is referred to as the alluvial zone. The till generally exhibits very low hydraulic conductivity and is not an important water-transmitting unit. However, the zone straddling the boundary between the weathered bedrock and the fine-grained soils (including the bottom of the till) typically transmits water and is referred to as the till/bedrock zone. A brief discussion of the alluvial and till/bedrock water bearing zones in provided in the following subsections.

3.1.1 Alluvial Zone

Figure 3-1 is a groundwater elevation contour map constructed for the alluvial zone using July 2009 data for the southern portion of the Site and October 2009 data for the northern portion of the Site. As depicted on the figure, this shallow water-transmitting unit is relatively absent in the area of the

majority of Site buildings, including the main manufacturing building complex in the north-central portion of the Site. Building areas underlain by the alluvial zone are generally limited to the area of the old wastewater treatment facility (Buildings 350 and 351) in the western portion of the Site and the area of the new large manufacturing/integration building (Building 080) in the southern portion of the Site. As shown on Figure 3-1, water levels and apparent groundwater flow directions in the alluvial zone are strongly influenced by groundwater extraction operations in the northern parking lot area north of the main manufacturing building complex and in the southern portion of the former waste management area in the southwestern portion of the Site.

3.1.2 Till/Bedrock Zone

Figure 3-2 is a groundwater elevation contour map constructed for the till/bedrock zone using July 2009 data for the southern portion of the Site and October 2009 data for the northern portion of the Site. As depicted on the figure, this water-transmitting unit is present throughout the area of the Site. Except where influenced by groundwater extraction operations in the Tank Farm Area (extraction well 415) in the northern parking lot area (extraction well 414), and the former waste management area (extraction wells 404 and 405), groundwater flow in the till/bedrock zone is generally from northeast to southwest across the Site towards Barnes Creek.

3.1.3 Water Table Conditions Beneath Building Areas

Two hydrogeologic cross-sections depicting variations in Site stratigraphy and water table elevations in developed and undeveloped portions of the Site are provided on Plate 3-1. As shown in the central portion of Cross-Section A-A' and the eastern portion of Cross-Section B-B', the hill that underlies the main manufacturing building complex is generally underlain by fill and glacial till while saturated alluvium and outwash and sand & gravel soils are either relatively thin or absent. In these building areas, the water table surface typically lies within the glacial till or bedrock. Water table elevations in the till/bedrock zone beneath the main manufacturing building complex suggest a range of vadose zone thickness of about 5 to 15 feet.

As depicted on the western portion of cross-section B-B', the water table in the area of the former waste treatment plant building area is present within alluvium or outwash sand & gravel soils. The thickness of vadose zone soils in this area of the Site is estimated to be about 10 to 20 feet.

3.2 Nature and Extent of VOCs in Groundwater

As documented in the Groundwater Monitoring Program Annual Report for 2009[5], the primary VOCs of concern in groundwater at the Site are 1,1,1-trichloroethane (TCA), trichloroethene (TCE), and the transformation products of TCA and TCE. The transformation products of TCA are 1,1-dichloroethane (11-DCA), 1,1-dichloroethene (11-DCE), and chloroethane. The transformation products of TCE are cis-1,2-dichloroethene (c12-DCE) and vinyl chloride. Vinyl chloride can also be produced by transformation of 11-DCE in the TCA series. Methylene chloride (dichloromethane) historically has been detected on-Site but is now detected only in the vicinity of the Tank Farm Area extraction well 415 and in parking lot area extraction well 414 (See extraction well locations on Figure 3-2).

Isoconcentration contour maps (Figures 3-3 though 3-6) show data that incorporates mass lost due to transformation of TCA or TCE by reductive dehalogenation by expressing the concentrations of all chemical degradation products in terms of the source constituent (TCA-series or TCE-series). The TCA-series concentration for each groundwater sample was calculated by multiplying concentrations of 11-DCA, 11-DCE, and chloroethane by the ratio of the molecular weight of TCA to the molecular weight of each degradation product, and then summing the products. In this way, all concentrations of TCA, 11-DCA, 11-DCE, and chloroethane dissolved in groundwater for a particular groundwater sample are expressed as a total TCA-series concentration, thereby approximating the TCA concentration that theoretically could have been measured if none of the TCA had been transformed to its degradation products. A similar procedure was performed for the TCE-series parameters such that the TCE, c12-DCE, and vinyl chloride concentrations were expressed as a total TCE-series concentration.

Figures 3-3 and 3-4 show isoconcentration contours for TCA-series and TCE-series VOCs in alluvial zone groundwater. In aggregate, the figures depict TCA-series and TCE-series constituents in alluvial zone groundwater limited to portions of the Site outside of building areas including:

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[5] Groundwater Sciences Corporation, February 26, 2010, *2009 Annual Report, Groundwater Monitoring Program, Former IBM Facility*, Owego, New York, prepared for IBM Corporation.

- The parking lot area, north of the main manufacturing building complex;
- The south central portion of the Site, south of the main manufacturing building complex; and
- The southwestern portion of the Site, south of the former wastewater treatment plant and west of the new large manufacturing building 080.

Isoconcentration contour maps for TCA-series and TCE-series VOCs in till/bedrock zone groundwater are depicted on Figures 3-5 and 3-6. The TCA-series and TCE-series plumes in the northern portion of the Site extend from the Tank Farm Area near the northeast corner of the main manufacturing building complex to the parking lot area in the northern portion of the Site. In the southern portion of the Site, the TCA-series and TCE-series plumes extend from the southern portion of Building 002, north of Tower Drive, and extend west to groundwater extraction wells 404 and 405. A second TCA-series and TCE-series plume area appears to originate west of the main manufacturing building complex and extends into the area of the former wastewater treatment plant.

Overall, the isoconcentration contours depicted on Figures 3-5 and 3-6 suggest TCA-series and TCE-series constituents are present at the water table in till/bedrock zone groundwater beneath the following buildings:

- The northern portion of Building 001 (B001);
- The northern and southern portions of Building 002 (B002);
- The Building 306 (B306) warehouse north of B002;
- The B309 security and telephone switch building north of B001;
- Modular office Building 900 (B900), located between B001 and B002;
- Modular office Building 901 (B901), located north of Building 304; and
- Modular office Building 902 (B902), located north of B001.

TCA-series and TCE-series constituents are also depicted as being present in the till/bedrock zone beneath former wastewater treatment buildings B350 and B351 ("Old WTP"). However, no VOCs are inferred to be present at the water table beneath these two buildings (See Figures 3-3 and 3-4).

3.3 Site Conceptual Model Related to Subsurface Vapor Migration

Vapor migration in the subsurface occurs due to advection and diffusion. Diffusion generally controls mass transport from the water table to near foundation level, whereas advective flow is usually predominant at foundation level. The effectiveness of both mechanisms is proportional to the air-filled porosity. Saturated or nearly saturated soils generally retard vapor transport. Low porosity soils also limit vapor transport. The effect of these physical properties on vapor transport can be explained by the effective diffusion coefficient.

The effective diffusion coefficient for a particular VOC in a porous medium containing both air-filled and water-filled porosity can be estimated using what is referenced by USEPA as the Millington relationship. Specifically, the Millington relationship indicates that as the water content of the porous media increases and the air content decreases, the effective diffusion coefficient is more strongly dependent on diffusion in water. For the primary constituents of concern at the Site, the diffusivity in water is about four orders of magnitude (10,000 times) smaller than the diffusivity in air as indicated below[6]:

Properties	TCA	TCE
Diffusivity in Water (cm^2/sec)	8.8×10^{-6}	9.1×10^{-6}
Diffusivity in Air (cm^2/sec)	7.8×10^{-2}	7.9×10^{-2}

Therefore, as the percentage of water-filled porosity increases, the effectiveness of diffusion decreases and the rate of vapor transport from the water table to foundation level decreases. Based on these physical relationships and our understanding of Site subsurface conditions, we offer the following conceptual model for vapor intrusion at the Site:

[6] Source: http://www.epa.gov/ATHENS/learn2model/part-two/onsite/JnE_lite.htm

- Diffusion through the bedrock and fine-grained glacial till soils would be the predominant transport mechanism for VOC vapor migration beneath the main manufacturing building complex. The high moisture content and low porosity of the glacial till soils beneath the majority of Site buildings is expected to serve as a limitation to upward vapor migration, resulting in a low vapor intrusion potential sourced from groundwater.

- For the limited number of buildings located in the western and southern portions of the Site, the presence of water not containing VOCs at the water table suggests that there is no vapor intrusion potential from groundwater.

4 BUILDING INFORMATION

This section presents an overview of building information for the Site buildings included in Lockheed's indoor air sampling program. A summary of building-specific characteristics and other information pertinent to the assessment of vapor intrusion is provided in Table 4-1.

4.1 Building Demographics

Over the past six years, Lockheed's air sampling program has included the collection of indoor air samples from up to twenty-six (26) buildings and one utility tunnel. Each building sampled during one or more years of the monitoring program is listed in Table 4-1. Table 4-1 includes data and information provided to IBM by Lockheed concerning building footprint, number of floors, current use/function, occupancy, and the number of engineered heating, ventilating, and air conditioning (HVAC) units.[7] Characteristics of the lowest level of the building such as basement (below ground surface), slab-on-grade (at ground surface level) or crawl space (lowest level of building interior above ground surface) have been added by GSC.

4.2 Review of Solvent Use and Solvent-Related Infrastructure

The column in Table 4-1 titled "Solvent SWMUs within/beneath Building" provides a summary of whether solvents were used, stored, handled, and/or transferred in the area of a particular building. This information is based on a review of historical chemical usage and infrastructure as documented in Corrective Action Permit Module II of the Site's Part 373 permit. Approximate locations of SWMUs relative to Site buildings are also shown on Plate 4-1.

Overall, SWMUs that are believed to have included use, storage, handling, and/or transfer of solvents or solvent-containing wastewater include: former solvent stills in B001 and B002; the tank farm and solvent truck unload pad at the chemical distribution facility in the area of the northeast corner of B002; the former chemical warehouse near the truck dock and courtyard between buildings B001 and B002;

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[7] *According to Lockheed, the HVAC systems are operated in a manner that meets applicable American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards.*

general rinse ("GR") drain lines located beneath buildings B004, B101, B102, B103, B309, B901, and B902; and the former wastewater treatment plant and surface impoundments surrounding buildings B350 and B351.

4.3 Proximity to Subsurface VOC Presence

Overall, the isoconcentration contours depicted on Figures 3-5 and 3-6 suggest TCA-series and TCE-series constituents are present at the water table in till beneath buildings B001, B002, B306, B309, B900, B901, and B902. A brief description of the pertinent characteristics of these seven buildings relative to vapor intrusion potential is provided below:

- B001 and B002 consist of large two-story slab-on-grade manufacturing buildings. B001 has 17 HVAC units, equivalent to approximately one HVAC per 12,000 square feet (ft^2) of floor space. B002 has 12 HVAC units, equivalent to approximately one HVAC unit per 21,000 ft^2 of floor space. The number of HVAC units per floor area for these two buildings are consistent with high volume air exchanges typical for manufacturing buildings. Given the concentrations of VOCs in groundwater beneath portions of these two buildings, the volume of indoor air in such large manufacturing buildings, and the number of air exchanges likely required to maintain adequate ventilation, vapor intrusion potential is inferred to be low.

- B306 is a one story slab-on-grade chemical storage warehouse with two HVAC units, or approximately one HVAC unit per approximately 7,000 ft^2 of floor space. Similar to B001 and B002, vapor intrusion potential for B306 is inferred to be low given the concentrations of VOCs in groundwater, the volume of indoor air, and the number of air exchanges likely required to maintain adequate ventilation.

- B309 is a one-story slab-on-grade building that houses Site security and telephone switch operations. B309 has two HVAC units or one unit per approximately 90,000 ft^2 of floor space. As previously summarized in Section 2.3.1, a vapor intrusion assessment in 2000 and 2001 indicated B309 showed the highest potential for vapor intrusion at the Site. However, on the basis of 2001 indoor air sampling of B309, vapor intrusion potential was inferred to be low since VOCs in groundwater were not considered a source of indoor air exposure at the Site.

- Buildings B900, B901, and B902 consist of one-story modular offices (trailers) with the first floor of the building located above the ground surface. The crawl space area beneath each office trailer is surrounded by an unsealed trailer skirt that allows ambient air to flow into and out of the crawl space area. As such, vapor intrusion potential is inferred to be unlikely.

5 INDOOR AND AMBIENT AIR SAMPLING

The indoor and ambient air sampling program by Lockheed has consisted of six years of annual heating season sampling within and outside of Site buildings performed between March 2005 and February 2010. The scope of the indoor air sampling has included collection of multiple indoor air samples in twenty-six (26) buildings and one utility tunnel. The indoor sampling program has included collection of samples from multiple building levels and confined-space utility trenches. The ambient air sampling program has included collection of air samples in parking lots, building roofs, HVAC intakes, and lawn areas. This section provides a brief description of Lockheed's sampling procedures/methodology followed by a discussion of the results of air sampling pertinent to our assessment of vapor intrusion potential.

5.1 Scope of Indoor and Ambient Air Sampling

A summary of Lockheed's field procedures and sampling methodology is included in a document provided to IBM from Lockheed that has been attached to this report as Appendix B.1. As described in Appendix B.1, the indoor and ambient air samples were collected during a 24-hour period using pre-evacuated 6-liter stainless steel SUMMA® canisters with integrated flow metering valves. A vacuum gauge was used to check initial and final vacuum in the canisters. Attempts were made by Lockheed to promote "worst-case building conditions" during the indoor air sampling. The samples were collected during the heating season under normal HVAC operating conditions and normal business operating conditions. The majority of the indoor air samples were reportedly collected at a breathing zone height of approximately 3 feet above the floor level (excludes confined-space trench samples). Ambient air samples collected in parking lots and lawn areas were generally collected approximately 5 feet above the ground surface and approximately 5 to 15 feet away from nearby buildings (excludes HVAC intake and roof samples).

The air samples were analyzed by USEPA Method TO-15 for the following analytes: TCA, 11-DCA, 11-DCE, 1,2-dichloroethane (12-DCA), benzene, chloroform, methylene chloride, tetrachloroethene (PCE), toluene, TCE, and vinyl chloride. The analyses of samples collected in 2005 were performed by Centak Laboratories of Syracuse, New York. The analyses of samples collected between 2006 and 2010 were performed by TestAmerica (formerly STL Laboratories) of Burlington, Vermont. Centak and TestAmerica were/are ELAP approved laboratories. Quality Assurance/Quality Control procedures

included collection of duplicate SUMMA® canister samples using a sampling "T". Analytical laboratory quality control checks included method blanks, laboratory duplicates, calibration standards and internal standards. All of the analytical data were also subject to third-party data validation. Overall, the air sampling field procedures and sampling methodology were completed by Lockheed in accordance with NYSDOH *"Guidance for Evaluating Soil Vapor Intrusion in the State of New York"*, finalized in October 2006.

A location map showing the buildings and approximate indoor sampling locations is provided as Figure 5-1. Individual sampling location maps for each building that were provided to IBM from Lockheed, and used as the basis for the sampling locations shown on Figure 5-1, are included in Appendix B.2. A table prepared by Lockheed that summarizes the analytical laboratory data is provided in Appendix B.3.

5.2 Sampling Data Relevant to Vapor Intrusion Assessment

The portion of Lockheed's sampling data relevant to assessment of vapor intrusion includes indoor air samples collected from the lowest elevation in each building that is the normally occupied level. For the data included in Appendix B.3, this includes building levels designated as "basement" or "A" (ground surface level). Indoor air samples collected by Lockheed that were excluded from the assessment include samples collected from upper floors of buildings designated as building levels "B", "C", "D", "Mezzanine", "roof" and "Tower Discharge." Additional samples excluded from our assessment were samples collected from utility trenches located in B002, samples collected from the "Industrial Tunnel, and building level "A" samples collected from modular office buildings B899, B900, B901, B902, and B903. The utility trench and industrial tunnel samples were excluded based on information from Lockheed that indicates these locations consist of permitted confined spaces that are only accessed by maintenance workers on a limited basis for a very short time period with, in some cases, modified air ventilation. The indoor air samples from the modular office buildings were excluded as they were collected in occupied building space located above unsealed crawl spaces exposed to ambient air conditions.

In addition to the sample location exclusions, three of the eleven VOCs analyzed by Lockheed have been excluded from our assessment as they are not constituents of concern identified in Site groundwater and are common background constituents found in indoor air. The VOCs that were excluded include: benzene, chloroform, and toluene. Benzene and toluene are common constituents in

commercial and industrial products while chloroform is a common disinfection byproduct in public water supplies.

5.3 Analytical Results

A summary of the statistical results for the eight VOCs detected in Site groundwater that were included in Lockheed's sampling and analysis program is provided in Table 5-1. As shown in the table, the air sampling results have been subdivided into the following seven groups of data:

- Lowest occupied building floor level indoor air results for manufacturing and product testing building B001;
- Lowest occupied building floor level indoor air results for manufacturing and product testing building B002;
- Lowest occupied building floor level indoor air results for chemical storage warehouse building B306 located adjacent to the north side of B002;
- Lowest occupied building floor level indoor air results for security, telephone switch building B309, located adjacent to the northeast corner of B001;
- Lowest building floor level indoor air results for storage areas in former wastewater treatment plant (including recycling operations) buildings B350 and B351;
- Lowest occupied building floor level indoor air results for all other Site buildings; and
- Ambient air sampling results.

The indoor air data groupings were selected based on the results of the historical operations review (SWMU locations) and our assessment of the presence or absence of VOCs in groundwater at the water table beneath various building areas.

The table includes a listing of simple statistics for each of the eight VOCs, including the number of samples, number of detections, maximum, minimum, and median concentrations. In cases where there were sufficient data, a 95% upper confidence limit (UCL) statistical test of the mean value was also calculated. The 95% UCL test was performed using EPA's ProUCL software, version 4.00.04 (February 2009), available from www.epa.gov. The 95% UCL component of this software first tests the distribution of the data (e.g., normal, lognormal, gamma-distributed, or lacking distribution) and then applies the appropriate parametric or non-parametric method to obtain a 95% UCL statistic for the data. A review of the median and 95% UCL of the mean is believed to be the most appropriate method for assessing the indoor and ambient air data since "average" air concentrations are the most meaningful in attempting to discern whether the data reflect background conditions or conditions related to vapor intrusion. A discussion of the median and/or 95% UCL of the mean concentrations for the various indoor air groupings and ambient air data is provided in the following subsections.

5.3.1 Buildings 001 and 002

Median and 95% UCL of the mean concentrations calculated for lowest-level indoor air data for manufacturing buildings B001 and B002 are near or about an order of magnitude above method detection limits. The 95% UCL of the mean concentrations for TCA for B001 and B002 are approximately 2 and 8 micrograms per cubic meter ($\mu g/m^3$), respectively. The 95% UCL concentrations calculated for TCA degradation products 11-DCA and 11-DCE are about one-half to one order of magnitude lower. 12-DCA, a common impurity in TCA, was detected in about half the indoor air samples with 95% UCL concentrations about one order of magnitude lower than the TCA values.

Methylene chloride was detected in 53% of the indoor air samples from B001 and 16% of the indoor air samples from B002, with 95% UCL concentrations of 1.7 $\mu g/m^3$ for B001 and 2.6 $\mu g/m^3$ for B002. PCE and TCE were detected in the majority of B001 and B002 indoor air samples. For PCE, the 95% UCL concentrations calculated for the B001 and B002 indoor air data are about 0.7 $\mu g/m^3$ and 1 $\mu g/m^3$, respectively, while the 95% UCL concentrations for TCE are about 2.5 and 2.3 $\mu g/m^3$, respectively. Vinyl chloride was not detected in any of the lowest level indoor air samples from B001 and B002.

5.3.2 Building 306

The number of indoor air samples collected from B306 is insufficient to calculate a 95% UCL of the mean concentration. However, a comparison of the B306 indoor air median concentrations for TCA and its degradation products 11-DCA and 11-DCE with results for nearby building B002 indicate similar concentrations. Median concentrations for 12-DCA and methylene chloride are at method detection limits and median concentrations for PCE and TCE are similar or less than the PCE and TCE median concentrations detected in B002. Vinyl chloride was not detected in any of the lowest level indoor air samples from B306.

5.3.3 Building 309

The number of indoor air samples collected from B309 is insufficient to calculate a 95% UCL of the mean concentration. However, median concentrations of TCA and 12-DCA are similar to or lower than those identified for nearby building B001. Median concentrations for PCE and TCE are at method detection limits. 11-DCA, 11-DCE, methylene chloride and vinyl chloride were not detected in any of the lowest level indoor air samples from B309.

5.3.4 Buildings 350 and 351

The number of indoor air samples collected from B350 and B351 is insufficient to calculate a 95% UCL of the mean concentration. However, median concentrations calculated for the lowest building level indoor air data for former wastewater treatment buildings B350 and B351 are near or about an order of magnitude above method detection limits. The median concentration identified for TCA is 3.3 $\mu g/m^3$, while median concentrations for TCA degradation products 11-DCA and 11-DCE are one to two orders of magnitude lower. Median concentrations for PCE and TCE are 0.15 and 5.3 $\mu g/m^3$, respectively. 1,2-dichloroethane, methylene chloride and vinyl chloride were not detected in any of the lowest building level indoor air samples from B350 and B351.

5.3.5 Other Buildings

The fifteen other buildings sampled by Lockheed that have been included in our assessment of potential vapor intrusion include B004, B080, B082, B101, B102, B103, B104, B149, B151, B154, B201, B301, B304, B305, and B352. As shown in Table 5-1, TCA was detected in 83% of the samples collected in the fifteen other buildings. The 95% UCL of the mean concentration for TCA for these buildings is 3.7

μg/m^3, which is similar to the 95% UCL results for B001 and B002 and median concentration for buildings B350 and B351. TCA degradation products 11-DCA and 11-DCE were detected in about 25 to 40% of the samples with 95% UCL concentrations of about 0.7 and 0.1 μg/m^3, respectively. The 95% UCL of the mean calculated for 12-DCA in the data set for the fifteen other buildings is 0.2 μg/m^3, which is similar to the 95% UCL values calculated for B001 and B002.

Methylene chloride was detected in 22% of the indoor air samples from the fifteen other buildings with a 95% UCL concentration of 1 μg/m^3. For PCE, the 95% UCL concentration calculated for these other buildings is about 3.6 μg/m^3, while the 95% UCL concentrations for TCE is about 0.9 μg/m^3. Vinyl chloride was only detected in two of the 61 lowest level indoor air samples.

5.3.6 Ambient Air

Constituents of concern detected in at least one third of the ambient air samples include TCA, TCE, and PCE. As shown in Table 5-1, the calculated 95% UCL of the mean values for TCA, TCE, and PCE are about 0.2, 0.2, and 6.8 μg/m^3, respectively. 95% UCL of the mean values could not be calculated for the other analytes due to an insufficient number of detections.

6 ASSESSMENT OF VAPOR INTRUSION POTENTIAL

Based on the preceding evaluation of physical and chemical data associated with different building areas of the Site, the potential for vapor intrusion of VOCs into human-occupied building space is considered to be low. Site hydrogeologic conditions beneath Site buildings are expected to be unfavorable for subsurface VOC vapor migration by diffusion due to the high degree of water saturation in the fine-grained glacial till soils in areas beneath buildings where the water table is present within the till/bedrock zone. Vapor intrusion potential is likely to be further limited by high volume HVAC air exchanges required to maintain adequate ventilation within Site manufacturing buildings and Site operations that likely include frequent opening and closing of doors associated with loading/unloading of raw materials and manufacturing products.

Groundwater monitoring at the Site indicates VOC-containing groundwater at the water table beneath buildings with slab-on-grade foundations is generally limited to portions of buildings B001, B002, B306, and B309. Former solvent usage and storage areas are present within or beneath these four buildings. Buildings B001, B002, and B306 are currently used for manufacturing operations and/or chemical storage. A comparison of indoor air quality statistics for these four buildings with statistics for the former wastewater treatment plant buildings B350 and B351, and statistics for the fifteen other slab-on-grade or basement buildings indicates similar order-of-magnitude median and/or 95% UCL of the mean concentrations for VOC constituents detected in Site groundwater.

The detections of TCA and TCE at low concentrations in indoor air for some buildings likely reflect background conditions attributable to historical Site operations and/or current background sources. The presence of TCA degradation products 11-DCA and 11-DCE at lower concentrations in buildings 350 and 351 could be attributable to a limited vapor intrusion condition or background conditions associated with former waste solvent storage and treatment at these locations.

Finally, in aggregate, the indoor air data are indicative of background concentrations typically found in industrial buildings and do not suggest the presence of significant vadose zone or groundwater sourcing beneath Site buildings that might contribute to a vapor intrusion condition. The low concentrations and spatial variability of the indoor data are more suggestive of typical industrial background conditions rather than vapor intrusion sourced from VOCs in groundwater.

7 REFERENCES

Groundwater Sciences Corporation, March 29, 2001, *Indoor Air Sampling Report for the Former IBM Owego Facility*, prepared for IBM Corporation.

Groundwater Sciences Corporation, July 9, 2009, *Evaluation of Off-Site Vapor Intrusion Potential, Owego, New York*, prepared for IBM Corporation.

Groundwater Sciences Corporation, February 26, 2010, *2009 Annual Report, Groundwater Monitoring Program, Former IBM Facility, Owego, New York*, prepared for IBM Corporation.

IBM Corporation and Groundwater Sciences Corporation, December 29, 2000, *Indoor Air Monitoring Work Plan for Building 309 – Former IBM Owego Facility*.

New York State Department of Environmental Conservation and New York State Department of Health, January 14, 2002, Letter from Denise Radtke of NYSDEC and Gerald McDonald of NYSDOH to Mitchell E. Meyers of IBM re: Indoor Air Sampling Report.

New York State Department of Environmental Conservation, December 7, 2009, Letter from Alex G. Czuhanich of NYSDEC to Kevin Whalen of IBM re: Evaluation of Off-Site Vapor Intrusion Potential, Former IBM-Owego, Owego, New York, EPA ID No. NYD986874501, NYSDOH Site No. 754006.

New York State Department of Environmental Conservation, Effective Date March 30, 2010, *6NYCRR Part 373 Permit, DEC Permit Number 7-4930-00095/00005*, Operator- IBM Corporation, Owner-Lockheed Martin Corporation.

New York State Department of Health, October 2006, Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

Sanborn, Head & Associates, Inc., May 2, 2006, Report of Findings, Soil Vapor Sampling, Cloverleaf Area, Former IBM Facility, Owego, New York, prepared for IBM Corporation.

TABLE 4-1
SUMMARY OF BUILDING INFORMATION
Evaluation of On-Site VI Potential
Former IBM Owego Facility, Owego, NY

Building	Gross Floor Space (ft^2)	Lowest Level	Number of Floors	Usage	Nominal Occupancy	Number of HVAC Units	Solvent SWMUs within/ beneath Building	VOCs in Water Table Groundwater		
								None Known	Alluvium/ Sand & Gravel	Till/ Bedrock
001	207,886	Slab-on-grade	1	Manufacturing, Product Testing, Office, Infrastructure	197	17	Former solvent stills			√
002	253,294	Slab-on-grade	2	Manufacturing, Product Testing, Office, Vehicles, Infrastructure	338	12	Former solvent stills; Tank Farm at Chemical Distribution Facility (CDF); Former Chemical Warehouse			√
004	50,113	Slab-on-grade	2	Integration Facility, Office, Infrastructure	2	3	General Rinse Drain Line	√		
080	177,126	Slab-on-grade	2	Integration Facility, Office, Lab	34	15	None	√		
082	5,386	Slab-on-grade	1	A10 Hangar	0	1	None	√		
101	213,097	Slab-on-grade	3	Office, Lab, Computer Ops	401	9	General Rinse Drain Line	√		
102	104,581	Slab-on-grade	2	Office, Lab	322	6	General Rinse Drain Line	√		
103	77,815	Basement	3	Office, Lab, Hangar, SCIF	236	4	General Rinse Drain Line	√		
104	59,964	Slab-on-grade	2	Office, SCIF	165	2	None	√		
149	383	Slab-on-grade	1	Fire Pump Building	0	1	None	√		
151	1,678	Slab-on-grade	1	Storage	0	1	None	√		
154	6,004	Slab-on-grade	1	Anechoic Chamber, Work Station	2	2	None	√		
201	127,711	Slab-on-grade	3	Office, Cafeteria, Credit Union, Medical	324	6	None	√		
301	28,400	Basement	3	Powerhouse	3	3	None	√		
304	166,343	Slab-on-grade	2	Office, Warehouse, Dock, Lab	336	6	None	√		
305	4,790	Slab-on-grade	1	Storage, Infrastructure	0	1	None	√		
306	14,170	Slab-on-grade	1	Chemical Storage Warehouse, Infrastructure	2	2	Chemical Warehouse at the CDF			√
309	184,161	Slab-on-grade	1	Security, Telephone Switch	37	2	General Rinse Drain Line			√
350	5,512	Slab-on-grade	1	Solid waste recycle operations (Waste Treatment Old)	0	1	Former Waste Treatment Plant	√		
351	6,048	Basement	2	Solid waste recycle operation (Waste Treatment Addition)	0	1	Former Waste Treatment Plant	√		
352	31,132	Slab-on-grade	3	Waste Treatment, Office, Infrastructure	4	1	None	√		
899	30,924	Above Crawl Space	2	Modular Office	138	42	None	√		
900	3,150	Above Crawl Space	1	Modular Office	4	4	None			√
901	21,789	Above Crawl Space	1	Modular Office	71	NR	General Rinse Drain Line			√
902	26,063	Above Crawl Space	1	Modular Office	92	NR	General Rinse Drain Line			√
903	10,705	Above Crawl Space	1	Modular Office, Classroom	22	15	None	√		
Tunnel	N/A	Below ground surface	N/A	Utility Tunnel	N/A	N/A	None	√		

TABLE 5-1
SUMMARY OF STATISTICS FOR VOCS IN AIR
Evaluation of On-Site VI Potential
Former IBM Owego Facility, Owego, NY

Building 001 - Lowest Level Indoor Air

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	40	36	4.8	ND@0.082	0.965	2.02	95% KM (Chebyshev) UCL, lognormal gamma distr.
1,1-Dichloroethane	28	26	1.3	ND@0.081	0.21	0.57	95% KM (Chebyshev) UCL, lognormal gamma distr.
1,1-Dichloroethene	28	19	0.36	ND@0.04	0.165	0.24	95% KM (t) UCL, detects normally distr.
1,2-Dichloroethane	28	15	0.15	ND@0.081	0.065	0.1	95% KM (t) UCL, detects normally distr.
Methylene Chloride	40	21	11	ND@0.52	0.54	1.68	95% KM (t) UCL, no distr.
Tetrachloroethene	28	26	1.6	ND@0.068	0.185	0.69	95% KM (Chebyshev) UCL, lognormal gamma distr.
Trichloroethene	40	39	6.4	ND@0.21	2	2.51	95% KM (BCA) UCL, lognormal gamma distr.
Vinyl Chloride	28	0	ND@0.39	ND@0.026	ND@0.051	NA	Not applicable, insufficient data

Building 002 - Lowest Level Indoor Air

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	45	45	21	0.17	3.5	8.07	95% H-UCL, lognormal gamma distr.
1,1-Dichloroethane	35	28	3.5	ND@0.04	0.14	1.34	95% KM (Chebyshev) UCL, lognormal distr.
1,1-Dichloroethene	35	30	3.2	0.083	0.48	1.13	95% KM (Chebyshev) UCL, no distr.
1,2-Dichloroethane	35	18	3.9	ND@0.04	0.055	0.38	95% KM (t) UCL, no distr.
Methylene Chloride	45	7	24	ND@0.52	ND@0.69	2.64	95% KM (BCA) UCL, no distr.
Tetrachloroethene	35	29	5.5	ND@0.068	0.14	0.97	95% KM (Chebyshev) UCL, no distr.
Trichloroethene	45	44	5.6	0.13	1.1	2.34	95% KM (Chebyshev) UCL, lognormal distr.
Vinyl Chloride	35	0	0.39	ND@0.026	ND@0.051	NA	Not applicable, insufficient data

Building 306 - Lowest Level Indoor Air

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	4	3	1.6	0.76	1.1	NA	Not applicable, insufficient data
1,1-Dichloroethane	3	3	0.17	0.053	0.11	NA	Not applicable, insufficient data
1,1-Dichloroethene	3	2	0.21	0.17	0.21	NA	Not applicable, insufficient data
1,2-Dichloroethane	3	1	0.045	ND@0.081	ND@0.081	NA	Not applicable, insufficient data
Methylene Chloride	4	1	4.1	ND@0.52	ND@1.2	NA	Not applicable, insufficient data
Tetrachloroethene	3	2	0.22	ND@0.068	0.1	NA	Not applicable, insufficient data
Trichloroethene	4	4	0.7	0.3	0.4	NA	Not applicable, insufficient data
Vinyl Chloride	3	0	ND@0.051	ND@0.026	ND@0.051	NA	Not applicable, insufficient data

Building 309 - Lowest Level Indoor Air

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	5	4	0.15	0.065	0.15	NA	Not applicable, insufficient data
1,1-Dichloroethane	4	0	ND@0.081	ND@0.04	ND@0.04	NA	Not applicable, insufficient data
1,1-Dichloroethene	4	0	ND@0.36	ND@0.04	ND@0.04	NA	Not applicable, insufficient data
1,2-Dichloroethane	4	2	0.081	ND@0.057	0.081	NA	Not applicable, insufficient data
Methylene Chloride	5	0	ND@1.7	ND@0.52	ND@0.069	NA	Not applicable, insufficient data
Tetrachloroethene	4	2	0.23	ND@0.068	ND@0.11	NA	Not applicable, insufficient data
Trichloroethene	5	2	0.11	ND@0.054	ND@0.21	NA	Not applicable, insufficient data
Vinyl Chloride	4	0	ND@0.051	ND@0.026	ND@0.039	NA	Not applicable, insufficient data

Building 350/351 - Lowest Level Indoor Air

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	7	6	11	ND@0.82	3.3	NA	Not applicable, insufficient data
1,1-Dichloroethane	3	3	0.15	0.085	0.0875	NA	Not applicable, insufficient data
1,1-Dichloroethene	3	2	0.12	0.04	0.075	NA	Not applicable, insufficient data
1,2-Dichloroethane	3	2	0.089	0.049	ND@0.081	NA	Not applicable, insufficient data
Methylene Chloride	7	0	1.7	0.52	ND@0.053	NA	Not applicable, insufficient data
Tetrachloroethene	3	3	0.2	0.081	0.15	NA	Not applicable, insufficient data
Trichloroethene	7	6	16	ND@0.21	5.3	NA	Not applicable, insufficient data
Vinyl Chloride	3	0	ND@0.051	ND@0.026	ND@0.051	NA	Not applicable, insufficient data

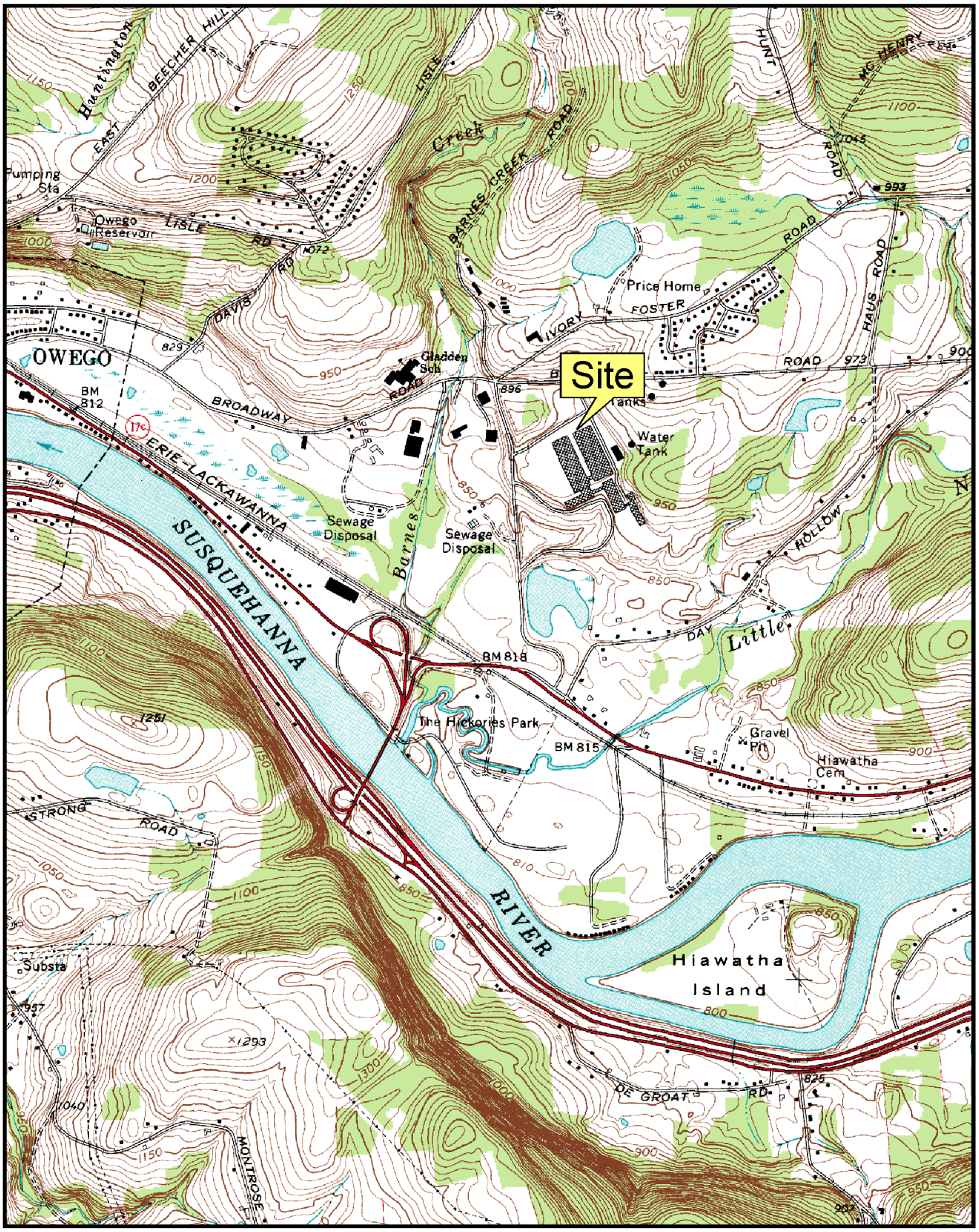
Fifiteen Other Buildings - Lowest Level Indoor Air (See Report Text)

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	88	73	43	ND@0.055	0.25	3.7	95% KM (Chebyshev) UCL, no distr.
1,1-Dichloroethane	61	25	7.9	ND@0.04	ND@0.081	0.68	95% KM (BCA) UCL, no distr.
1,1-Dichloroethene	61	15	0.315	ND@0.04	ND@0.04	0.097	95% KM (t) UCL, detects lognormal gamma distr.
1,2-Dichloroethane	61	37	2.4	ND@0.04	0.053	0.2	95% KM (BCA) UCL, no distr.
Methylene Chloride	88	19	10.6	ND@0.52	ND@1.4	1.0	95% KM (t) UCL, no distr.
Tetrachloroethene	61	45	39	ND@0.068	0.11	3.6	95% KM (Chebyshev) UCL, no distr.
Trichloroethene	88	60	6.3	ND@0.054	0.13	0.86	95% KM (Chebyshev) UCL, lognormal distr.
Vinyl Chloride	61	2	0.093	ND@0.026	ND@0.051	NA	Not applicable, insufficient data

Ambient Air

Parameter	Number of Samples	Number of Detects	Maximum	Minimum	Median	95% UCL Result	Method and Distribution
1,1,1-Trichloroethane	39	23	1.3	ND@0.055	0.065	0.2	95% KM (t) UCL, no distr.
1,1-Dichloroethane	29	1	0.14	ND@0.04	ND@0.04	NA	Not applicable, insufficient data
1,1-Dichloroethene	29	1	0.79	ND@0.04	ND@0.04	NA	Not applicable, insufficient data
1,2-Dichloroethane	29	9	0.11	ND@0.04	ND@0.081	NA	Not applicable, insufficient data
Methylene Chloride	39	8	5.2	ND@0.52	ND@0.69	NA	Not applicable, insufficient data
Tetrachloroethene	29	10	26	ND@0.068	ND@0.14	6.76	95% KM (Chebyshev) UCL, no distr.
Trichloroethene	39	16	0.7	ND@0.054	ND@0.21	0.18	95% KM (t) UCL, detects lognormal gamma distr.
Vinyl Chloride	29	2	1	ND@0.026	ND@0.051	NA	Not applicable, insufficient data

All units in $\mu g/m^3$.



Portion of the Apalachin, NY
7.5-minute USGS Quadrangle
(1988)

N

Scale
0 1000' 2000'

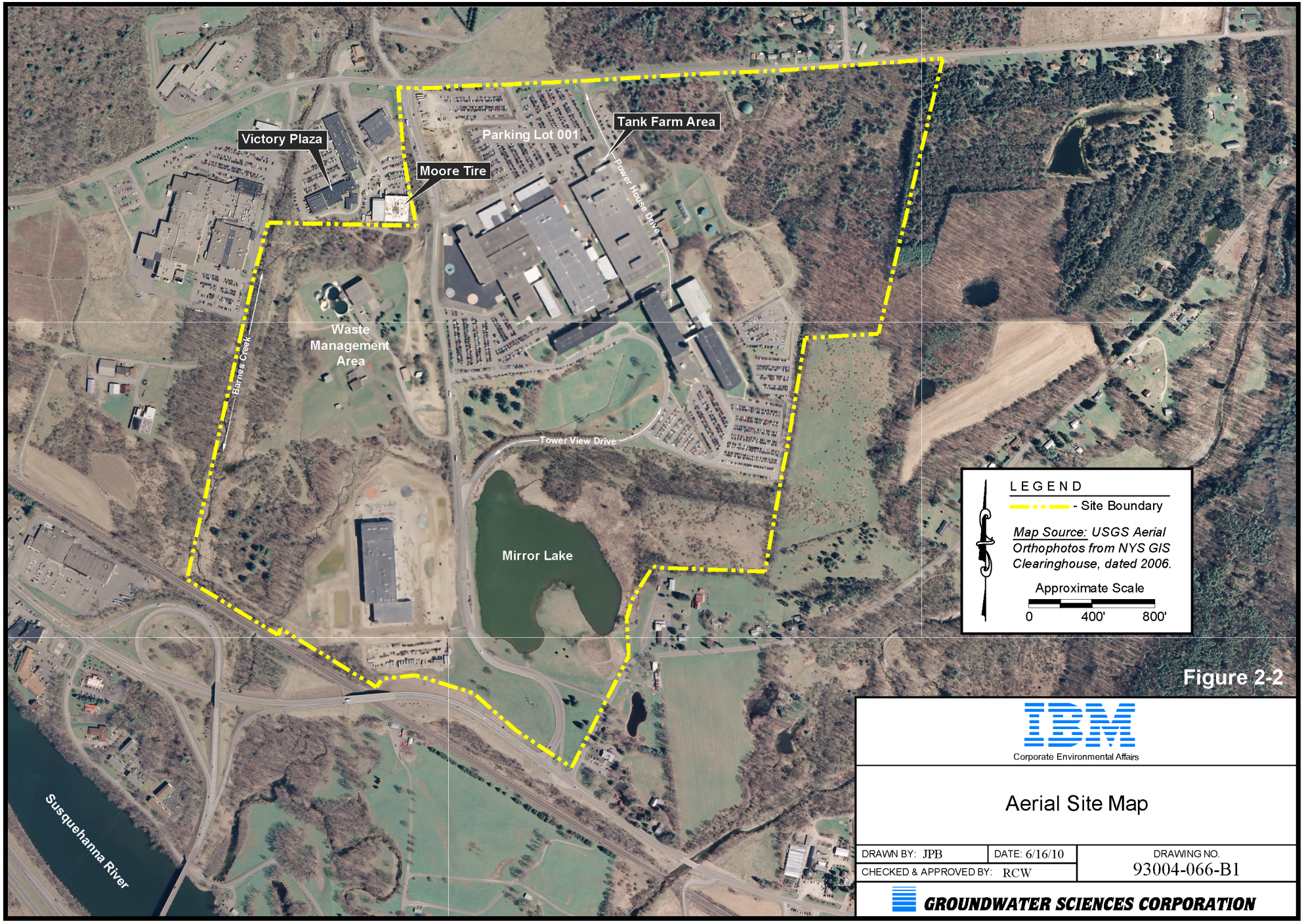
Figure 2-1

IBM
Corporate Environmental Affairs

Site Location Map

GROUNDWATER SCIENCES CORPORATION

93004-068-A6 / 6-9-10


Victory Plaza
Moore Tire
Parking Lot 001
Tank Farm Area
Power House Drive
Waste Management Area
Barnes Creek
Tower View Drive
Mirror Lake
Susquehanna River
LEGEND
- Site Boundary
Map Source: USGS Aerial Orthophotos from NYS GIS Clearinghouse, dated 2006.
Approximate Scale
0
400'
800'
Figure 2-2
IBM
Corporate Environmental Affairs
Aerial Site Map
DRAWN BY: JPB
DATE: 6/16/10
CHECKED & APPROVED BY: RCW
DRAWING NO.
93004-066-B1
GROUNDWATER SCIENCES CORPORATION

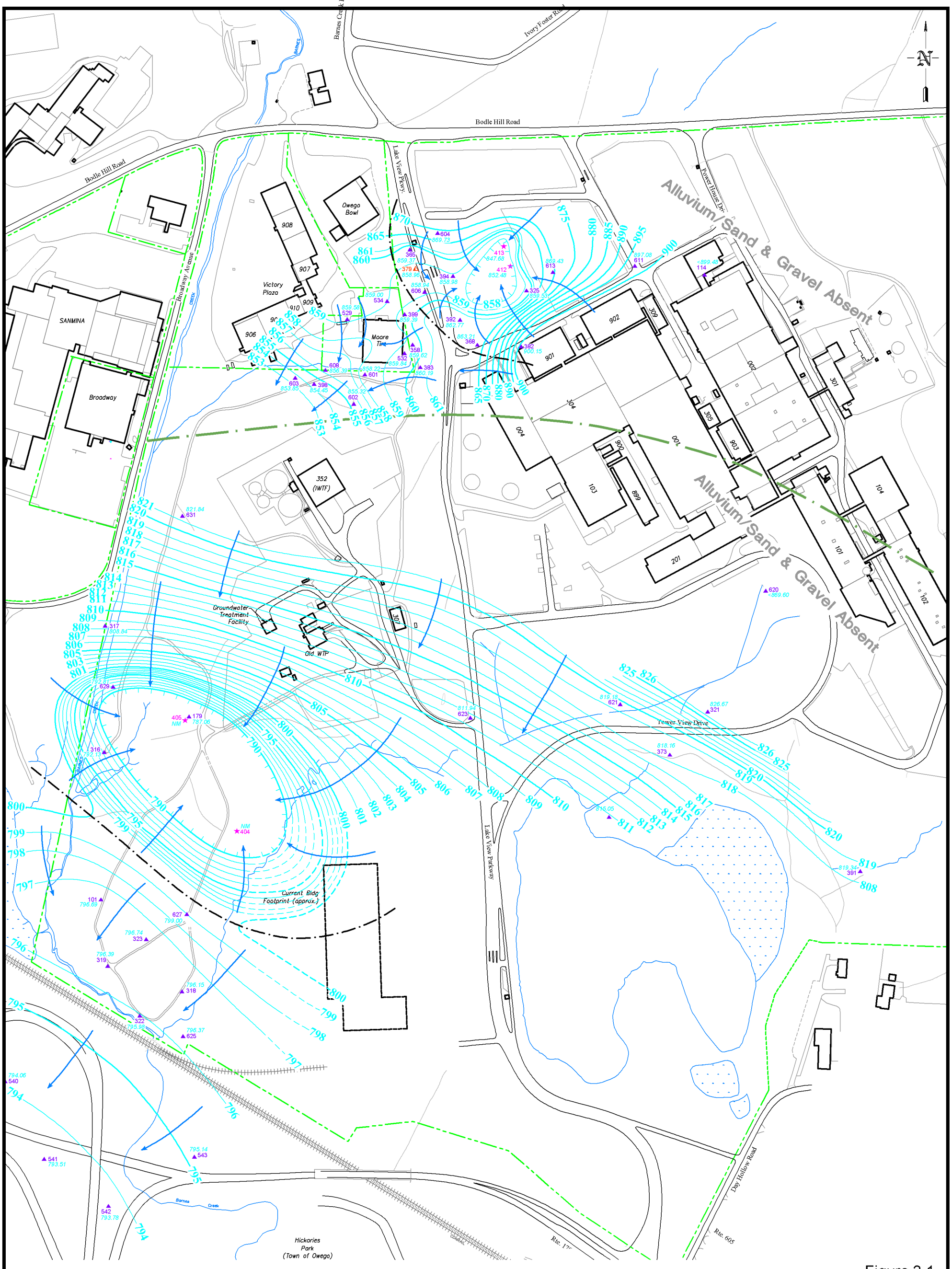


Figure 3-1

LEGEND

- ▲ - Soil monitoring well
- ◬ - Till monitoring well
- ★ - Withdrawal well
- Property Line
- Line of Separation Between Northern and Southern Sampling Events
- Swamp area
- 795.14 - Groundwater Elevation (feet amsl)
- NM - Not Measured
- 800 - Groundwater Elevation Contour (feet amsl)
- Direction of Groundwater Flow
- Groundwater Flow Divide

Note: Groundwater elevations for wells P1, P2, 161, 163, 386, 387 and 374 were not used because these wells monitor a shallow alluvial unit that is different from the outwash unit monitored by other wells in the southern areas.

Southern Area wells measured July 17, 2009; Northern Area wells measured October 19, 2009.

Scale
0 175' 350'

IBM
Owego, New York

Alluvium/Sand & Gravel
Groundwater Elevation Contour Map
Third and Fourth Quarters, 2009

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CHECKED & APPROVED BY: CAR/RCW		93004-073-D4

GROUNDWATER SCIENCES CORPORATION

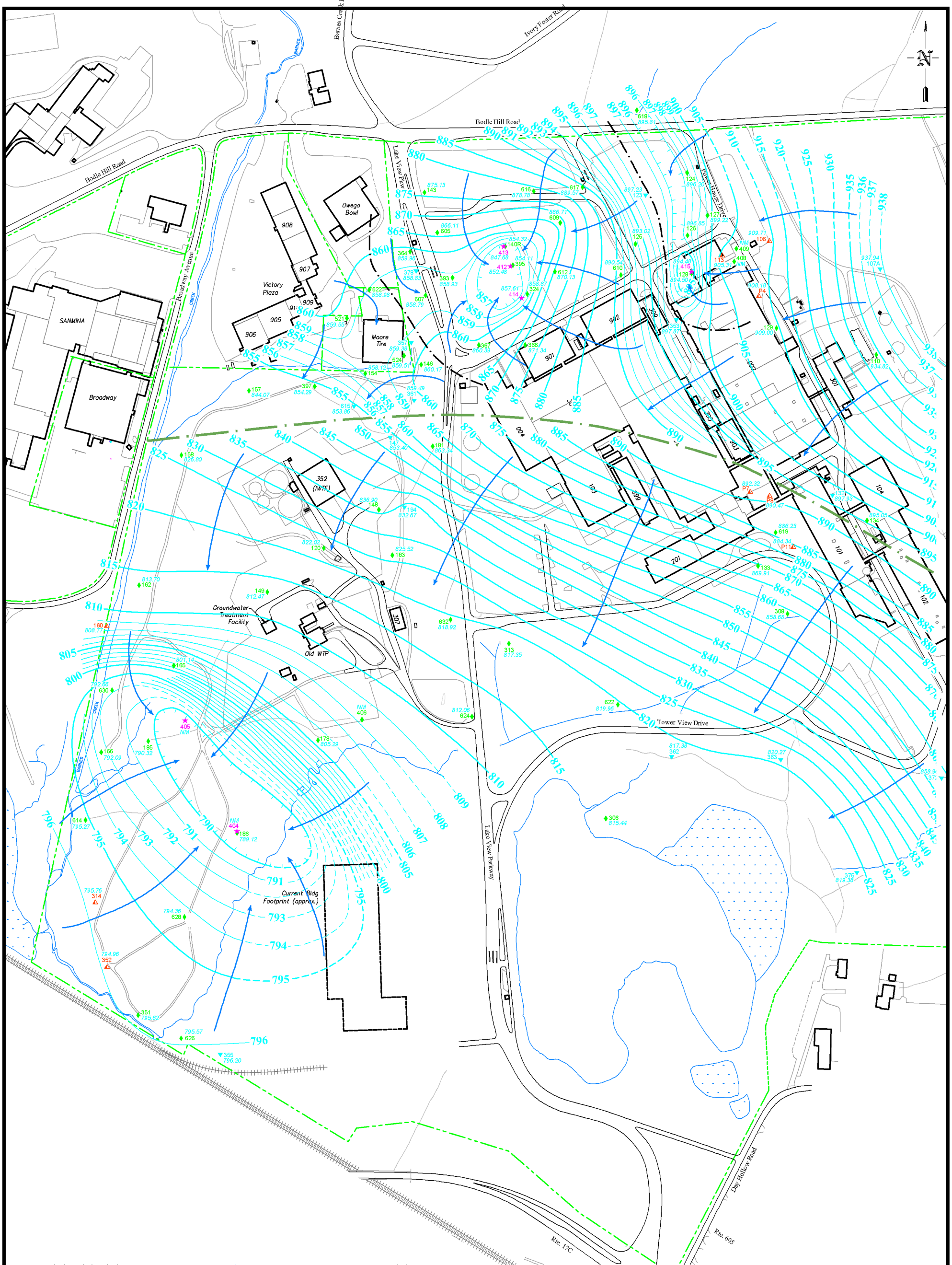


Figure 3-2

LEGEND

- Bedrock monitoring well
- Till monitoring well
- Soil/Bedrock monitoring well
- Withdrawal well
- Property Line
- Swamp area
- Direction of Groundwater Flow

796.20 - Groundwater Elevation (feet amsl)
NM - Not Measured
795 - Groundwater Elevation Contour (feet amsl)
- Inferred Groundwater Elevation Contour
- Supplemental Groundwater Elevation Contour
- Groundwater Flow Divide
- Line of Separation Between Northern and Southern Sampling Events

Southern Area wells measured July 17, 2009; Northern Area wells measured October 19, 2009.

Note: Some wells that monitor the lower till were used to construct this map.

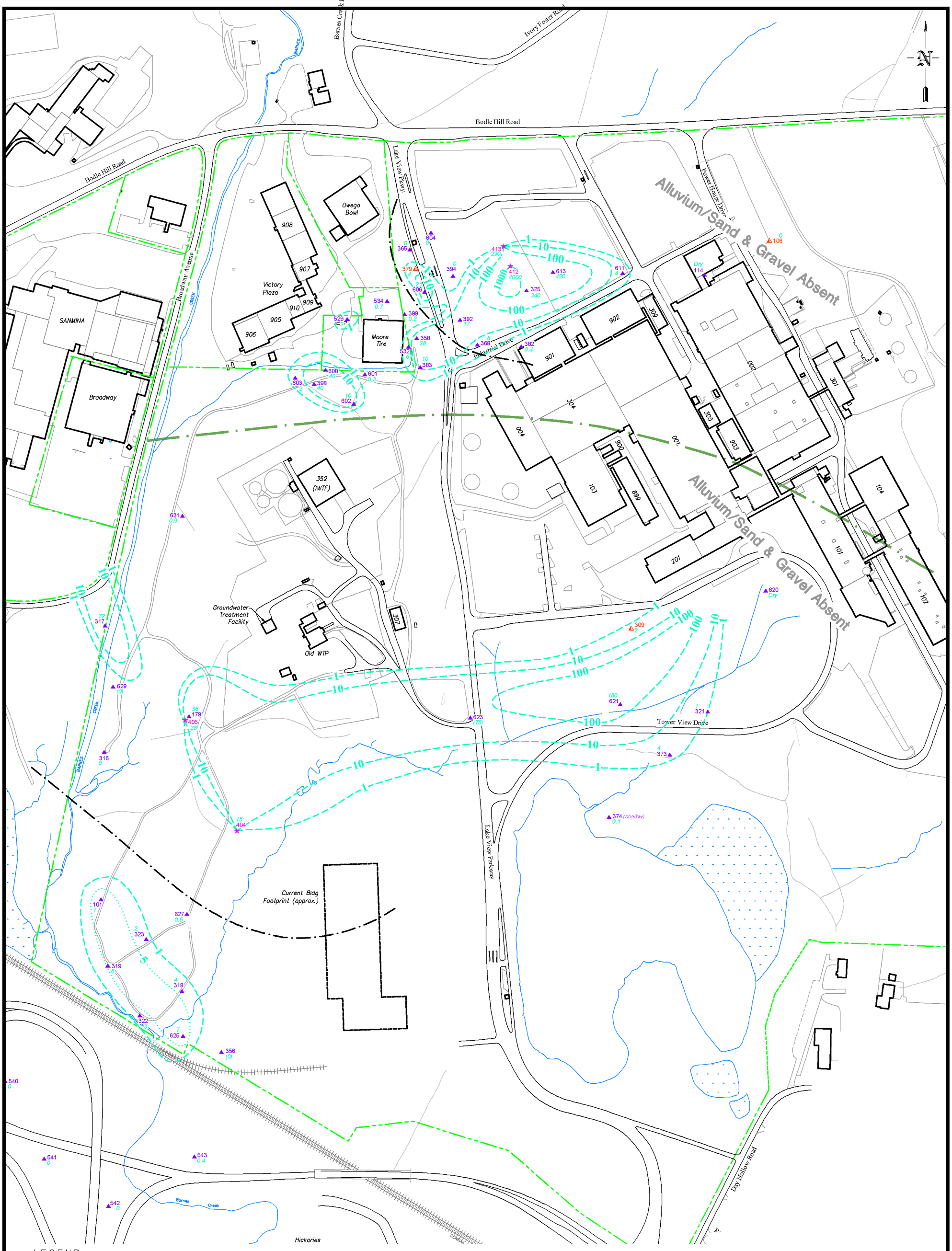
Scale
0 175' 350'

IBM
Owego, New York

Till/Bedrock
Groundwater Elevation Contour Map
Third and Fourth Quarters, 2009

DRAWN BY: MM/JB	DATE: 6/14/10	DRAWING NO.
CHECKED & APPROVED BY: CAR/RCW		93004-072-D4

GROUNDWATER SCIENCES CORPORATION



LEGEND

- ▲ - Soil monitoring well
- ◭ - Till monitoring well
- ★ - Withdrawal well
- 7 - TCA-Series Concentration (ug/l)
- (73) - Previous sampling result (for wells sampled annually)
- - Swamp area
- 100 - TCA-Series Concentration Contour (ug/l)
- 5 - Supplemental Contour
- - Groundwater Flow Divide
- - Property Line
- - Line of Separation Between Northern and Southern Sampling Events

Calculation:

$$\text{TCA Series} = \text{TCA} + \text{1,1-DCA}\left(\frac{133.42}{98.97}\right) + \text{1,1-DCE}\left(\frac{133.42}{96.95}\right) + \text{CEA}\left(\frac{133.42}{64.52}\right)$$

where
TCA = 1,1,1-Trichloroethane
1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
CEA = Chloroethane

Notes: Wells 309 and 379, which monitor the upper till, were also used to construct this map. Values shown have been rounded to two significant figures or one significant figure if less than 10 ug/l.

Southern Area wells sampled July 2009.
Northern Area wells sampled October 2009.

Notes: Wells 309, and 379, which monitor the upper till, were also used to construct this map. Values shown have been rounded to two significant figures or one significant figure if less than 10 ug/l.

Scale
0 175' 350'

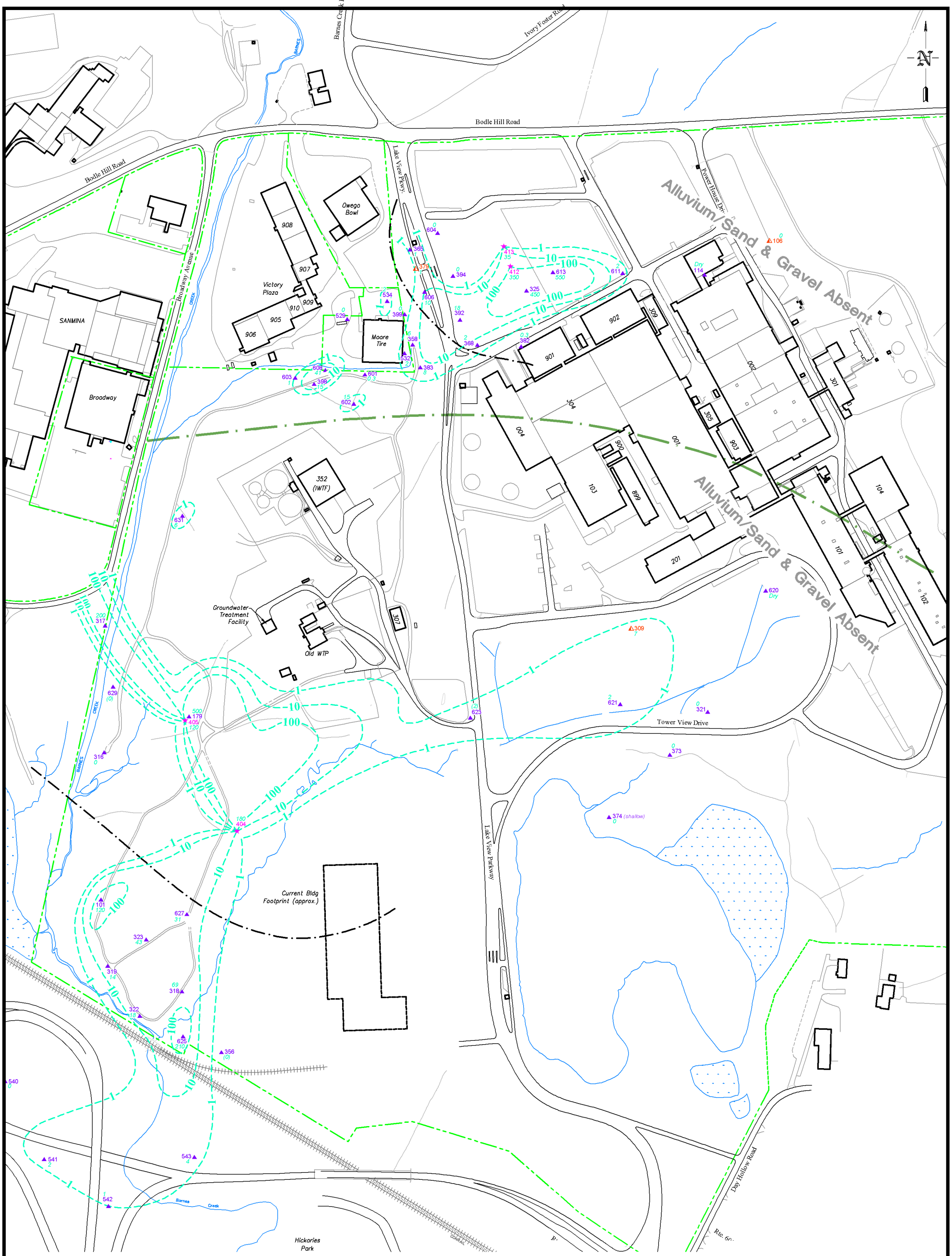
Figure 3-3

IBM
Owego, New York

Alluvium/Sand & Gravel TCA-Series Isoconcentration Contour Map
Third and Fourth Quarters, 2009

DRAWN BY: MM/JB	DATE: 6/14/10	DRAWING NO.
CHECKED & APPROVED BY: CAR/RCW		93004-076-E4

GROUNDWATER SCIENCES CORPORATION



LEGEND

- ▲ - Soil monitoring well
- △ - Till monitoring well
- ★ - Withdrawal well
- 4 - TCE-Series Concentration (ug/l)
- (2) - Previous sampling result (for wells sampled annually)
- 100 - TCE-Series Concentration Contour (ug/l)
- Groundwater Flow Divide
- Property Line
- Line of Separation between Northern and Southern Sampling Events
- Swamp area

Calculation:

$$\text{TCE Series} = \text{TCE} + \text{1,2-DCE(TOT)}\left(\frac{131.4}{96.95}\right) + \text{VC}\left(\frac{131.4}{62.5}\right)$$

where
TCE = Trichloroethene
1,2-DCE(TOT) = Total 1,2-Dichloroethene
VC = Vinyl Chloride

Notes: Wells 106, 309 and 379, which monitor the upper till, were also used to construct this map. Values shown have been rounded to two significant figures or one significant figure if less than 10 ug/l.

Southern Area wells sampled July 2009.
Northern Area wells sampled October 2009.

Scale
0 175' 350'

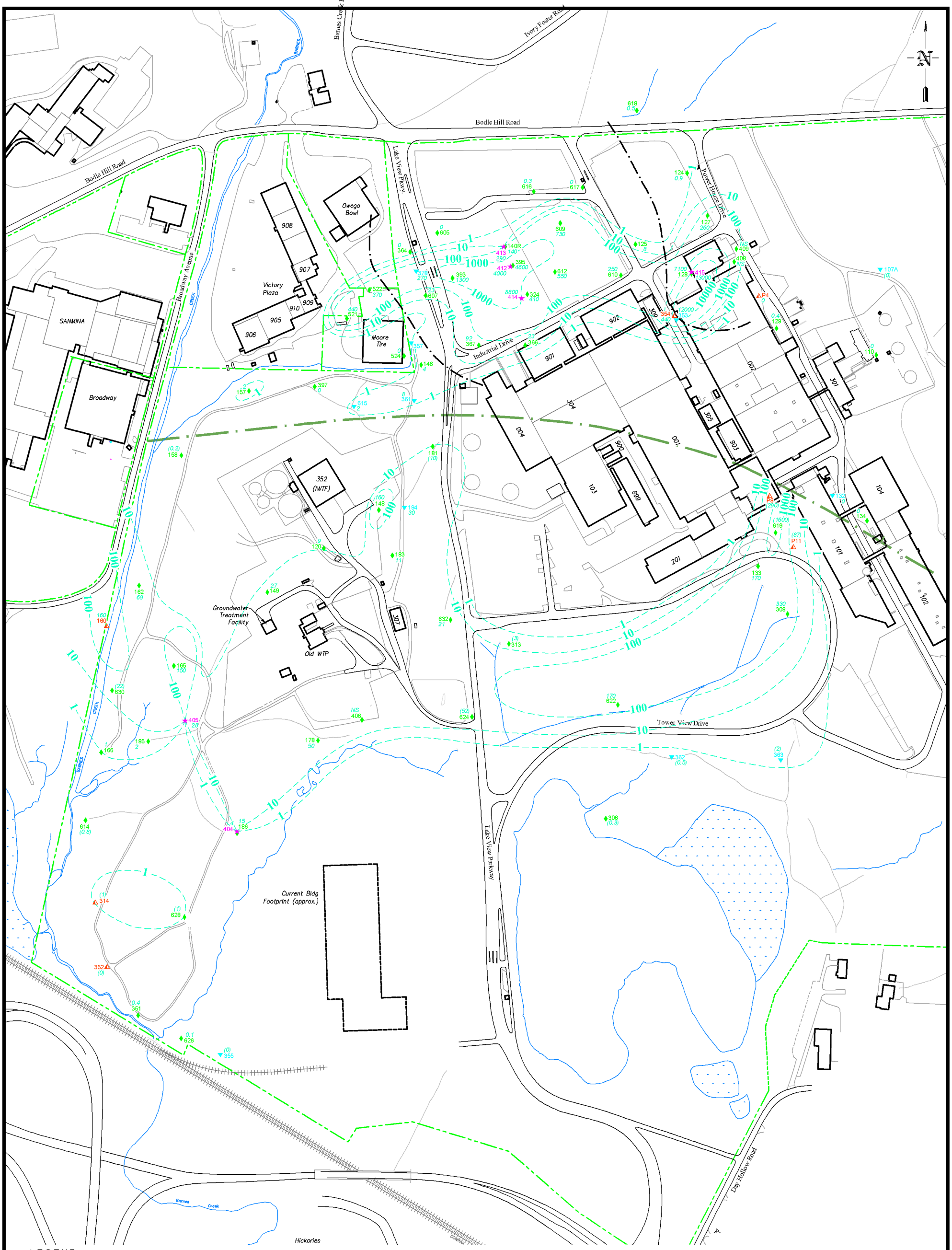
Figure 3-4

IBM
Owego, New York

Alluvium/Sand & Gravel TCE-Series Isoconcentration Contour Map
Third and Fourth Quarters, 2009

DRAWN BY: MM/JB	DATE: 6/14/10	DRAWING NO. 93004-077-E5
CHECKED & APPROVED BY: CAR/RCW		

GROUNDWATER SCIENCES CORPORATION



LEGEND

- ▼ - Bedrock monitoring well
- ♦ - Soil/Bedrock monitoring well
- ▲ - Till monitoring well
- ★ - Withdrawal well
- 0.4 - TCA-Series Concentration (ug/l)
- (1) - Previous sampling result (for wells sampled annually)
- NS - Not Sampled
- 100 - TCA-Series Concentration Contour (ug/l)
- Groundwater Flow Divide
- Property Line
- Line of Separation Between Northern and Southern Sampling Events
- Swamp area

Calculation:

$$\text{TCA Series} = \text{TCA} + \text{1,1-DCA}\left(\frac{133.42}{98.97}\right) + \text{1,1-DCE}\left(\frac{133.42}{96.95}\right) + \text{CEA}\left(\frac{133.42}{64.52}\right)$$

where
TCA = 1,1,1-Trichloroethane
1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
CEA = Chloroethane

Southern Area wells sampled July 2009.
Northern Area wells sampled October 2009.

Notes: Some wells that monitor the lower till or the bedrock were used to construct this map.
Values shown have been rounded to two significant figures or one significant figure if less than 10 ug/l.

Scale
0 175' 350'

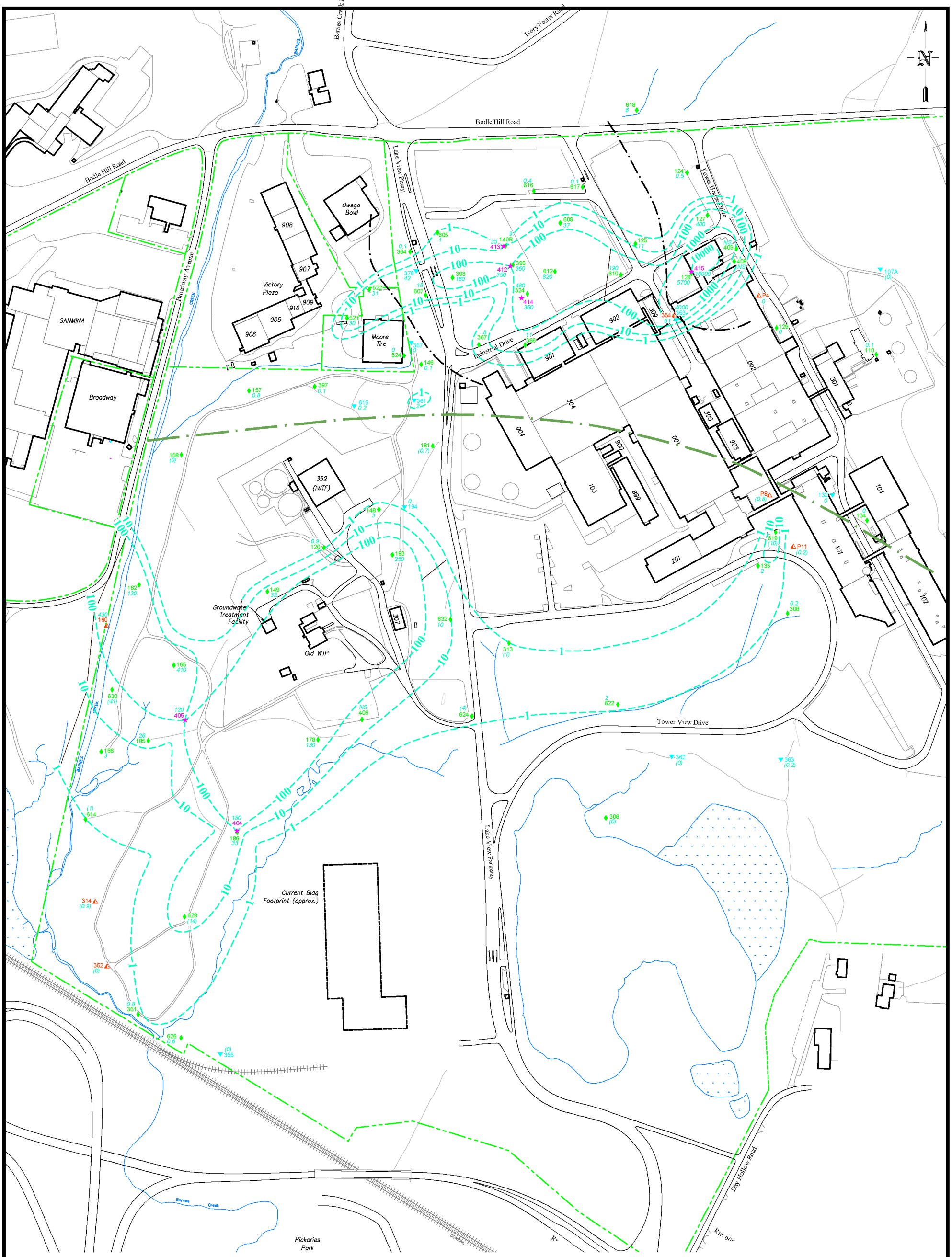
Figure 3-5

IBM
Owego, New York

Till/Bedrock TCA-Series
Isoconcentration Contour Map
Third and Fourth Quarters, 2009

DRAWN BY: MM/JB	DATE: 6/14/10	DRAWING NO.
CHECKED & APPROVED BY: CAR/RCW		93004-075-D4

GROUNDWATER SCIENCES CORPORATION



LEGEND

- Bedrock monitoring well
- Soil/Bedrock monitoring well
- Till monitoring well
- Withdrawal well
- 82 - TCE-Series Concentration (ug/l)
- (10) - Previous sample result (for wells sampled annually)
- NS - Not Sampled
- 100 - TCE-Series Concentration Contour (ug/l)
- Groundwater Flow Divide
- Property Line
- Line of Separation Between Northern and Southern Sampling Events
- Swamp area

Calculation:

$$\text{TCE Series} = \text{TCE} + \text{1,2-DCE(TOT)}\left(\frac{131.4}{96.95}\right) + \text{VC}\left(\frac{131.4}{62.5}\right)$$

where
TCE = Trichloroethene
1,2-DCE(TOT) = Total 1,2-Dichloroethene
VC = Vinyl Chloride

Notes: Some wells that monitor the lower till or the bedrock were used to construct this map. Values shown have been rounded to two significant figures. or one significant figure if less than 10 ug/l.

Southern Area wells sampled July 2009.
Northern Area wells sampled October 2009.

Scale
0 175' 350'

Figure 3-6

IBM
Owego, New York

Till/Bedrock TCE-Series
Isoconcentration Contour Map
Third and Fourth Quarters, 2009

DRAWN BY: MM/JB	DATE: 6/14/10	DRAWING NO.
CHECKED & APPROVED BY: CAR/RCW		93004-074-D4

GROUNDWATER SCIENCES CORPORATION

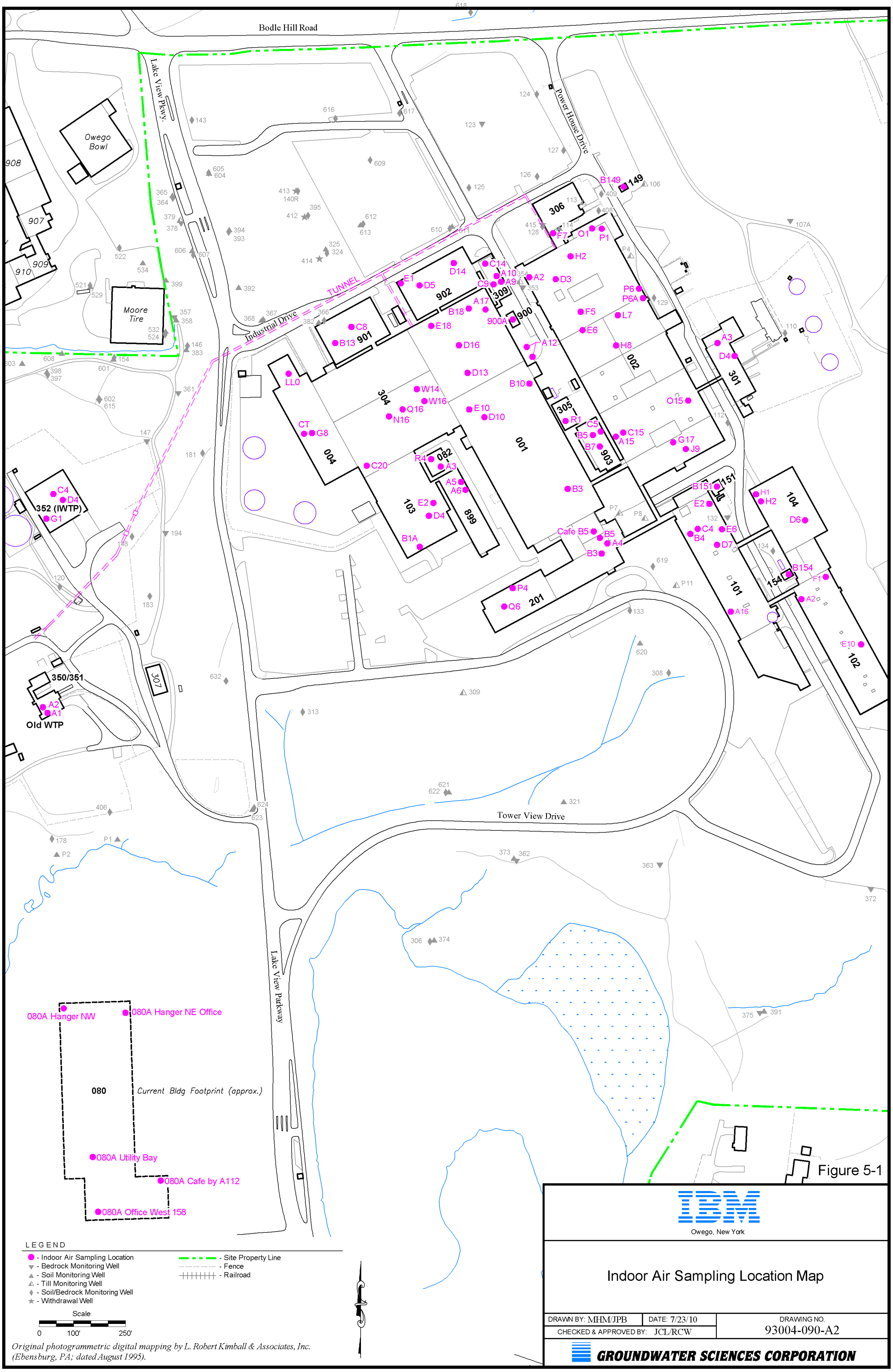
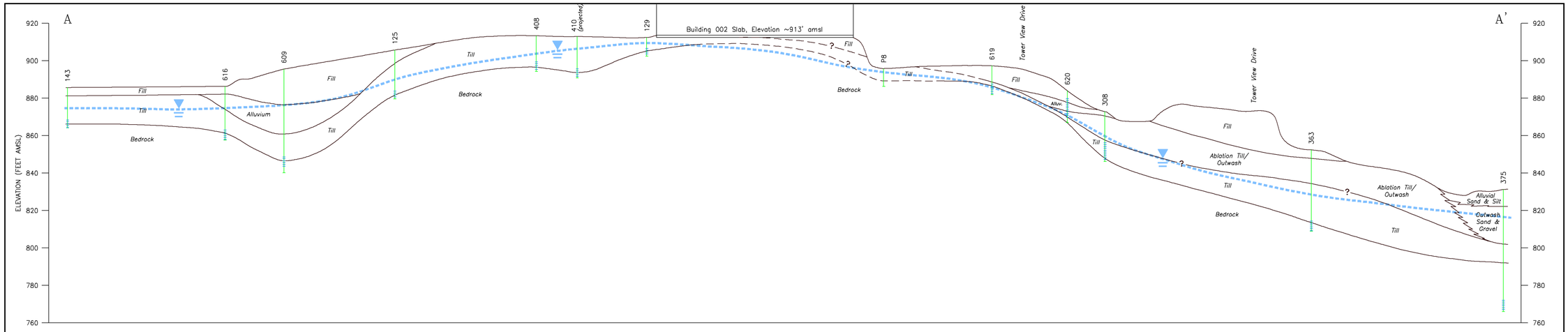
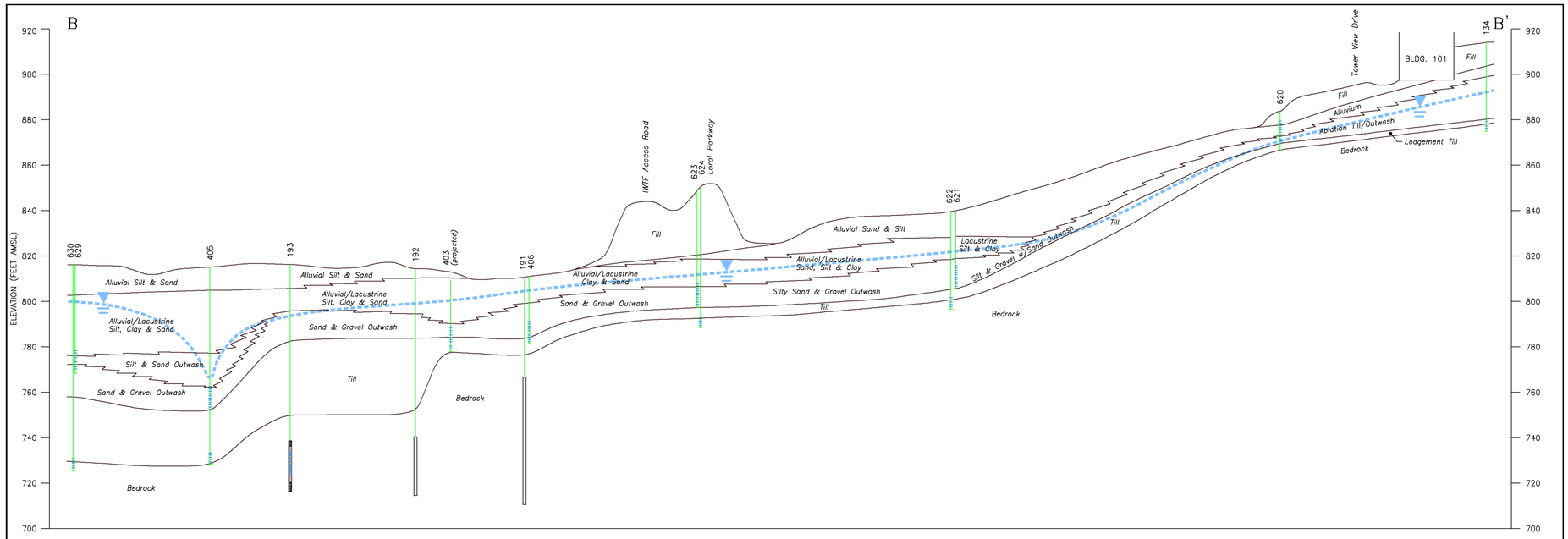


Figure 5-1

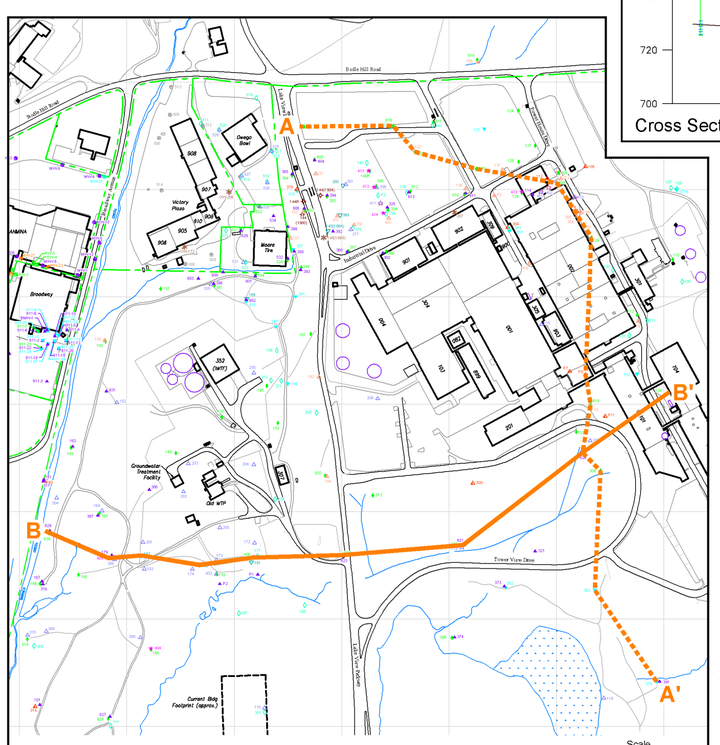
Original photogrammetric digital mapping by L. Robert Kimball & Associates, Inc. (Ebensburg, PA; dated August 1995).



Cross Section A-A



Cross Section A-A

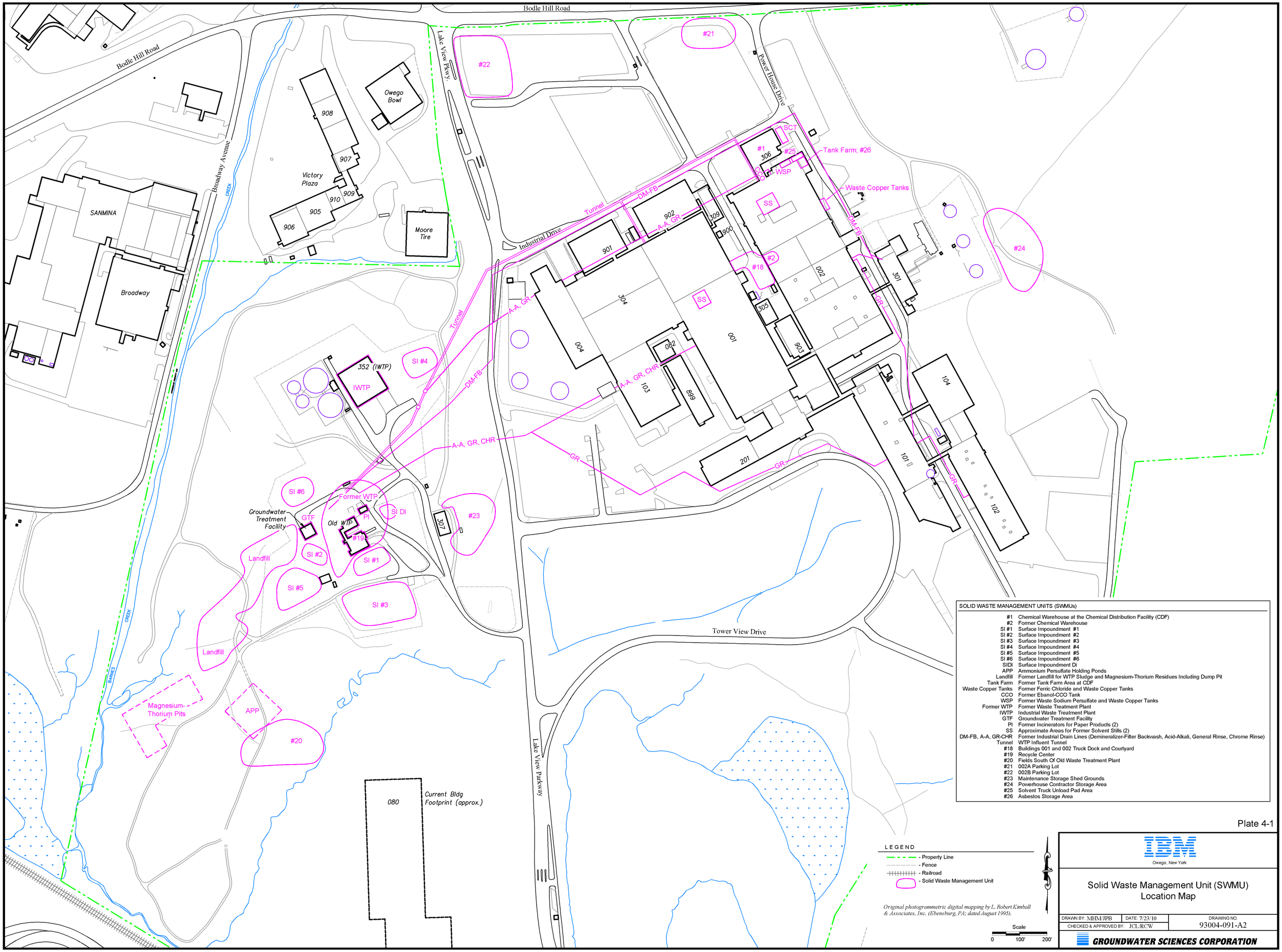


Cross Section Location Map

LOCATION MAP LEGEND

B——B' - Cross Section Trace

- - - -



SOLID WASTE MANAGEMENT UNITS (SWMUs)

#1	Chemical Warehouse at the Chemical Distribution Facility (CDF)
#2	Former Chemical Warehouse
SI #1	Surface Impoundment #1
SI #2	Surface Impoundment #2
SI #3	Surface Impoundment #3
SI #4	Surface Impoundment #4
SI #5	Surface Impoundment #5
SI #6	Surface Impoundment #6
SIDI	Surface Impoundment Di
APP	Ammonium Persulfate Holding Ponds
Landfill	Former Landfill for WTP Sludge and Magnesium-Thorium Residues Including Dump Pit
Tank Farm	Former Tank Farm Area at CDF
Waste Copper Tanks	Former Ferric Chloride and Waste Copper Tanks
CCO	Former Ebanol-CCO Tank
WSP	Former Waste Sodium Persulfate and Waste Copper Tanks
Former WTP	Former Waste Treatment Plant
IWTP	Industrial Waste Treatment Plant
GTF	Groundwater Treatment Facility
PI	Former Incinerators for Paper Products (2)
SS	Approximate Areas for Former Solvent Stills (2)
DM-FB, A-A, GR-CHR	Former Industrial Drain Lines (Demineralizer-Filter Backwash, Acid-Alkali, General Rinse, Chrome Rinse)
Tunnel	WTP Influent Tunnel
#18	Buildings 001 and 002 Truck Dock and Courtyard
#19	Recycle Center
#20	Fields South Of Old Waste Treatment Plant
#21	002A Parking Lot
#22	002B Parking Lot
#23	Maintenance Storage Shed Grounds
#24	Powerhouse Contractor Storage Area
#25	Solvent Truck Unload Pad Area
#26	Asbestos Storage Area

LEGEND

- Property Line
- Fence
- Railroad
- Solid Waste Management Unit

Original photogrammetric digital mapping by L. Robert Kimball & Associates, Inc. (Ebensburg, PA; dated August 1995).

Scale

0 100' 200'

Plate 4-1

IBM

Owego, New York

Solid Waste Management Unit (SWMU) Location Map

DRAWN BY: MHM/JPB	DATE: 7/23/10	DRAWING NO. 93004-091-A2
CHECKED & APPROVED BY: JCL/RCW		

GROUNDWATER SCIENCES CORPORATION

APPENDIX A

LIMITATIONS

APPENDIX A

LIMITATIONS

1. The findings and conclusions contained in this report are based, in part, on our interpretation of data and information obtained by others as presented in reports and files made available to GSC for review. As additional data becomes available, it may be necessary to re-evaluate the findings and conclusions of this report.

2. The generalized soil and bedrock profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed in part on the data obtained from soil and groundwater samples from subsurface explorations observed and logged by GSC or others. The nature and extent of variations between these explorations may not become evident until further investigation or remediation.

4. Water level measurements have been recorded by GSC at times and under conditions stated within the text of this report. Note that fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors not evident at the time measurements were made.

5. The findings and conclusions contained in this report are based, in part, upon various types of chemical data as well as historical and hydrogeologic information developed by previous investigators. While GSC has reviewed that data and information as stated in this plan, any of GSC's findings and conclusions that have relied on that information will be contingent on its validity. Should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by GSC and the findings and conclusions presented herein may be modified accordingly.

6. Sampling and quantitative laboratory testing was performed by GSC or others as noted within the report. Where such analyses have been conducted by an outside laboratory, GSC has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.

7. This report has been prepared for, and is intended for the exclusive use of the IBM Corporation. The contents of this report should not be relied upon by any other party other without the express written consent of IBM and GSC. No other warranty, express or implied, is made.

8. In the event that any changes in the nature, design, or location of the facilities are planned, the findings and conclusions contained in this report should not be considered valid unless the changes are reviewed and findings and conclusions of this report modified or verified in writing by GSC. GSC is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or re-use of the subsurface data without the express written authorization of GSC.

App A Limitations 26Jul2010.doc

APPENDIX B

LOCKHEED INDOOR AND AMBIENT AIR

SAMPLING INFORMATION AND DATA

APPENDIX B.1

Sampling Procedures/Methodology

ARCADIS BBL
Infrastructure, environment, facilities

Imagine the result

Lockheed Martin Corporation

Work Plan for Evaluating Indoor and Ambient Air Quality

Lockheed Martin Corporation Facility

Owego, New York

January 15, 2007

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ARCADIS BBL

Work Plan

LMC Owego, New York

Signature 1 Name
Title

Signature 2 Name
Title

Signature 3 Name
Title

DRAFT

Prepared for:
Lockheed Martin Corporation

Prepared by:
ARCADIS U.S., Inc.
3350 Buschwood Park Drive
Suite 100
Tampa
Florida 33618
Tel 813.933.0697
Fax 813.932.9514

Our Ref.:
Project Number

Date:
January 15, 2007

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1. Procedures/Sampling Methodology

This section presents the detailed field procedures and sampling methodology for the work to be completed for this assessment at the LMC Owego, NY and associated satellite facilities.

1.1 Indoor Air Sampling

Indoor air samples will be collected in accordance with the NYSDOH Guidance (NYSDOH, 2006). The buildings at the LMC Owego, NY and associated satellite facilities are currently used for commercial and industrial activities. Because the purpose of this sampling is to assess and document the indoor air quality within each building in which workers are exposed, sampling will be conducted during normal business hours. To promote the "worst-case building conditions," the windows and doors will be kept closed to the extent practical at least 24 hours prior to and during the sampling. However, the heating, ventilation and air conditioning (HVAC) system and any other exhaust fans will be operated normally during the sampling event to provide for increased pressure differential so that a "worst-case" vapor intrusion scenario is achieved.

1.1.1 Sampling Equipment and Methodology

Indoor air samples will be collected during a 24-hour period in pre-evacuated 6-liter stainless steel SUMMA® canisters. The canisters will be placed at breathing zone height, approximately 3 feet above the floor level (NYSDOH, 2006). A vacuum gauge will be used to check both the initial and final vacuum in the canisters.

1.1.2 Sampling Equipment and Methodology

To the extent possible, the ambient air samples will be collected from open areas and away from extraneous point sources such as car exhausts or fuel tanks. Ambient air samples will be collected in pre-evacuated 6-liter stainless steel SUMMA® canisters. Ambient air samples will be collected at the approximate midpoint of the ground story level of the building, usually approximately 5 feet above ground surface, and approximately 5 to 15 feet away from the building (USEPA, 1992). All other sampling equipment and methods will be the same as those used to collect indoor air samples.

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2. Analytical Methods

The analytical protocol for the 2007 sampling event will parallel the analytical program completed during the 2006 event. **Table 4-1** lists the analytes that will be used for the LMC Owego, NY Facility.

Table 4-1

USEPA Method TO-15 Target Analyte List and Associated Reporting Limits

LMC Owego, NY Facility

Compound	ppbv	M.W.	µg/m^3
1,1,1-Trichloroethane	0.01	133.42	0.05
1,1-Dichloroethane	0.01	98.97	0.04
1,1-Dichloroethene	0.01	96.95	0.04
1,2-Dichloroethane	0.01	98.96	0.04
Benzene	0.01	78.11	0.03
Chloroform	0.01	119.39	0.05
Methylene Chloride	0.5	84.94	1.74
Tetrachloroethene	0.01	165.85	0.07
Toluene	0.01	92.13	0.04
Trichloroethene	0.01	131.4	0.05
Vinyl Chloride	0.01	62.5	0.03

Notes:

ppbv = part per billion by volume.
M.W. = molecular weight.
µg/m^3 = microgram per cubic meter of air.

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Information regarding the QA/QC measures to be undertaken for the sampling and analysis is provided in Section 3.

3. Quality Assurance/Quality Control

All samples collected during this program will be analyzed using a laboratory that has a current New York State Environmental Laboratory Approval Program certification for USEPA Method TO-15 for indoor air. This section discusses the data quality objectives for this program.

3.1 General Precautions

Sampling personnel will conduct themselves in a manner intended to minimize the potential for introducing interference during the sampling events. For instance, sampling personnel will not handle hazardous substances such as gasoline, use permanent marking pens or smoke cigarettes during the sampling events.

3.2 Indoor and Ambient Air

All sampling will be conducted using the procedures outlined in Section 1 and in accordance with the appropriate standard operating procedures (SOPs) listed below :

- SOP: Ambient Air Sampling Using USEPA Method TO-15
- SOP: Indoor Air Sampling Using USEPA Method TO-15

Detailed information regarding the time and location will be collected for each sample, and the information will be recorded on the Indoor Air Quality Questionnaire and Building Inventory Form. Once samples are collected they will be stored according to the method protocol and delivered to the analytical laboratory within the next business day. Samples will not exceed recommended holding times prior to being processed by the laboratory. Laboratory procedures for sample accession and chain of custody will be followed.

All canisters will be laboratory-certified clean (batch certification) by gas chromatography/mass spectrometry (GC/MS) analysis before being used in the field. All canisters will be used within 14 days of shipment. Batch certification will be noted prior to collection of samples. A vacuum gauge will be used to check both the initial and final vacuum in the canisters. The initial vacuum will be checked prior to use to determine mechanical integrity of the canister, and should be approximately -28 inches

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mercury (in Hg). The final vacuum should read approximately -2 in Hg. Site name, sample location, number and date will be recorded on a chain of custody form and on a blank tag attached to the canister.

3.2.1 Quality Assurance/Quality Control for Laboratory Analysis

3.2.1.1 Duplicate Samples

One field duplicate sample will be collected and sent to the laboratory for analysis to evaluate the reproducibility of the sampling technique used. As such, one QC field duplicate will be collected from a location selected in the field for every 20 samples collected with each event. Duplicates will be collected in canisters that are identical to other investigative sample containers. While each investigative sample will be given a sample identifier indicative of a sample location, duplicate samples will be given an indistinguishable sample identifier so that the laboratory will not know if a sample is a duplicate. Actual sample identifiers for duplicate samples will be noted in the field logbook. Duplicate samples will be collected as split samples, by using a second sample container and simultaneously collecting indoor air off a sampling “T” at the same time the original investigative sample is being collected.

3.2.1.2 Analytical Laboratory Quality Control Checks

Analytical laboratory QC checks to be used include method blanks, laboratory duplicates, calibration standards and internal standards as specified in the most recent version of the NYSDEC Analytical Services Protocol (ASP) Exhibits B (reporting deliverables), D (analytical methods) and E (quality assurance/quality control) (NYSDEC, 2005).

3.2.2 Data Validation

All analytical data will be reported by the laboratory with NYSDEC ASP Exhibit B deliverables. An electronic data deliverable (EDD) will be provided by the laboratory to facilitate transfer of data into a project database for the building. A chemist(s) not employed by the analytical laboratory will validate the data generated by the contract laboratory. The chemist(s) will be experienced in performing data validations and will be familiar with the analytical methods used. The applicable analytical methods and the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, 1999) will be used to validate all data generated by the laboratory.

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APPENDIX B.2

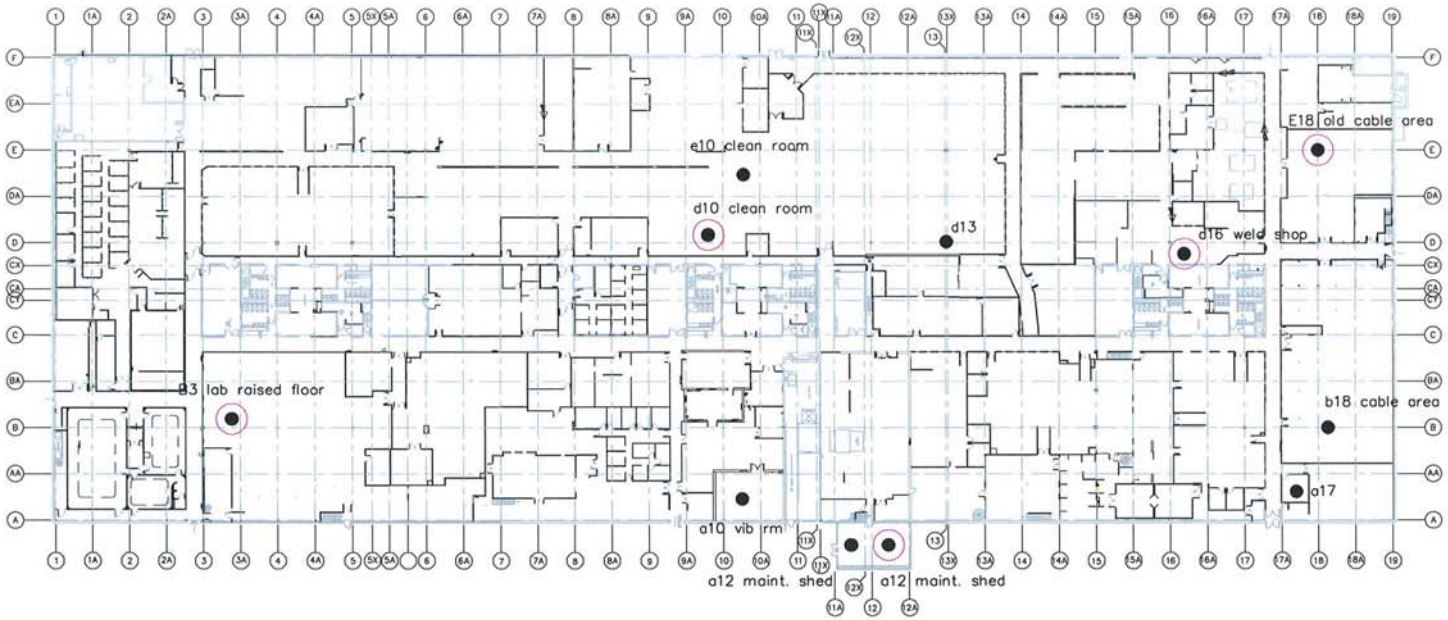
Sampling Location Maps

Building List at Lockheed Martin Owego Facility

Figure 1: Overall Site Map
Figure 2: Building 001
Figure 3: Building 002
Figure 4: Building 004
Figure 5: Building 080
Figure 6: Building 082 (A–10 Building)
Figure 7: Building 101
Figure 8: Building 102
Figure 9: Building 103
Figure 10: Building 104
Figure 11: Building 149
Figure 12: Building 151
Figure 13: Building 154
Figure 14: Building 201
Figure 15: Building 301
Figure 16: Building 304
Figure 17: Building 305
Figure 18: Building 306
Figure 19: Building 309
Figure 20: Building 350/351– Basement
Figure 21: Building 350/351 – Level A
Figure 22: Building 352
Figure 23: Building 899
Figure 24: Building 900
Figure 25: Building 901
Figure 26: Building 902
Figure 27: Building 903

FIRE PROT. WATER TANK 200,000 GAL
DOMESTIC/FIRE WATER TANK 1,000,000 GAL
FIRE PUMP BLDG 149
GAS METER BLDG 390 (MAIN SITE DISTRIBUTION)
COOLING TOWER 361
FUEL OIL TANKS 370
COOLING TOWER 360
POWERHOUSE BLDG 301 (MAIN SITE DISTRIBUTION)
EMER. VEHICLE BLDG 510
BLDG 125 (PASSWAY)
EMER GEN BLDG 320
LIQ. NIT. TANK 371
GEN. BLDG
BLDG 134
BLDG 171 (PASSWAY)
1020 PARKING
BLDG 102
BLDG 101
BLDG 122 (PASSWAY)
BLDG 201
BLDG 318
BLDG 123 (PASSWAY)
BLDG 001
EMER GEN BLDG 317
BLDG 304
BLDG 082
BLDG 004
HELO PADS
GEN BLDG
BLDG 600
BLDG 602
BLDG 500
BLDG 501
BLDG 502
BLDG 503
BLDG 504
BLDG 505
BLDG 506
BLDG 507
BLDG 508
BLDG 509
BLDG 510
BLDG 511
BLDG 512
BLDG 513
BLDG 514
BLDG 515
BLDG 516
BLDG 517
BLDG 518
BLDG 519
BLDG

BUILDING 001 – LEVEL A						
Sample ID:		001A A12	001A B3	001A D10	001A D16	001A E18
Date Collected:	Indoor Air Guidance	2/10/2009	2/10/2009	2/10/2009	2/10/2009	2/10/2009
Analyte						
1,1,1 – Trichloroethane	2,200	0.47	3.5	2.9 [3.1]	1.6	1.7
1,1 – Dichloroethane	500	0.57	0.34	0.31 [0.32]	0.18	0.20
1,1 – Dichloroethene	200	0.20	0.36	0.31 [0.32]	0.25	0.21
1,2 – Dichloroethane	0.94	0.11	0.12	0.12 [0.13]	0.13	0.15
Benzene	3.1	1.7	1.1	0.99 [1.1]	1.3	1.5
Chloroform	1.1	0.083	2.9	0.43 [0.38]	0.12	0.15
Methylene Chloride	60	ND (0.69)	0.69	1.8 [1.8]	1.4	1.8
Tetrachloroethene	100	0.13	0.21	0.20 [0.35]	0.75	0.81
Toluene	400	10 EJ	53 EJ	7.2 EJ [13 EJ]	13 EJ	13 EJ
Trichloroethene	5	3.5	0.75	1.0 [1.2]	1.8	1.7
Vinyl Chloride	2.8	ND (0.051)	ND (0.051)	ND (0.051) [ND (0.051)]	ND (0.051)	ND (0.051)



BUILDING 001 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION
- RESULT EXCEEDS INDOOR AIR GUIDELINE (SEE NOTE 4)

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.
6. [ ] = BRACKETED VALUES INDICATE RESULTS OF DUPLICATE SAMPLE ANALYSIS.
7. E = THE COMPOUND WAS QUANTITATED ABOVE THE CALIBRATION RANGE.
8. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

DRAFT

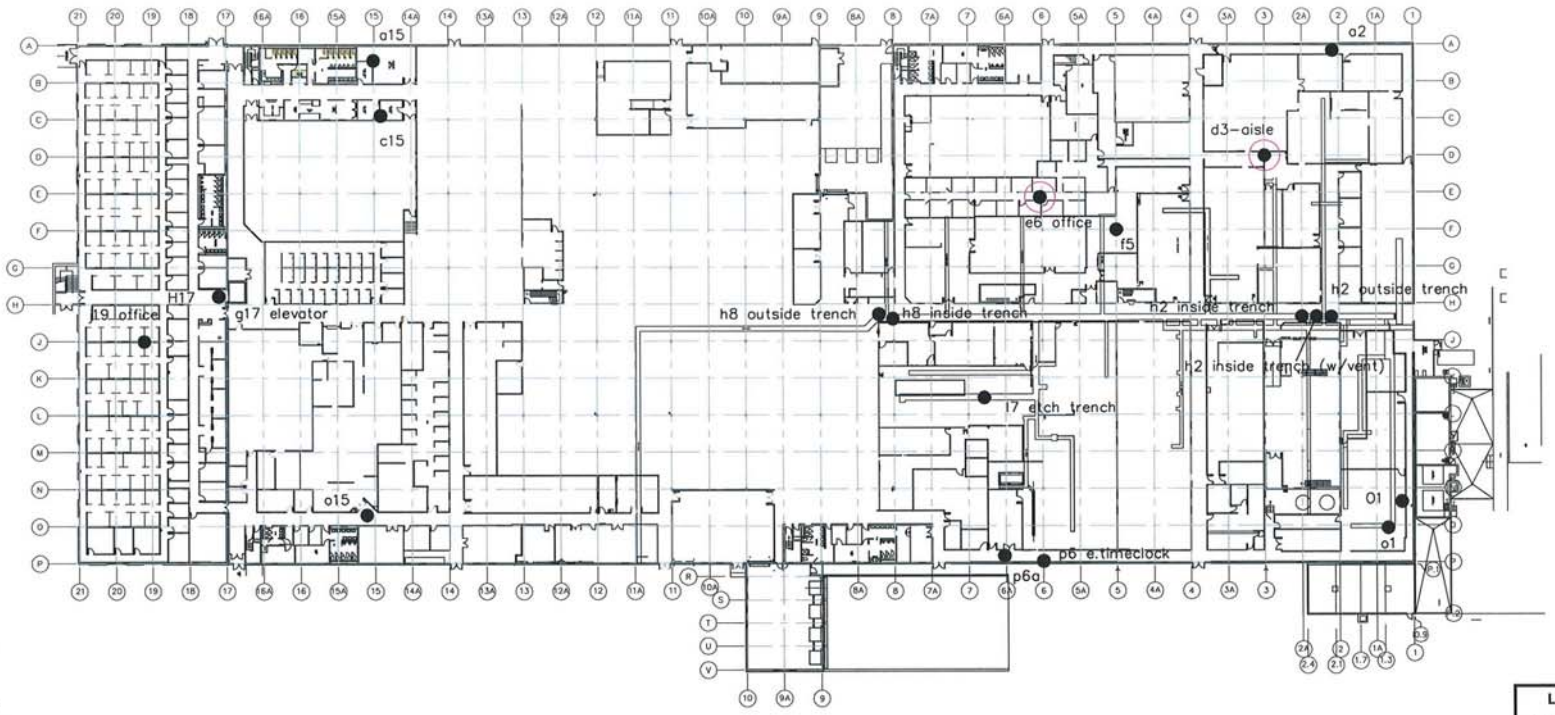
LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 001 - LEVEL A

ARCADIS

FIGURE 2

BUILDING 002 – LEVEL A			
Sample ID:		002A D3	002A E6
Date Collected:	Indoor Air Guidance	2/10/2009	2/10/2009
Analyte			
1,1,1 – Trichloroethane	2,200	1.9	0.82
1,1 – Dichloroethane	500	0.065	ND (0.040)
1,1 – Dichloroethene	200	1.4	0.21
1,2 – Dichloroethane	0.94	0.11	0.17
Benzene	3.1	1.2	1.2
Chloroform	1.1	0.10	0.088
Methylene Chloride	60	ND (0.69)	ND (0.69)
Tetrachloroethene	100	0.14	0.13
Toluene	400	5.3 EJ	4.5 EJ
Trichloroethene	5	1.9	2.3
Vinyl Chloride	2.8	ND (0.051)	ND (0.051)



BUILDING 002 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.
6. E = THE COMPOUND WAS QUANTITATED ABOVE THE CALIBRATION RANGE.
7. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

DRAFT

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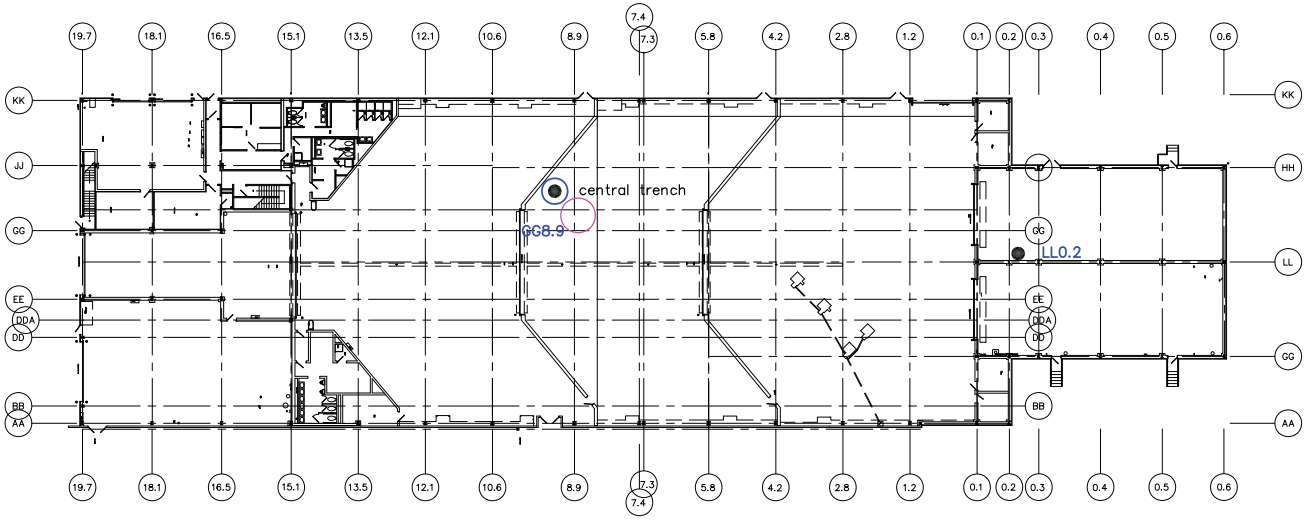
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 002 - LEVEL A

ARCADIS

FIGURE 3

Building 004 – Level A		
Sample ID:		004A GG8
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.86
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	0.094
Benzene	3.1	2.3
Chloroform	1.1	ND(0.098)
Methylene chloride	60	2.4
Tetrachloroethene	100	0.23
Toluene	400	22 EJ
Trichloroethene	5	0.35
Vinyl chloride	2.8	ND(0.051)



BUILDING 004 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2006 6 LITER SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN CORPORATION IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. 2005 LABORATORY ANALYTICAL RESULTS PROVIDED BY CENTEK LABORATORIES. RESULTS TAKEN FROM BBL (5/19/2005) REPORT TO LOCKHEED MARTIN CORPORATION MARCH THROUGH APRIL 2005 INDOOR AIR SAMPLE RESULTS.
5. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS.

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LOCKHEED MARTIN CORPORATION
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

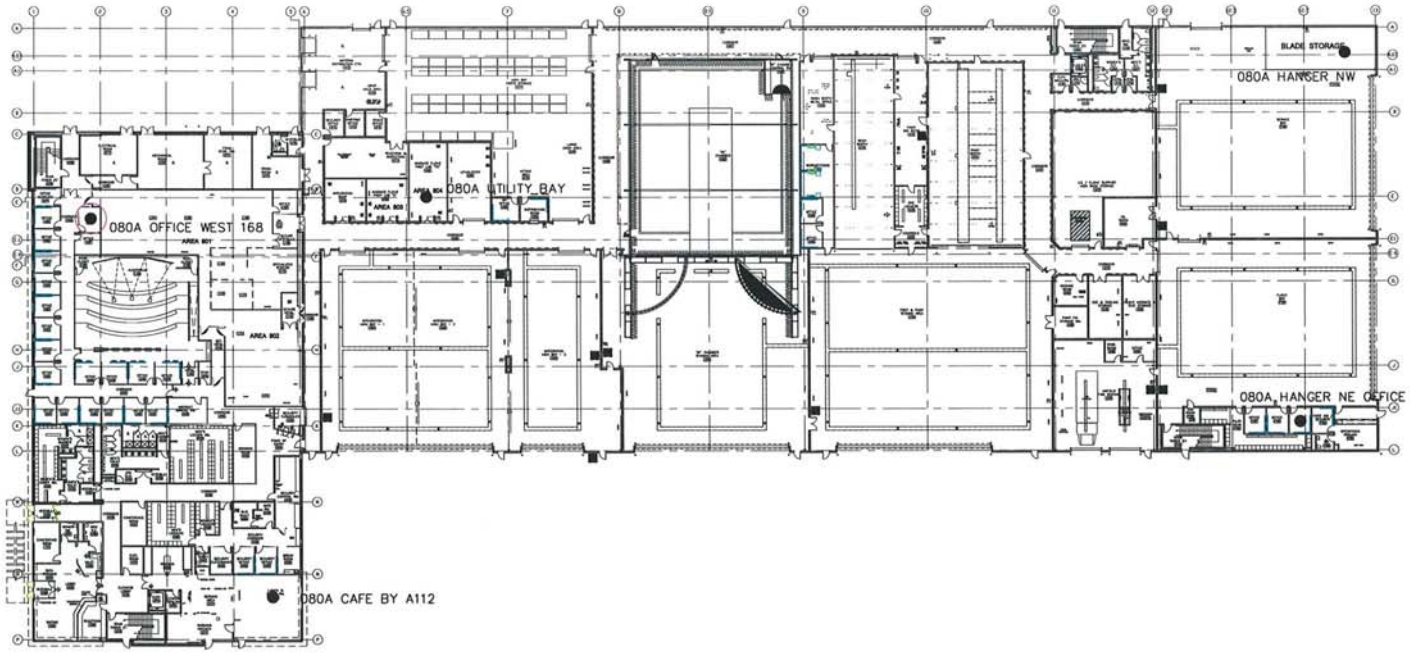
SAMPLING LOCATIONS - BUILDING 004

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
10

[SYR-85-LEAD] SYR-85-QMS RCA AMS LAYER: ON=*; OFF=*REF*
G:\CAD\ACTIVE\-DWG\ACT\38026013\DSR07\38026C05.DWG SAVED:7/12/2007 12:19 PM LAYOUT:10 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED:7/12/2007 12:19 PM BY:ASCHILLING
PROJECTNAME: ----
XREFS:
38026X00 IMAGES:

BUILDING 080 – LEVEL A		
Sample ID:		080A E1
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	0.076
1,1 – Dichloroethane	500	ND (0.040)
1,1 – Dichloroethene	200	ND (0.040)
1,2 – Dichloroethane	0.94	0.21
Benzene	3.1	1.4
Chloroform	1.1	0.098
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.10
Toluene	400	2.7
Trichloroethene	5	ND (0.054)
Vinyl Chloride	2.8	ND (0.051)



BUILDING 080 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

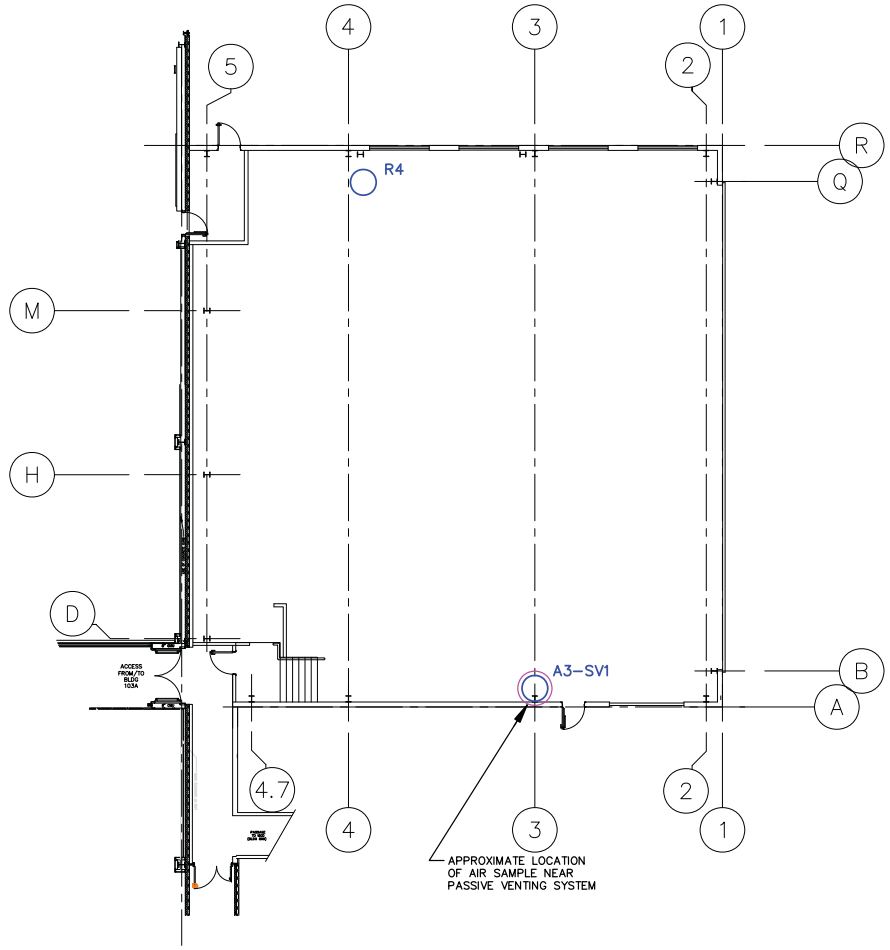
AIR ANALYTICAL RESULTS - BUILDING 080 - LEVEL A

ARCADIS

FIGURE 6

CITY: SYRACUSE DIV/GROUP: 141/ENVCAD DB: LJP LAF LD:(OK) PIC: L.MCBURNEY PM: G.THOMAS TM: A.FAZZARANO LYR:(OK)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0038\0000\10000\DWG\OWEGO\EGEJAA009\38093514.DWG LAYOUT: 6 SAVED: 3/9/2009 4:17 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/9/2009 4:17 PM BY: FORAKER, LYDIA
XREFS: 38093500 IMAGES: PROJECTNAME: ----

Building 082 – Level A		
Sample ID:		082A A10
Date Collected:	Indoor Air Guidance	03/01/07
Analyte		
1,1,1–Trichloroethane	2,200	0.16
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	0.86
Chloroform	1.1	ND(0.098)
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	0.64
Toluene	400	1.7
Trichloroethene	5	0.14
Vinyl chloride	2.8	ND(0.051)



BUILDING 082 (A-10 BUILDING) - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- SPRING 2006 6 LITER SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN CORPORATION IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m³), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS.

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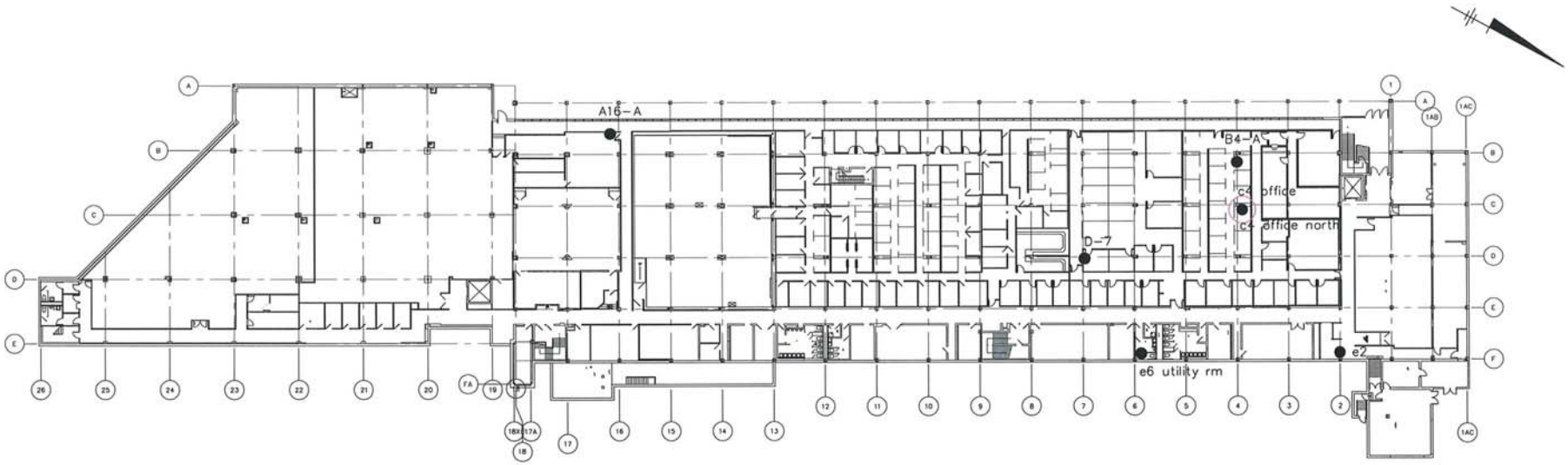
LOCKHEED MARTIN CORPORATION
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

SAMPLING LOCATIONS - BUILDING 082 (A-10 BUILDING)

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
16

[SYR-85-LEAD] SYR-85-QMS RCA AMS LAYER: ON=*, OFF=*REF*
G:\CAD\ACTIVE\-DWG\ACT\38026013\DSR07\38026G08.DWG SAVED:7/11/2007 1:27 PM LAYOUT:16 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED:7/12/2007 12:21 PM BY:ASCHILLING
PROJECTNAME: ----
XREFS:
38026X00 IMAGES:



BUILDING 101 - LEVEL A

NOT TO SCALE

BUILDING 101 - LEVEL A		
Sample ID:		101A C4
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 - Trichloroethane	2,200	1.4
1,1 - Dichloroethane	500	0.85
1,1 - Dichloroethene	200	0.12
1,2 - Dichloroethane	0.94	0.097
Benzene	3.1	1.1
Chloroform	1.1	0.083
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.13
Toluene	400	1.6
Trichloroethene	5	0.41
Vinyl Chloride	2.8	ND (0.051)

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 101 - LEVEL A

ARCADIS

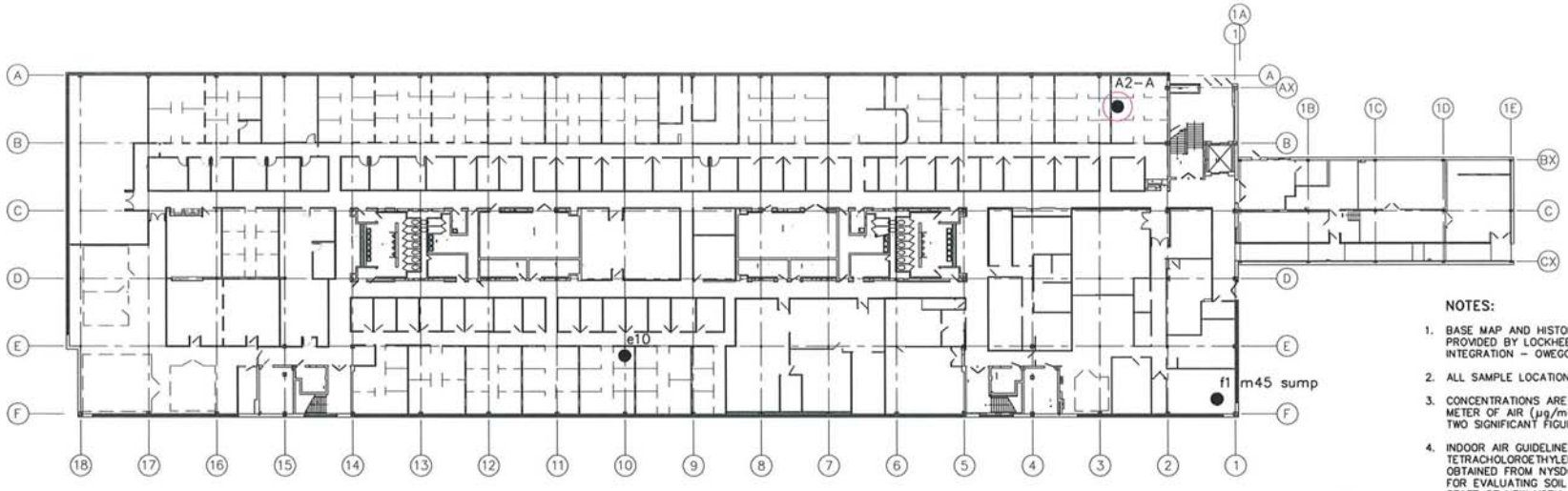
FIGURE 7

CITY:SYRACUSE DIV/GROUP:141/ENV/CAD DB:LJP LAF LD:(NS) PIC:LMCBURNEY PM:G.THOMAS TM:A.FALZARANO LYR:0;0;0;0*;0*;0*;0*;0*;REF*
G:\ENVCAD\SYRACUSE\ACT\60038905\0001\00001\DWG\OWEGO\BAA\00B0905017.DWG LAYOUT: 7 SAVED: 3/30/2009 4:17 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: C-LB-PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/30/2009 4:17 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
38093300

BUILDING 102 – LEVEL A		
Sample ID:		102A A2
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	0.15
1,1 – Dichloroethane	500	0.057
1,1 – Dichloroethene	200	ND (0.040)
1,2 – Dichloroethane	0.94	0.13
Benzene	3.1	0.96
Chloroform	1.1	0.16
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.10
Toluene	400	2.3
Trichloroethene	5	0.081
Vinyl Chloride	2.8	ND (0.051)

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION



BUILDING 102 - LEVEL A

NOT TO SCALE

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (µg/m³), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
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INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 102 - LEVEL A

ARCADIS

FIGURE 8

CITY: SYRACUSE DIV/GROUP: 141/ENV/CAD DB: LIP LAF LD: (opt) PIC: L.MCGURNEY PM: G.THOMAS TM: A.FALZARANO LYR: (o)0#0*0FF*REF*
G:\ENVCAD\SYRACUSE\ACT\B0039\0001\00010\OWEGO\OEM\AQR\B0039G020.DWG LAYOUT: 8 SAVED: 3/30/2009 4:18 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: C.LB.PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/30/2009 4:18 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
30003000

BUILDING 103 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.
6. E = THE COMPOUND WAS QUANTITATED ABOVE THE CALIBRATION RANGE.
7. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

BUILDING 103 – LEVEL A		
Sample ID:		103A BA1
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	0.32
1,1 – Dichloroethane	500	ND (0.040)
1,1 – Dichloroethene	200	ND (0.040)
1,2 – Dichloroethane	0.94	0.15
Benzene	3.1	1.1
Chloroform	1.1	0.073
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.17
Toluene	400	6.4 EJ
Trichloroethene	5	0.16
Vinyl Chloride	2.8	ND (0.051)

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

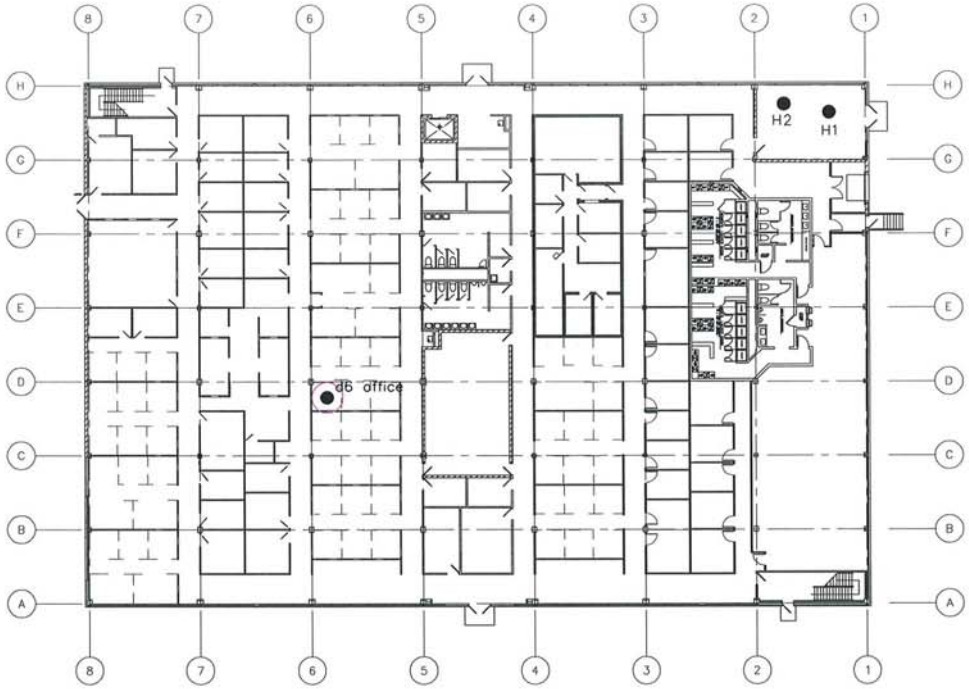
AIR ANALYTICAL RESULTS - BUILDING 103 - LEVEL A

ARCADIS

FIGURE 9

CITY:SYRACUSE DIV/GROUP:141/ENV/CAD DB:LJP LAF LD:(0d) PIC:LMCBURNEY PM:G.THOMAS TM:A.FALZARANO LYR:0;0;0ON*;OFF*;REF*
G:\ENVCAD\SYRACUSE\ACT\60038989\0001\DWG\WOEGO\BA\AQ\38989002\22.DWG LAYOUT: 9 SAVED: 3/20/2009 4:18 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: C.LB-PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/20/2009 4:18 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
38989000

BUILDING 104 – LEVEL A		
Sample ID:		104A D6
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	0.20
1,1 – Dichloroethane	500	0.077
1,1 – Dichloroethene	200	ND (0.040)
1,2 – Dichloroethane	0.94	0.14
Benzene	3.1	0.99
Chloroform	1.1	0.093
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.11
Toluene	400	2.3
Trichloroethene	5	0.064
Vinyl Chloride	2.8	ND (0.051)



BUILDING 104 - LEVEL A

NOT TO SCALE

LEGEND:

GRIDLINE

HISTORICAL SAMPLE LOCATION

FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.

DRAFT

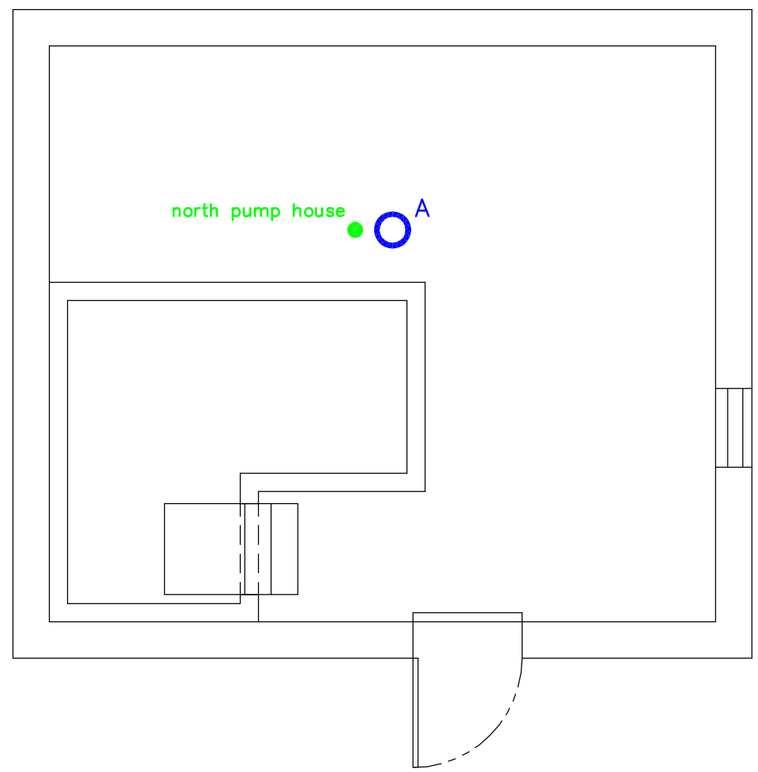
LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 104 - LEVEL A

ARCADIS

FIGURE
10

CITY: SYRACUSE DIVGROUP: 141ENVCAD DB: LJF LA: LJ(DG) PIC: LMCBURNEY PM: G.THOMAS TM: A.FALZARANO LYR: 0;0;0;0*;0;0;0*;0;0;0*REF*
G:\ENVCAD\SYRACUSE\ACT\60085897\0001\10\WDGNWEGO\BAA\0208000025.DWG LAYOUT: 10 SAVED: 3/30/2009 4:19 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: CLIB-PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/30/2009 4:19 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
380003000



NOT TO SCALE

LEGEND:

GRIDLINE

2005 INDOOR AIR SAMPLE LOCATION

2006 INDOOR AIR SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN CORPORATION IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

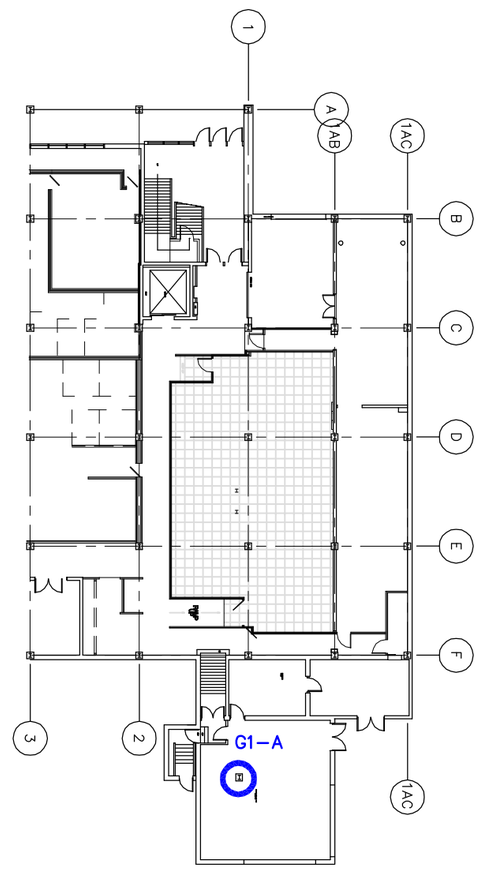
LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY

INDOOR AIR SAMPLING LOCATION - BUILDING 149 - LEVEL A

BBL
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE
20

X: 38026X00.DWG
L: ON*, OFF=REF
P: PAGESET/SYR-BL1
5/31/06 SYR-85-BGP BGP LJP
38026013/DSR06-2/38026G18.DWG



NOT TO SCALE

LEGEND:

GRIDLINE

2006 INDOOR AIR SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN CORPORATION IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

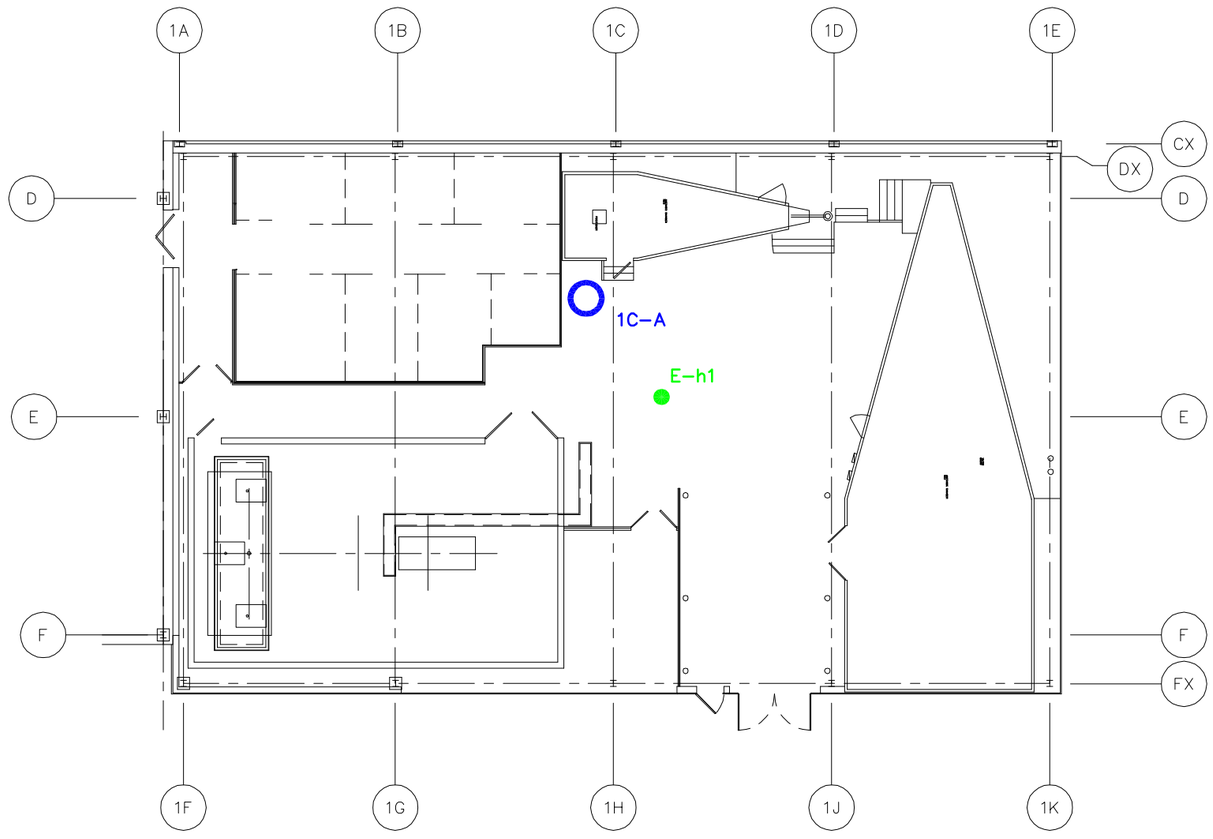
LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY

INDOOR AIR SAMPLING LOCATIONS - BUILDING 151 - LEVEL A

BBL® BLASLAND, BOUCK & LEE, INC. engineers, scientists, economists

FIGURE **21**

X: 38026X00.DWG
L: ON*, OFF=REF
P: PAGESET/SYR-BL1
5/30/06 SYR-85-GMS BGP LJP
38026013/DSR06-2/38026G19.DWG



NOT TO SCALE

LEGEND:

- GRIDLINE
- 2005 INDOOR AIR SAMPLE LOCATION
- 2006 INDOOR AIR SAMPLE LOCATION

NOTE:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN CORPORATION IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY

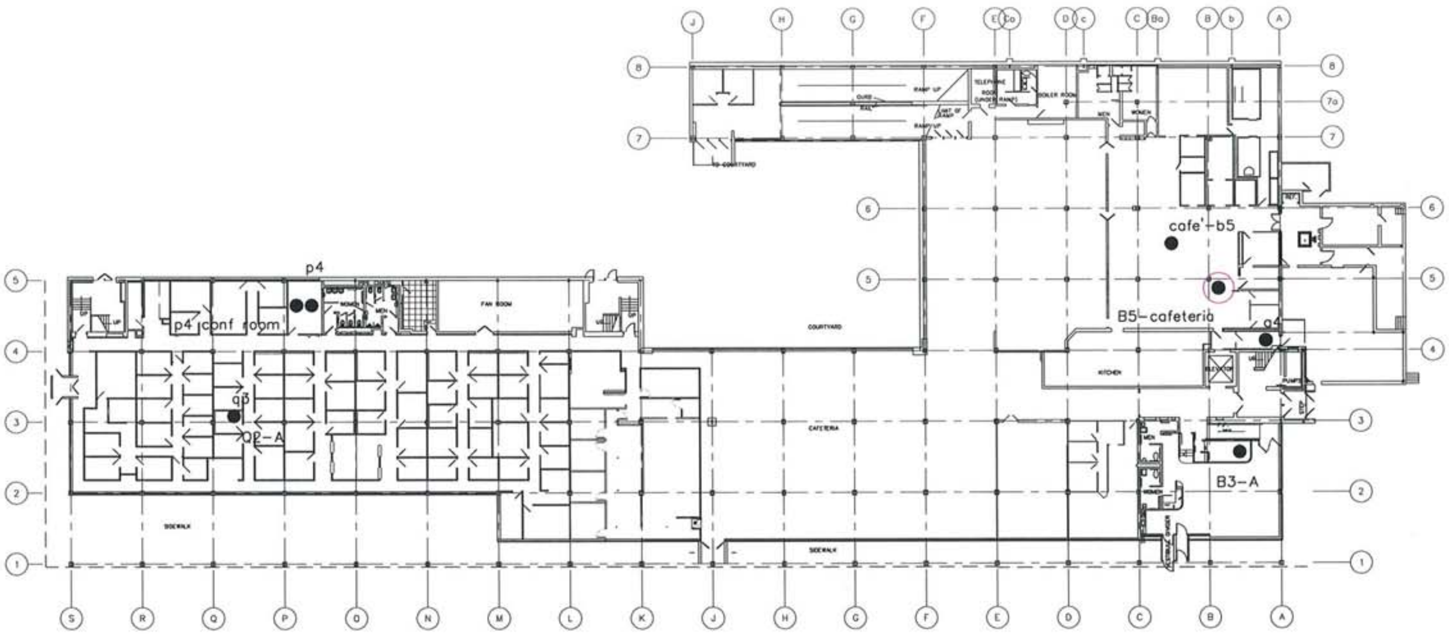
INDOOR AIR SAMPLING LOCATIONS - BUILDING 154 - LEVEL A

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE
22

X: 38026X00.DWG
L: ON*, OFF=REF
P: PAGESET/SYR-BL1
5/30/06 SYR-85-GMS SDL LJP
38026001/DSR06-2/38026G43.DWG

BUILDING 201 - LEVEL A		
Sample ID:		201A B5
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 - Trichloroethane	2,200	2.4
1,1 - Dichloroethane	500	1.1
1,1 - Dichloroethene	200	0.19
1,2 - Dichloroethane	0.94	0.13
Benzene	3.1	1.2
Chloroform	1.1	0.25
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.13
Toluene	400	4.9 EJ
Trichloroethene	5	0.25
Vinyl Chloride	2.8	ND (0.051)



LEGEND:

GRIDLINE

HISTORICAL SAMPLE LOCATION

FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.
6. E = THE COMPOUND WAS QUANTITATED ABOVE THE CALIBRATION RANGE.
7. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

BUILDING 201 - LEVEL A

NOT TO SCALE

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK

INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

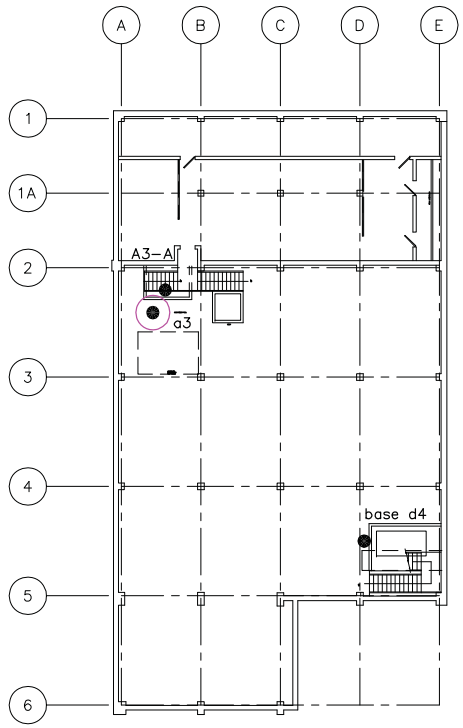
AIR ANALYTICAL RESULTS - BUILDING 201 - LEVEL A

ARCADIS

FIGURE

11

Building 301 – Level A		
Sample ID:		301A A3
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.28 J [0.42 J]
1,1–Dichloroethane	500	0.13 [0.12]
1,1–Dichloroethene	200	ND(0.36) [ND(0.36)]
1,2–Dichloroethane	0.94	ND(0.081) [ND(0.081)]
Benzene	3.1	1.6 [1.7]
Chloroform	1.1	ND(0.098) [ND(0.098)]
Methylene chloride	60	ND(0.69) [ND(0.69)]
Tetrachloroethene	100	0.19 [0.19]
Toluene	400	5.8 [5.9]
Trichloroethene	5	0.12 [0.21]
Vinyl chloride	2.8	ND(0.051) [ND(0.051)]



BUILDING 301 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m³), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. DUPLICATE SAMPLES ARE SHOWN IN BRACKETS.
5. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
6. J = ESTIMATED VALUE
7. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTED LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 301

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
32

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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PROJECTNAME: ----
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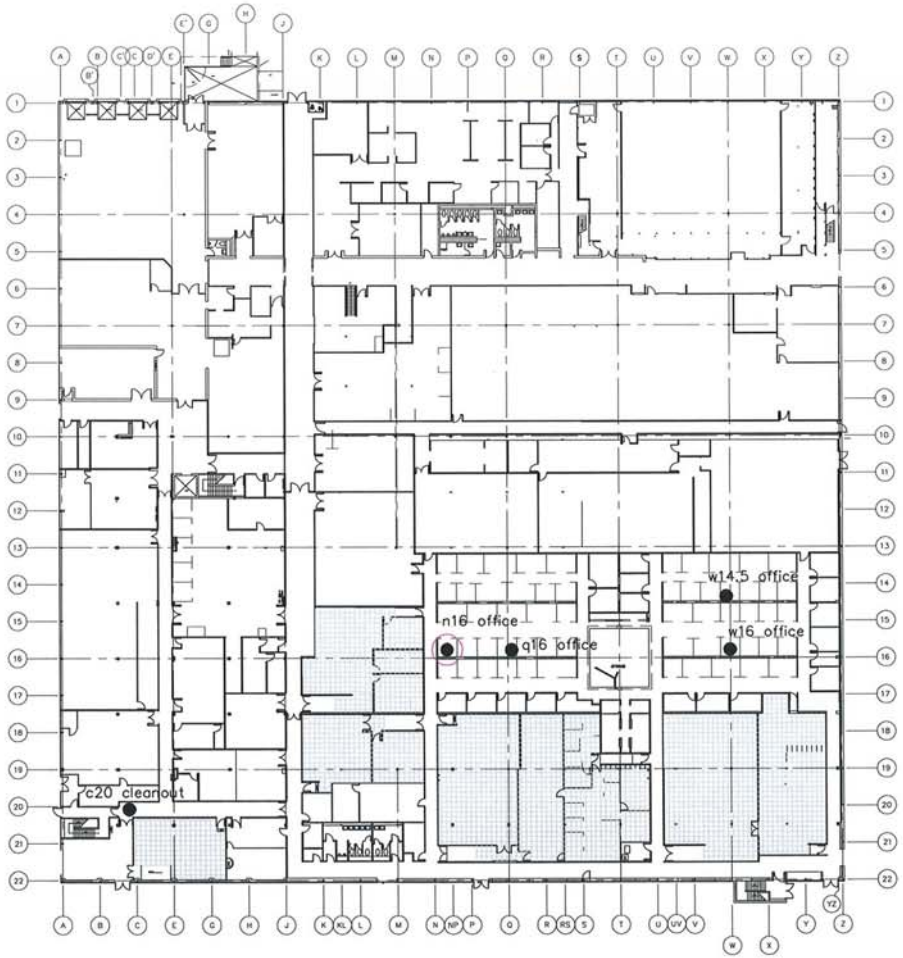
38026X00



BUILDING 304 - LEVEL A

NOT TO SCALE

BUILDING 304 – LEVEL A		
Sample ID:		304A N16
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	1.0
1,1 – Dichloroethane	500	0.093
1,1 – Dichloroethene	200	0.12
1,2 – Dichloroethane	0.94	0.14
Benzene	3.1	1.2
Chloroform	1.1	0.078
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.37
Toluene	400	7.5 EJ
Trichloroethene	5	0.34
Vinyl Chloride	2.8	ND (0.051)

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.
6. E = THE COMPOUND WAS QUANTITATED ABOVE THE CALIBRATION RANGE.
7. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

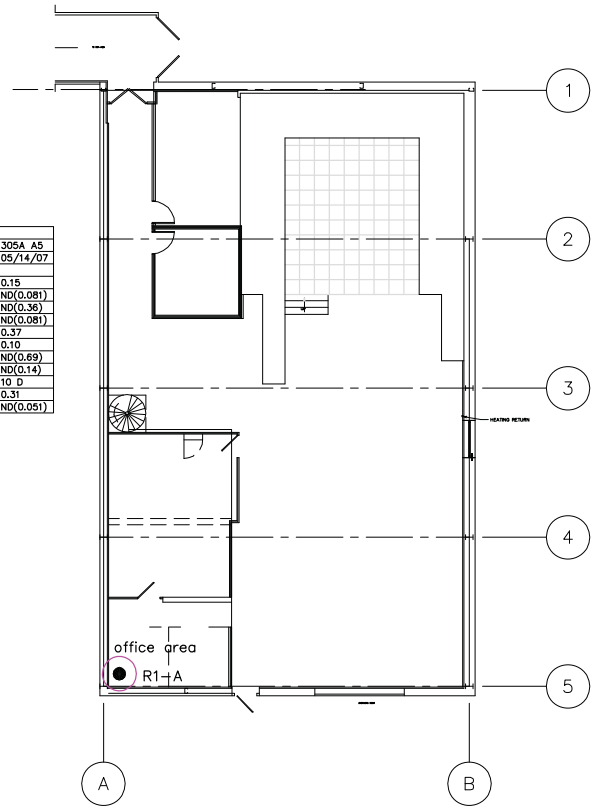
AIR ANALYTICAL RESULTS - BUILDING 304 - LEVEL A

ARCADIS

FIGURE 12

CITY: SYRACUSE DIV/GROUP: 141/ENVCAD DB: LJF LAF LD: (20) PIC: LMCBURNEY PM: G.THOMAS TM: A.FALZARANO LYR: 0;0;0;0*;0*;0*;0*;0*;0*
G:\ENVCAD\SYRACUSE\ACT\60035892\0001\01\DWG\NEW\GC\BAA\0030\60035892\0030\0030-0235.DWG LAYOUT: 12 SAVED: 3/30/2009 4:20 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: CLB-PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/30/2009 4:20 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
30/03/2009

Building 305 – Level A			
Sample ID:		305A A5	305A A5
Date Collected:	Indoor Air Guidance	03/01/07	05/14/07
Analyte			
1,1,1–Trichloroethane	2,200	0.29	0.15
1,1–Dichloroethane	500	ND(0.081)	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)	ND(0.081)
Benzene	3.1	0.76	0.37
Chloroform	1.1	0.21 J	0.10
Methylene chloride	60	19 EJ	ND(0.69)
Tetrachloroethene	100	0.43 J	ND(0.14)
Toluene	400	4.3 J	10 D
Trichloroethene	5	1.7 J	0.31
Vinyl chloride	2.8	ND(0.051)	ND(0.051)



BUILDING 305 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3).
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
6. D = CONCENTRATION IDENTIFIED FROM ANALYSIS AT A SECONDARY DILUTION.
7. E = RESULT IS OUTSIDE THE CALIBRATION RANGE.
8. J = ESTIMATED VALUE
9. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 305

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
37

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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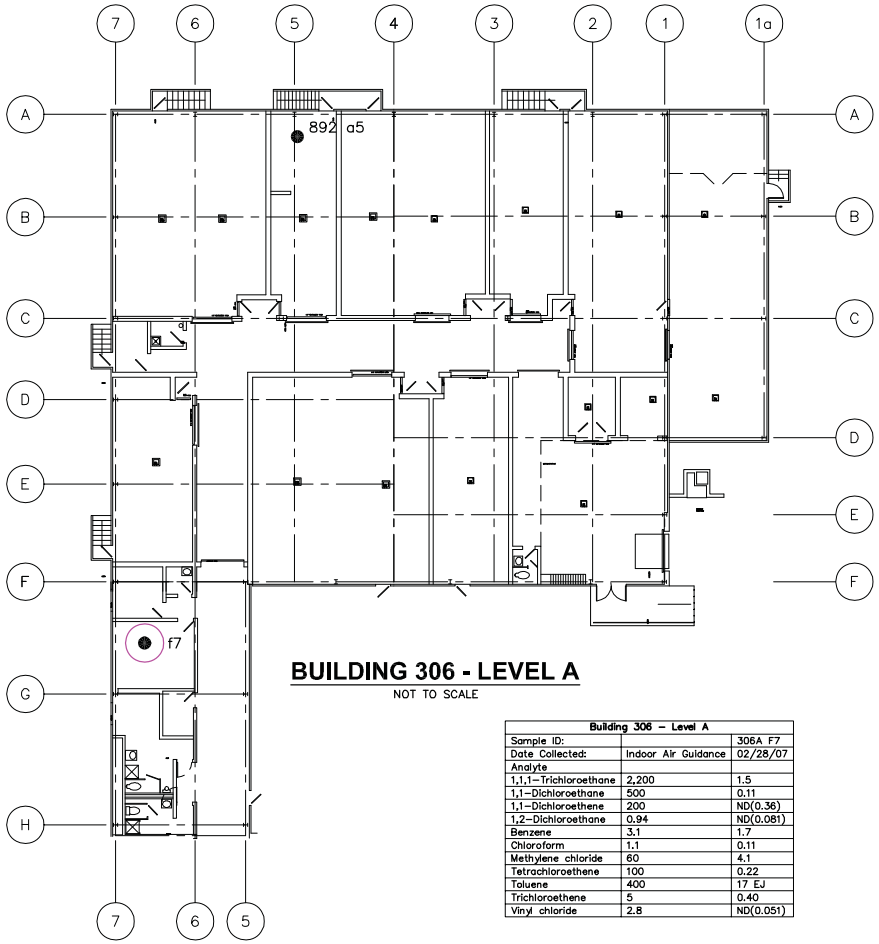
38026X00



BUILDING 306 - LEVEL A

NOT TO SCALE

Building 306 – Level A		
Sample ID:		306A F7
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	1.5
1,1–Dichloroethane	500	0.11
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	1.7
Chloroform	1.1	0.11
Methylene chloride	60	4.1
Tetrachloroethene	100	0.22
Toluene	400	17 EJ
Trichloroethene	5	0.40
Vinyl chloride	2.8	ND(0.051)

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m³), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. E = RESULT IS OUTSIDE THE CALIBRATION RANGE.
6. J = ESTIMATED VALUE
7. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 306

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
39

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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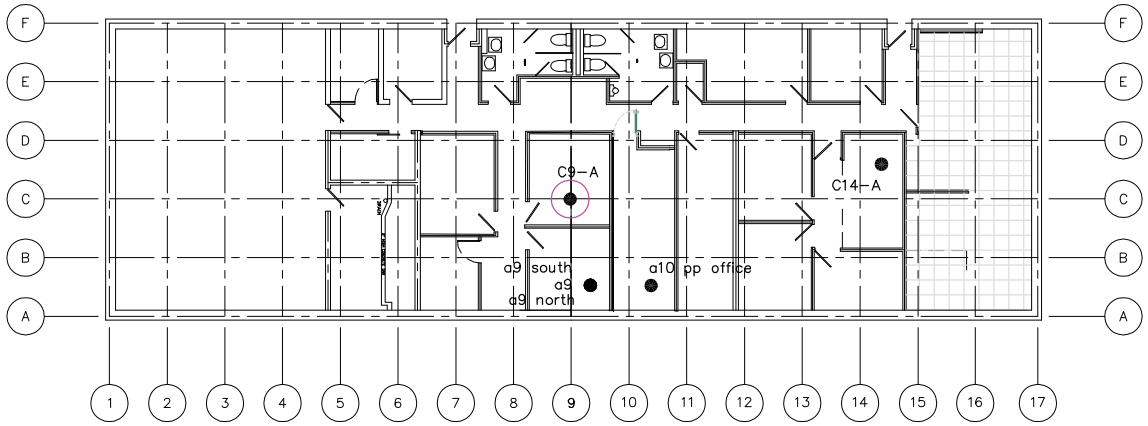
PROJECTNAME: ----
XREFS: IMAGES:
38026X00

Building 309 – Level A		
Sample ID:		309A C9
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.15
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	1.4
Chloroform	1.1	0.10
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	0.23
Toluene	400	4.3
Trichloroethene	5	ND(0.11)
Vinyl chloride	2.8	ND(0.051)



BUILDING 309 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

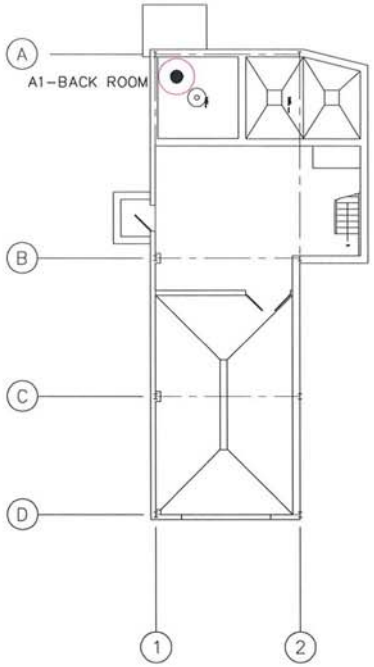
AIR ANALYTICAL RESULTS - BUILDING 309

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
40

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
G:\CAD\ACTIVE\-DWG\ACT\38026013\DSR07\38026C20.DWG SAVED: 7/19/2007 4:03 PM LAYOUT: 40 PAGESETUP:---- PENTABLE: PLTFULL.CTB PRINTED: 7/19/2007 4:03 PM BY: PLISTER
PROJECTNAME: ----
XREFS: 38026X00 IMAGES:

BUILDING 351 – BASEMENT		
Sample ID:		351BASE BR
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	0.76 [1.4]
1,1 – Dichloroethane	500	0.065 [0.11]
1,1 – Dichloroethene	200	0.059 [0.091]
1,2 – Dichloroethane	0.94	0.089 [0.089]
Benzene	3.1	1.3 [1.2]
Chloroform	1.1	0.073 [0.073]
Methylene Chloride	60	ND (0.69) [ND (0.69)]
Tetrachloroethene	100	0.14 [0.16]
Toluene	400	2.4 [2.0]
Trichloroethene	5	1.6 [2.7]
Vinyl Chloride	2.8	ND (0.051) [ND (0.051)]



BUILDING 351 (RECYCLE BUILDING) - BASEMENT

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.
6. [ ] = BRACKETED VALUES INDICATE RESULTS OF DUPLICATE SAMPLE ANALYSIS.

DRAFT

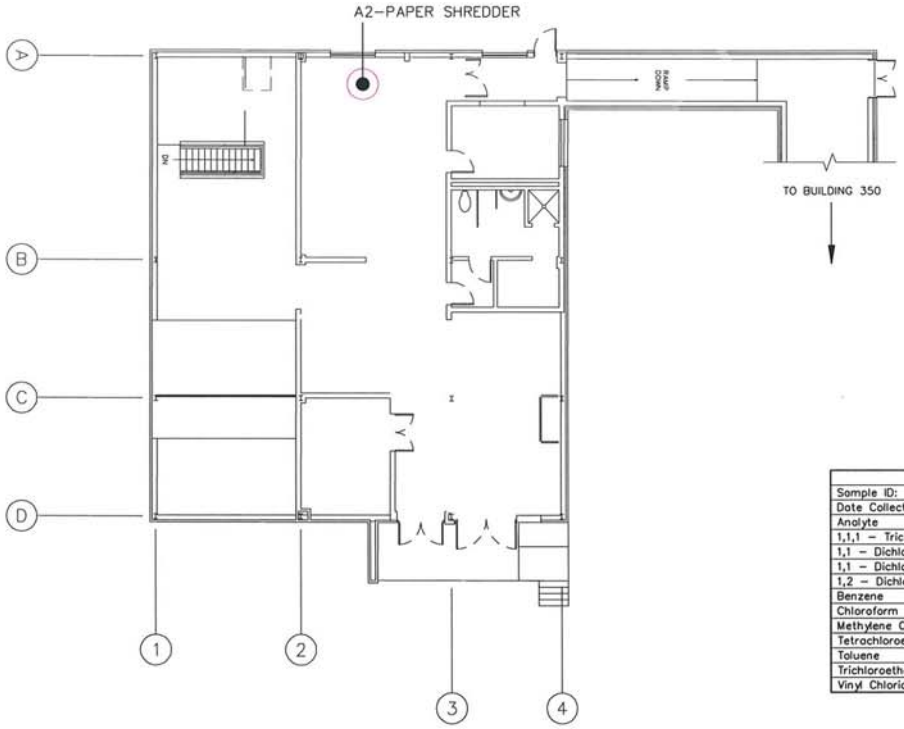
LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 351 (RECYCLE BUILDING) - BASEMENT

ARCADIS

FIGURE 15

CITY: SYRACUSE DIV/GROUP: 141/ENV/CAD DB: LIP LAF LD: (Opt) PIC: LMCBURNEY PM: G.THOMAS TM: A.FALZARANO LYR: (Opt)On*Off*REF*
G:\ENVCAD\SYRACUSE\ACT\B0035\B0035000\100001\DWG\OWEGO\BAACD\B0035043.DWG LAYOUT: 15 SAVED: 3/30/2009 4:22 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/30/2009 4:22 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: ----
360035000



BUILDING 351 (RECYCLE BUILDING) - LEVEL A

NOT TO SCALE

BUILDING 351 – LEVEL A		
Sample ID:		351A B1
Date Collected:	Indoor Air Guidance	2/10/2009
Analyte		
1,1,1 – Trichloroethane	2,200	2.9
1,1 – Dichloroethane	500	0.093
1,1 – Dichloroethene	200	ND (0.040)
1,2 – Dichloroethane	0.94	0.10
Benzene	3.1	1.4
Chloroform	1.1	0.083
Methylene Chloride	60	ND (0.69)
Tetrachloroethene	100	0.26
Toluene	400	2.7
Trichloroethene	5	4.4
Vinyl Chloride	2.8	ND (0.051)

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- FEBRUARY 2009 SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR ($\mu g/m^3$), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE COMPOUND QUANTITATION LIMIT.

DRAFT

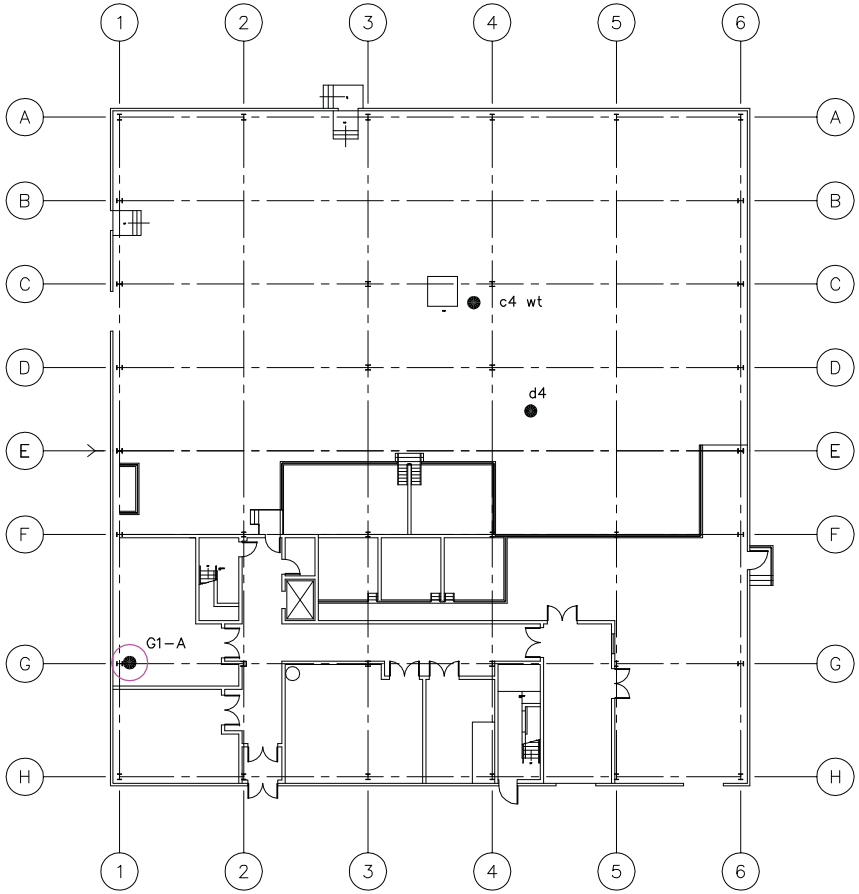
LOCKHEED MARTIN SYSTEMS INTEGRATION - OWEGO
OWEGO, NEW YORK
INDOOR AND AMBIENT AIR QUALITY EVALUATION REPORT - 2009 ANNUAL SAMPLING PROGRAM

AIR ANALYTICAL RESULTS - BUILDING 351 (RECYCLE BUILDING) - LEVEL A

ARCADIS

FIGURE 14

CITY:SYRACUSE DIV/GROUP:141/ENVCAD DB:LIPLAF LD:(0p0) PIC:LMCBURNEY PM:G.THOMAS TM:A.FALZARANO LYR:(0p)*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0035\0021\00001\DMOLONEG\DGE\AAQ\B0035G42.DWG LAYOUT: 14 SAVED: 3/30/2009 4:21 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: C.LB.PCF PLOTSTYLETABLE: PLTF.ULC.CTB PLOTTED: 3/30/2009 4:21 PM BY: FORAKER, LYDIA
XREFS: IMAGES: PROJECTNAME: —
3/30/2009



Building 352 – Level A		
Sample ID:		352A G1
Date Collected:	Indoor Air Guidance	02/26/07
Analyte		
1,1,1-Trichloroethane	2,200	0.16 J
1,1-Dichloroethane	500	ND(0.081)
1,1-Dichloroethene	200	ND(0.36)
1,2-Dichloroethane	0.94	ND(0.081)
Benzene	3.1	1.9
Chloroform	1.1	ND(0.098)
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	ND(0.14)
Toluene	400	3.2
Trichloroethene	5	ND(0.29)
Vinyl chloride	2.8	ND(0.051)

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10-5 RISK AND A HAZARD INDEX OF 1.
5. J = ESTIMATED VALUE
6. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

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BUILDING 352 (WATER TREATMENT PLANT) - LEVEL A

NOT TO SCALE

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY
2007 REPORT

AIR ANALYTICAL RESULTS -
BUILDING 352 (WATER TREATMENT PLANT)

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
44

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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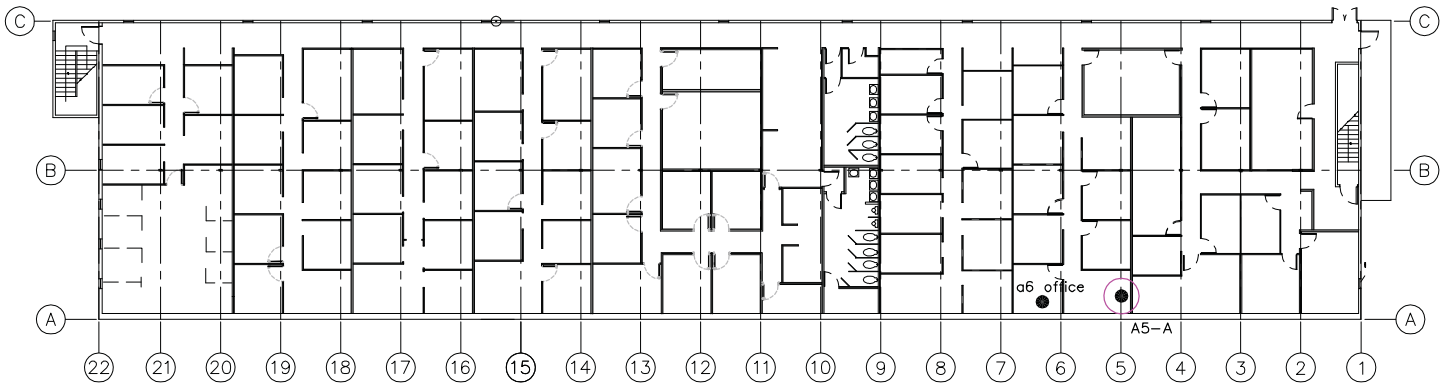
PROJECTNAME: ----
XREFS: 38026X00 IMAGES:

Buliding 899 – Level A		
Sample ID:		899A A5
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.11
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	1.1
Chloroform	1.1	ND(0.098)
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	0.33
Toluene	400	1.7
Trichloroethene	5	ND(0.11)
Vinyl chloride	2.8	ND(0.051)



BUILDING 899 - LEVEL A

NOT TO SCALE

LEGEND:

GRIDLINE

HISTORICAL SAMPLE LOCATION

SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

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LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 899

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
47

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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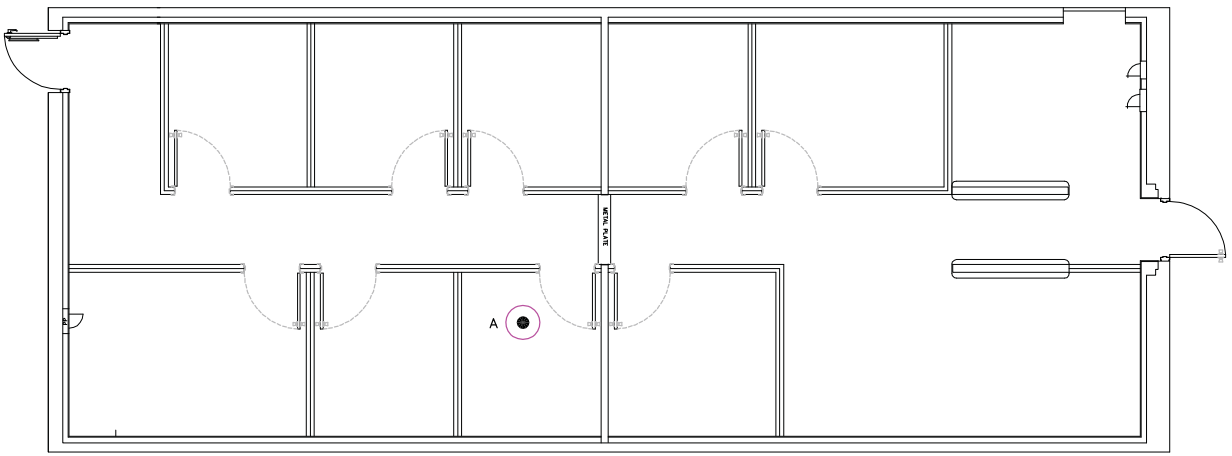
PROJECTNAME: ----
XREFS: IMAGES:
38026X00

Building 900 – Level A		
Sample ID:		900A ENT
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.12
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	1.0
Chloroform	1.1	0.44
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	0.35
Toluene	400	7.2
Trichloroethene	5	ND(0.11)
Vinyl chloride	2.8	ND(0.051)



BUILDING 900 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

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LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 900

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
49

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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PROJECTNAME: ----
XREFS: IMAGES:
38026X00

Building 901 – Level A		
Sample ID:		901A C8
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.17
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	1.3
Chloroform	1.1	ND(0.098)
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	ND(0.14)
Toluene	400	3.9
Trichloroethene	5	ND(0.11)
Vinyl chloride	2.8	ND(0.051)

BUILDING 901 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m3), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

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LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 901

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
50

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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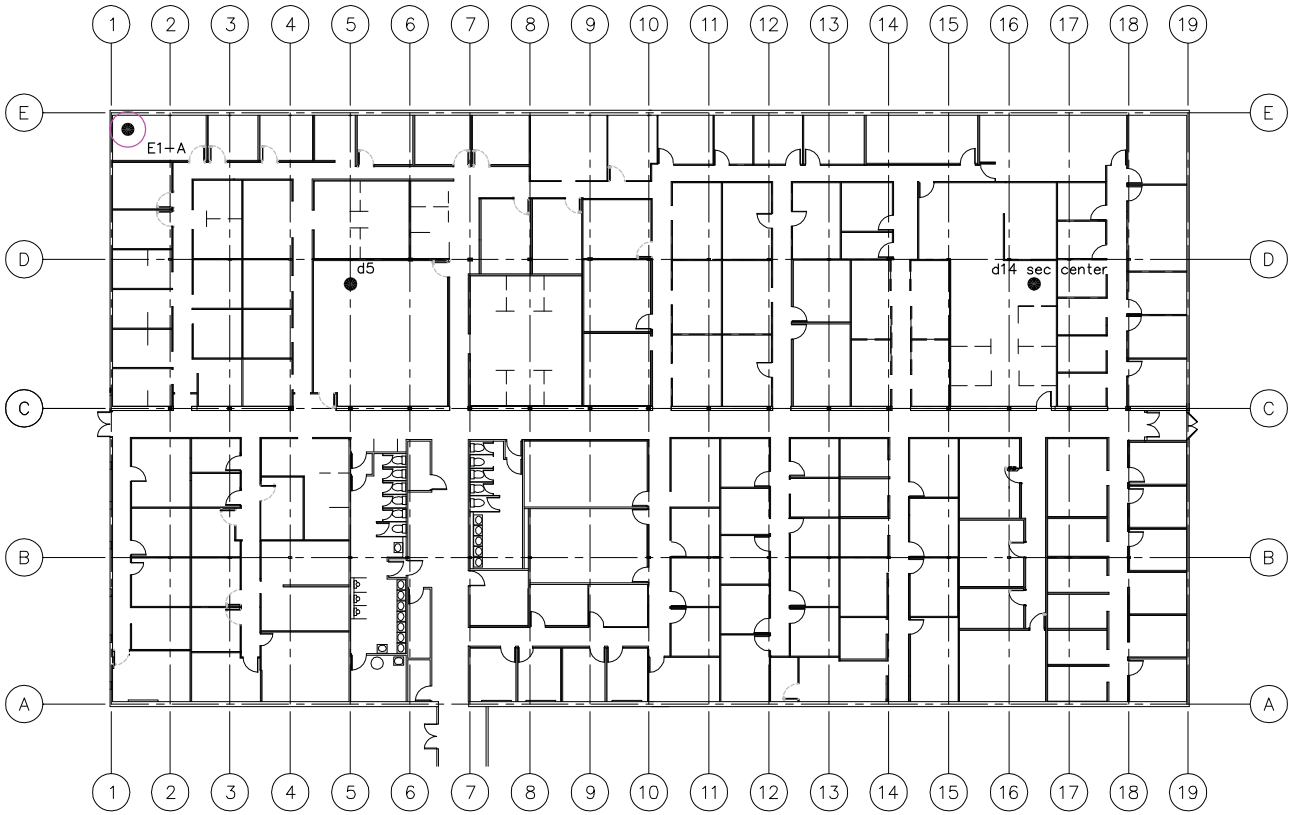
PROJECTNAME: ----
XREFS: IMAGES:
38026X00

Building 902 – Level A		
Sample ID:		902A E1
Date Collected:	Indoor Air Guidance	02/28/07
Analyte		
1,1,1–Trichloroethane	2,200	0.11
1,1–Dichloroethane	500	ND(0.081)
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	0.36
Chloroform	1.1	ND(0.098)
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	ND(0.14)
Toluene	400	ND(0.38)
Trichloroethene	5	ND(0.11)
Vinyl chloride	2.8	ND(0.051)



BUILDING 902 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m³), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHOLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

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LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 902

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
51

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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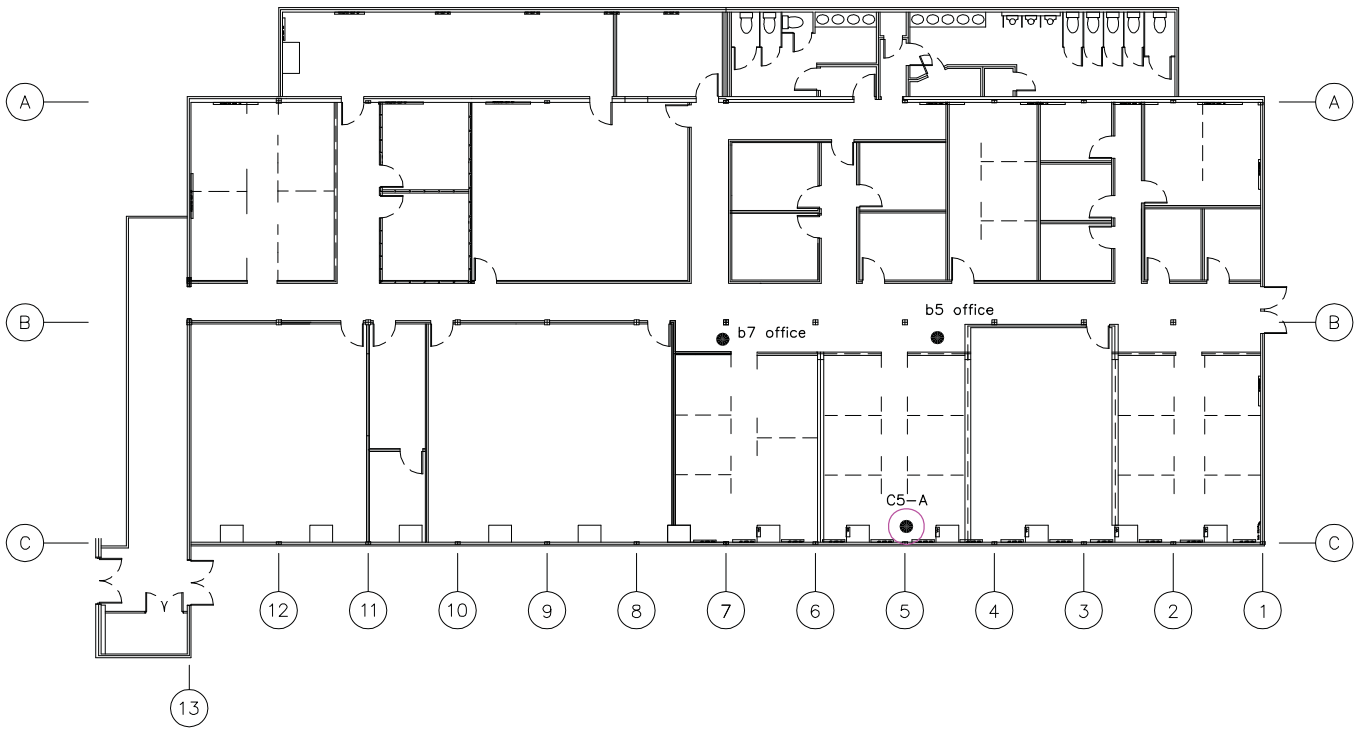
PROJECTNAME: ----
XREFS: 38026X00 IMAGES:

Building 903 – Level A		
Sample ID:		903A C5
Date Collected:	Indoor Air Guidance	03/01/07
Analyte		
1,1,1–Trichloroethane	2,200	0.91
1,1–Dichloroethane	500	0.51
1,1–Dichloroethene	200	ND(0.36)
1,2–Dichloroethane	0.94	ND(0.081)
Benzene	3.1	0.96
Chloroform	1.1	ND(0.098)
Methylene chloride	60	ND(0.69)
Tetrachloroethene	100	ND(0.14)
Toluene	400	1.8
Trichloroethene	5	0.16
Vinyl chloride	2.8	ND(0.051)



BUILDING 903 - LEVEL A

NOT TO SCALE

LEGEND:

- GRIDLINE
- HISTORICAL SAMPLE LOCATION
- SPRING 2007 SAMPLE LOCATION

NOTES:

1. BASE MAP AND HISTORICAL SAMPLE LOCATIONS PROVIDED BY LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO IN DECEMBER 2005.
2. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
3. CONCENTRATIONS ARE IN MICROGRAMS PER CUBIC METER OF AIR (ug/m³), AND ARE ROUNDED TO TWO SIGNIFICANT FIGURES.
4. INDOOR AIR GUIDELINES FOR METHYLENE CHLORIDE, TETRACHLOROETHYLENE AND TRICHLOROETHENE OBTAINED FROM NYSDOH 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK. GUIDELINES FOR ALL OTHER COMPOUNDS OBTAINED FROM USEPA (2002) GUIDANCE FOR EVALUATING THE VAPOR INTRUSION PATHWAYS FROM GROUNDWATER AND SOILS FOR 10–5 RISK AND A HAZARD INDEX OF 1.
5. ND = NOT DETECTED. THE VALUE SHOWN REPRESENTS THE REPORTING LIMIT.

DRAFT

LOCKHEED MARTIN SYSTEMS INTEGRATION – OWEGO
OWEGO, NEW YORK
EVALUATING INDOOR AND AMBIENT AIR QUALITY 2007 REPORT

AIR ANALYTICAL RESULTS - BUILDING 903

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
52

SYR-85-GMS AMS PGL LAYER: ON=*, OFF=REF
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PROJECTNAME: ----
XREFS: IMAGES:
38026X00

APPENDIX B.3

On-Site Summary of Analytical Results

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Building Level	Location Description	Location ID	Date Collected	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Benzene	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
A	A10 Vib Rm	001A A10	03/10/05	0.82 U	NA	NA	NA	NA	NA	1.6	NA	NA	0.21 U	NA
A	A12 Maintenance Shed	001A A12M	03/30/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	3.0	NA
A	A12 Maintenance Shed	001A A12	02/06/06	0.82	1.3	0.33	0.053	0.70	0.049 U	1.7 U	0.11	25	**5.2**	0.026 U
A	A12 Maintenance Shed	001A A12	02/10/09	0.47	0.57	0.20	0.11	1.7	0.083	0.69 U	0.13	10 EJ	3.5	0.051 U
A	A12 Maintenance Shed	001A A12	02/08/10	0.22	0.40	0.16	0.081 U	0.64	0.063	0.69 U	0.081	2.5	2.9	0.051 U
A	B3 Lab - Raised Floor	001A B3	02/06/06	3.2	0.69	0.29	0.093	0.86	0.049 U	1.7 U	0.22	98	2.1	0.026 U
A	B3 Lab - Raised Floor	001A B3	02/28/07	1.2	0.28	0.36 U	0.081 U	1.3	0.34	0.69 U	0.53	54 D	2.2	0.051 U
A	B3 Lab - Raised Floor	001A B3	02/18/08	1.3	0.21	0.19	0.081 U	0.51	0.21	2.1	0.068	68 D	0.81	0.051 U
A	B3 Lab - Raised Floor	001A B3	02/10/09	3.5	0.34	0.36	0.12	1.1	**2.9**	0.69	0.21	53 EJ	0.75	0.051 U
A	B18 Cable Area	001A B18 Cable	04/22/05	1.4	NA	NA	NA	NA	NA	0.52	NA	NA	2.5	NA
A	B18 Cable Area	001A B18	02/02/06	1.5	0.62 U	0.61 U	0.62 U	1.0	0.74 U	0.53 U	1.0 U	20	2.2	0.39 U
A	B18 Cable Area	001A B18	02/06/06	1.3	0.26	0.15	0.081	0.83	0.13	1.7 U	0.26	12	2.4	0.026 U
A	B18 Cable Area	001A B18	02/28/07	0.58	0.15	0.36 U	0.089	1.5	0.14	0.69 U	0.57	11 D	2.0	0.051 U
A	D10 Clean Room	001A D10 CR	04/21/05	0.93	NA	NA	NA	NA	NA	0.69 U	NA	NA	1.3	NA
A	D10 Clean Room	001A D10 CR	04/22/05	1.4	NA	NA	NA	NA	NA	1.5	NA	NA	**6.4**	NA
A	D10 Clean Room	001A D10	02/06/06	3.1	0.65	0.29	0.089	0.93	0.20	1.7 U	0.33	60	3.2	0.026 U
A	D10 Clean Room	001A D10	02/28/07	0.76	0.18	0.36 U	0.081 U	1.6	0.92	0.69 U	0.84	37 D	2.0	0.051 U
A	D10 Clean Room	001A D10	05/14/07	0.26	0.081 U	0.36 U	0.081 U	0.42	0.40	0.83	0.14	15 D	0.34	0.051 U
A	D10 Clean Room	001A D10	02/18/08	1.4	0.16	0.18	0.081 U	0.38	0.88	11 D	0.11	30 D	1.1	0.051 U
A	D10 Clean Room	001A D10	02/10/09	2.9 [3.1]	0.31 [0.32]	0.31 [0.32]	0.12 [0.13]	0.99 [1.1]	0.43 [0.38]	1.8 [1.8]	0.20 [0.35]	7.2 EJ [13 EJ]	1.0 [1.2]	0.051 U [0.051 U]
A	D10 Clean Room	001A D10	02/08/10	1.0	0.21	0.14	0.089	0.89	0.45	1.5	0.12	24 EJ	1.3	0.051 U
A	D15 Weld Shop	001A D15	03/28/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	2.1	NA
A	D15 Weld Shop	001A D15	04/21/05	0.28	NA	NA	NA	NA	NA	0.69	NA	NA	0.59	NA
A	D15 Weld Shop	001A D15	04/22/05	1.2 [1.3]	NA	NA	NA	NA	NA	1.2 [1.5]	NA	NA	2.2 [2.5]	NA
A	D15 Weld Shop	001A D15	06/22/05	4.8	NA	NA	NA	NA	NA	0.53 U	NA	NA	1.1	NA
A	D15 Weld Shop	001A D15	02/06/06	1.9	0.40	0.19	0.077	0.89	0.28	1.7 U	0.33	12	3.1	0.026 U
A	D15 Weld Shop	001A D15	02/28/07	0.54	0.099	0.36 U	0.081 U	1.6	0.16	0.69 U	1.4	8.6 D	1.8	0.051 U
A	D16 Weld Shop	001A A1/D16	03/10/05	2.3	NA	NA	NA	NA	NA	0.56	NA	NA	4.2	NA
A	D16 Weld Shop	001A D16	02/06/06	1.6	0.39	0.16	0.085	0.86	0.31	1.7 U	0.30	10	2.2	0.026 U
A	D16 Weld Shop	001A D16	02/28/07	0.46 [0.48]	0.090 [0.094]	0.36 U [0.36 U]	0.10 [0.083]	1.8 [1.7]	0.19 [0.18]	0.69 UJ [2.6 J]	1.6 [1.6]	11 D [10 D]	1.3 [1.3]	0.051 U [0.051 U]
A	D16 Weld Shop	001A D16	02/18/08	0.93	0.16	0.18	0.081 U	0.54	0.098	1.4	0.10	12 D	0.91	0.051 U
A	D16 Weld Shop	001A D16	02/10/09	1.6	0.18	0.25	0.13	1.3	0.12	1.4	0.75	13 EJ	1.8	0.051 U
A	D16 Weld Shop	001A D16	02/08/10	0.33	0.073	0.056	0.13	1.2	0.18	1.3	0.081	3.5	0.7	0.051 U
A	E10 Clean Room	001A E10	03/10/05	2.7	NA	NA	NA	NA	NA	0.59	NA	NA	3.2	NA
A	E10 Clean Room	001A E10	03/28/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	1.5	NA
A	Old Cable Area	001A E18	02/18/08	0.87	0.14	0.17	0.081 U	0.54	0.088	1.7	0.095	12 D	1.2	0.051 U
A	Century Fasteners (Old Cable Area)	001A E18	02/10/09	1.7	0.20	0.21	0.15	1.5	0.15	1.8	0.81	13 EJ	1.7	0.051 U
A	Century Fasteners (Old Cable Area)	001A E18	02/08/10	0.21 J	0.053 J	0.040 U	0.081 U	0.54 J	0.083 J	0.87 J	0.068 U	2.5 J	0.64 J	0.051 U

See Notes on Page 7.

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Building Level	Location Description	Location ID	Date Collected	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Benzene	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
Building 002 — Manufacturing														
A	A2 Aisle	002A A2	02/06/06	1.3	0.045	0.27	0.061	2.6	0.049 U	1.7 U	0.088	2.6	1.3	0.026 U
A	A2 Aisle	002A A2	02/28/07	1.4	0.081 U	0.36 U	0.081 U	1.4	0.11	0.69 U	0.14 U	0.56	1.0	0.051 U
A	C15 Backstage of Auditorium	002A C15	02/02/06	21	1.1	1.7	0.62 U	1.7	0.74 U	1.2	1.0 U	37	0.38	0.39 U
A	C15 Backstage of Auditorium	002A C15	02/06/06	9.8	0.89	1.3	0.081	1.2	0.049 U	1.7 U	0.16	30	0.31	0.026 U
A	C15 Backstage of Auditorium	002A C15	02/28/07	10	1.2	1.3	0.087	1.3	0.098 U	0.69 U	0.30	6.5	0.18	0.051 U
A	D3 Aisle	002A D3	02/28/07	2.4	0.13	0.40	0.081 U	2.1	0.17	0.69 U	0.15	5.3	3.7	0.051 U
A	D3 Aisle	002A D3	02/18/08	0.53	0.040 U	0.18	0.081 U	0.96	0.054	0.69 U	0.068 U	1.1	1.3	0.051 U
A	D3 Aisle	002A D3	02/10/09	1.9	0.065	1.4	0.11	1.2	0.10	0.69 U	0.14	5.3 EJ	1.9	0.051 U
A	D3 Aisle	002A D3	02/08/10	2.2	0.049	2.6	0.081 U	0.83	0.093	0.69 U	0.12	1.7	3.3	0.051 U
A	E6 Office	002A E6	03/28/05	2.9	NA	NA	NA	NA	NA	0.52 U	NA	NA	4.7	NA
A	E6 Office	002A E6	02/06/06	1.7	0.061	0.29	0.065	2.3	0.049 U	1.7 U	0.095	2.8	3.5	0.026 U
A	E6 Office	002A E6	02/28/07	2.1	0.097	0.36 U	0.081 U	2.7	0.12	0.69 U	0.14	6.1	3.0	0.051 U
A	E6 Office	002A E6	02/18/08	0.43	0.040 U	0.10	0.081 U	0.67	0.059	0.69 U	0.068 U	1.1	1.7	0.051 U
A	E6 Office	002A E6	02/10/09	0.82	0.040 U	0.21	0.17	1.2	0.088	0.69 U	0.13	4.5 EJ	2.3	0.051 U
A	E6 Office	002A E6	02/08/10	0.17	0.040 U	0.083	0.28	0.77	0.38	0.69 U	0.12	2.2	0.91	0.051 U
A	F5 Steel Room	002A F5	02/28/07	1.8	0.092	0.36 U	0.081 U	2.2	0.11	0.69 U	0.14	5.4	1.5	0.051 U
A	G17 Elevator	002A G17	03/10/05	43	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.75	NA
A	H2 Inside Trench	002A H2I	03/10/05	49	NA	NA	NA	NA	NA	0.52 U	NA	NA	**20**	NA
A	H2 Inside Trench	002A H2I	04/22/05	27 [28]	NA	NA	NA	NA	NA	1.3 [1.6]	NA	NA	**17 [16]**	NA
A	H2 Inside Trench	002A H2I	04/26/05	15	NA	NA	NA	NA	NA	0.52 U	NA	NA	**17**	NA
A	H2 Inside Trench	002A H2 IN	02/02/06	110	0.62	25	0.62 U	2.4	0.65 J	0.53 U	1.7	6.7	**18**	0.39 U
A	H2 Inside Trench	002A H2 IN	02/06/06	46	0.49	17	0.040 U	1.5	0.049 U	1.7 UJ	0.14	2.8 J	**11**	0.026 U
A	H2 Inside Trench	002A H2I	02/28/07	26 D	0.71	3.4	0.13	2.2	0.22	0.69 U	0.18	7.3	1.8	0.051 U
A	H2 Outside Trench	002A H2O	03/10/05	6.3	NA	NA	NA	NA	NA	0.52 U	NA	NA	1.9	NA
A	H2 Outside Trench	002A H20	04/21/05	1.2	NA	NA	NA	NA	NA	0.69 U	NA	NA	0.97	NA
A	H2 Outside Trench	002A H20	04/22/05	3.2	NA	NA	NA	NA	NA	0.97	NA	NA	2.3	NA
A	H2 Outside Trench	002A H20 Trench	04/26/05	2.0	NA	NA	NA	NA	NA	1.0	NA	NA	1.6	NA
A	H2 Outside Trench	002A H2 OUT	02/06/06	2.1	0.13	0.31	0.040 U	0.89	0.049 U	1.7 UJ	0.14	4.1	0.91	0.026 U
A	H2 Outside Trench	002A H2O	02/28/07	3.5	0.28	0.40	0.081 U	1.7	0.12	5.4	0.19	16 D	0.93	0.051 U
A	H2 Outside Trench	002A H2 - Out	02/18/08	1.9	0.14	0.48	0.081 U	0.58	0.068	0.69 U	0.075	4.1 D	1.1	0.051 U
A	H2 Outside Trench	002A H2 - Out	02/08/10	2.0 [2.0]	0.21 [0.19]	0.83 [0.79]	0.081 U [0.081 U]	0.70 [0.73]	0.088 [0.088]	0.69 U [0.69 U]	0.24 [0.26]	3.8 EJ [3.7]	1.2 [1.2]	0.051 U [0.051 U]
A	H8 Inside Trench	002A H8I	03/10/05	29	NA	NA	NA	NA	NA	0.52 U	NA	NA	**13**	NA
A	H8 Inside Trench	002A H8I	04/22/05	8.6	NA	NA	NA	NA	NA	1.4	NA	NA	0.21 U	NA
A	H8 Inside Trench	002A H8IN	02/06/06	460 D	28 D	40 D	0.19	1.9	0.049 U	1.7 U	0.20	4.5 D	1.7	0.026 U
A	H8 Inside Trench	002A H8IN	02/28/07	320 D	22 D	48 D	0.29	1.7	0.25	0.69 U	0.60	5.1 D	**6.7**	0.051 U
A	H8 Outside Trench	002A H8O	03/10/05	9.7	NA	NA	NA	NA	NA	0.52 U	NA	NA	4.2	NA
A	H8 Outside Trench	002A H8O	03/28/05	9.1	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.59	NA
A	H8 Outside Trench	002A H8O	04/22/05	6.1	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	H8 Outside Trench	002A H8OUT	02/02/06	6.3	0.62 U	0.61 U	**3.9**	**7.8**	0.74 U	24	5.5	180	**5.6**	0.39 U
A	H8 Outside Trench	002A H8OUT	02/06/06	8.7	0.57	1.0	0.085	1.4	0.049 U	1.7 U	0.13	3.4	2.1	0.026 U
A	H8 Outside Trench	002A H8O	02/28/07	11	0.74	0.96	0.094	1.6	0.099	0.69 U	0.17	6.2	0.30	0.051 U
A	H8 Outside Trench	002A H8 - Out	02/18/08	2.3 [2.1]	0.13 [0.10]	0.26 [0.25]	0.081 U [0.081 U]	0.61 [0.54]	0.068 [0.059]	0.69 U [0.69 U]	0.068 U [0.068 U]	4.5 D [4.5 D]	0.27 [0.25]	0.051 U [0.051 U]
A	H8 Outside Trench	002A H8 - Out	02/08/10	4.7 J	0.33 J	0.52 J	0.089 J	0.89 J	0.083 J	0.83 J	0.11 J	2.0 J	0.46 J	0.051 UJ
A	H17 Aisle	002A H17	02/06/06	17	3.4	3.2	0.15	0.83	0.049 U	1.7 U	0.20	3.7	0.32	0.026 U
A	H17 Aisle	002A H17	02/28/07	11 D	3.1	1.6	0.12	1.2	0.099	0.69 U	0.16	4.3	0.29	0.051 U
A	J19 Office	002A J19	03/10/05	19	NA	NA	NA	NA	NA	0.56	NA	NA	1.1	NA
A	J19 Office	002A J19	02/18/08	6.5 D	1.1	1.2	0.081 U	0.48	0.059	0.69 U	0.075	1.7	0.13	0.051 U
A	J19 Office	002A J19	02/08/10	18 D	3.5	2.4	0.13	0.67	0.088	0.69 U	0.19	1.9	0.20	0.051 U
A	L7 Etch Trench	002A L7	03/10/05	8.6	NA	NA	NA	NA	NA	1.2	NA	NA	0.21 U	NA
A	O1 Aisle	002A O1	02/06/06	3.1	0.13	0.40	0.065	0.83	0.049 U	1.7 U	0.12	1.7	3.3	0.026 U
A	O1 Aisle	002A O1	02/28/07	2.1	0.16	0.36 U	0.081 U	0.85	0.37	0.69 U	0.27	0.38	1.2	0.051 U
A	O15 Aisle	002A O15	02/06/06	19	1.7	2.4	0.11	0.83	0.049 U	1.7 U	0.11	3.3	0.35	0.026 U
A	O15 Aisle	002A O15	02/28/07	17 D	1.7	1.9	0.12	1.4	0.11	0.69 U	0.17	7.6 D	0.22	0.051 U
A	P6 Aisle (E. Timeclock)	002A P6TC	03/10/05	13	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.48	NA
A	P6 Aisle	002A P6A	02/02/06	6.3	0.62 U	0.56 J	0.62 U	1.2	0.74 U	0.53 U	1.0 U	7.0	1.7	0.39 U
A	P6 Aisle	002A P6A	02/06/06	4.1 [4.1]	0.22 [0.21]	0.48 [0.40]	0.057 [0.053]	0.77 [0.77]	0.063 [0.073]	1.7 U [1.7 U]	0.10 J [0.18 J]	1.7 [1.7]	1.1 [1.0]	0.026 U [0.026 U]
A	P6 Aisle	002A P6	02/28/07	5.5	0.39	0.56	0.081 U	1.3	0.10	0.69 U	0.14	6.1	0.27	0.051 U
B	L19 South Office	002B L19	03/28/05	11	NA	NA	NA	NA	NA	0.66	NA	NA	0.48	NA
B	L19 South Office	002B L19	04/22/05	9.3	NA	NA	NA	NA	NA	1.0	NA	NA	0.75	NA
B	L20 Office	002B L20	02/06/06	17	3.0	2.7	0.15	0.73	0.049 U	1.7 U	0.14	4.1	0.27	0.026 U
B	L20 Office	002B L20	02/28/07	15 D	2.5	1.9	0.16	1.4	0.11	0.69 U	0.24	6.6	0.25	0.051 U
B	P8 Office	002B P8	04/22/05	1.3	NA	NA	NA	NA	NA	0.73	NA	NA	0.21 U	NA
B	P18 South Office	002B P18	04/22/05	8.5	NA	NA	NA	NA	NA	0.83	NA	NA	0.48	NA
Mezzanine	B7 Aisle	002M B7	03/28/05	2.5	NA	NA	NA	NA	NA	0.52 U	NA	NA	1.2	NA
Mezzanine	B7 Office	002B B7 West	04/22/05	0.82 U	NA	NA	NA	NA	NA	0.69	NA	NA	0.91	NA
Mezzanine	B7 Office	002B B7	02/06/06	1.1	0.040 U	0.17	0.061	1.7	0.049 U	1.7 U	0.088	1.8 J	1.2	0.026 U
Mezzanine	B7 Aisle	002M B7	02/28/07	1.8	0.081 U	0.36 U	0.081 U	2.8	0.12	0.69 U	0.16	6.3	1.3	0.051 U
Mezzanine	L2A - Chemical Mix Room	002M L2A	02/06/06	2.0	0.081	0.33	0.057	0.70	0.049 U	1.7 U	0.081	4.9	4.6	0.026 U
Building 004 — Hangar														
A	Outside Central Trench	004A CT	03/10/05	0.82 U	NA	NA	NA	NA	NA	1.9	NA	NA	0.21 U	NA
A	GG8.9 Mfg Floor	004A GG8	02/06/06	0.20	0.040 U	0.040 U	0.040 U	0.58	0.049 U	1.7 UJ	0.068 U	2.8 J	0.11	0.026 U
A	GG8.9 Mfg Floor	004A GG8	02/28/07	0.86	0.081 U	0.36 U	0.094	2.3	0.098 U	2.4	0.23	22 EJ	0.35	0.051 U
A	GG8.9 Mfg Floor	004A GG8.9	02/18/08	0.34	0.040 U	0.040 U	0.081 U	1.1	0.054	0.69 U	0.068 U	4.9 D	0.19	0.051 U
A	LL0.2 Mfg Floor	004A LL0.2	02/06/06	0.25	0.040 U	0.040 U	0.073	0.58	0.049 U	1.7 UJ	0.068	2.6 J	0.18	0.026 U
B	JJ16 Chamber	004B JJ16	02/06/06	0.16	0.040 U	0.040 U	0.077	0.61	0.11	1.7 U	0.10	1.2 J	0.097	0.026 U

See Notes on Page 7.

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Building Level	Location Description	Location ID	Date Collected	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Benzene	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
Building 080														
A	Cafeteria	080A CAFE	06/18/06	0.13	0.040 U	0.040 U	0.10	0.83	0.16	1.4 U	0.095	53 D	0.091	0.051 U
A	Cafeteria	080A CAFE	02/08/10	0.055 U	0.040 U	0.040 U	0.093	0.67	0.083	0.69 U	0.088	1.2	0.054 U	0.051 U
A	E1 Office	080A E1	03/01/07	0.11	0.081 U	0.36 U	0.22	0.92	0.43	0.69 U	0.14 U	3.2	0.11 U	0.051 U
A	080A Office West 168	080A E1	02/18/08	0.060	0.040 U	0.040 U	0.18	0.45	0.12	0.69 U	0.068 U	1.0	0.054 U	0.051 U
A	080A Office West 168	080A E1	02/11/09	0.076	0.040 U	0.040 U	0.21	1.4	0.098	0.69 U	0.10	2.7	0.054 U	0.051 U
A	Hangar NE	080A HANG NE	06/18/06	0.15 [0.15]	0.040 U [0.040 U]	0.040 U [0.040 U]	0.26 [0.27]	3.0 [3.0]	0.16 [0.049 U]	1.4 U [1.4 U]	1.0 [1.0]	110 D [110 D]	0.32 [0.29]	0.097 [0.089]
A	Hangar NW	080A HANG NW	06/18/06	0.14	0.040 U	0.040 U	0.081 U	2.0	0.049 U	1.4 U	0.95	68 D	0.86	0.087
A	Office W	080A OFFICE W	06/18/06	0.13	0.040 U	0.040 U	0.081 U	0.77	0.049 U	1.4 U	0.095	28 D	0.070	0.051 U
A	Utility Room	080A UTILITY	06/18/06	0.14	0.040 U	0.040 U	0.12	1.1	0.15	1.4 U	0.36	68 D	0.16	0.051 U
B	Office NE	080B OFFICE NE	06/18/06	0.14	0.040 U	0.040 U	0.26	**3.2 D**	0.049 U	1.4 U	0.95	83 D	0.34	0.087
B	Office S	080B OFFICE SOUTH	06/18/06	0.12	0.040 U	0.040 U	0.26	0.61	0.12	1.4 U	0.18	79 D	0.13	0.051 U
B	080B South Office 253	080B E3	02/18/08	0.060	0.040 U	0.040 U	0.23	0.45	0.19	0.69 U	0.068 U	2.2	0.054 U	0.051 U
Security Booth	Security Booth Inside	Security Booth Inside	06/18/06	0.055 U	0.040 U	0.13	0.081 U	**350 D**	0.049 U	1.4 U	39 D	**1900 D**	0.054 U	0.051 U
VCF 330	VCF South	VCF South	06/18/06	0.44	0.040 U	0.087	0.73	0.86	0.15	1.4 U	0.38	4.9 D	0.070	0.051 U
VCF 331	VCF North	VCF North	06/18/06	0.65	0.040 U	0.091	**2.4**	1.2	1.0	1.4 U	0.12	15 D	0.13	0.051 U
Roof	080 Roof SW SVI Pipe	080R PIPE SW	06/20/06	0.50	0.040 U	0.040 U	0.097	0.28	0.21	1.4 U	0.18	4.1 D	0.054 U	0.051 U
Roof	080 Roof North SVI Pipe	080R SVIP Roof	06/20/06	2.0	0.040 U	0.040 U	0.28	0.15	0.49	1.4 U	0.46	2.2	0.17	0.051 U
Roof	Roof - SVE System Vent Pipe	080R SVIP	03/01/07	0.15	0.081 U	0.36 U	0.097	0.61	0.30	0.69 U	0.15	4.4	0.11 U	0.051 U
Roof	080 Roof SW SVI Pipe	080R SVIP SW	02/18/08	R	R	R	R	R	R	R	R	R	R	R
Building 082 — Hangar														
A	Inside SVI Pipe	082A A3	02/07/06	0.11	0.040 U	0.040 U	0.040	0.54	0.068	1.7 U	0.068 U	0.75 J	0.064	0.026 U
A	A3	082A A3	02/18/08	0.076	0.040 U	0.040 U	0.081 U	0.42	0.049	0.69 U	0.068 U	0.60	0.070	0.051 U
A	A10 - Inside Bldg.	082A A10	03/01/07	0.16	0.081 U	0.36 U	0.081 U	0.86	0.098 U	0.69 U	0.64	1.7	0.14	0.051 U
A	R4 Mfg Floor	082A R4	02/07/06	0.13	0.040 U	0.040 U	0.069	0.77	0.088	1.7 U	0.14	2.9 J	0.13	0.026 U
A	SVI Pipe	082SVI	02/18/08	0.065	0.040 U	0.040 U	0.081 U	0.42	0.049	0.69 U	0.068 U	0.41	0.059	0.051 U
Building 101 — Engineering														
A	A16 Utility Room	101A A16	02/07/06	0.60	0.17	0.040 U	0.045	0.58	0.068	1.7 U	0.095	1.6 J	0.23	0.026 U
A	B4 Office	101A B4	02/07/06	2.1	1.0	0.095	0.053	0.64	0.078	1.7 U	0.21	6.0	0.45	0.026 U
A	C4 Office North	101A C4	03/10/05	3.7 [3.2]	NA	NA	NA	NA	NA	0.56 [0.90]	NA	NA	0.21 U [0.21 U]	NA
A	C4 Office North	101A C4	02/10/09	1.4	0.85	0.12	0.097	1.1	0.083	0.69 U	0.13	1.6	0.41	0.051 U
A	C4 Office North	101A C4	02/08/10	1.0	0.65	0.056	0.081	0.73	0.073	0.69 U	0.12	1.0	0.48	0.051 U
A	D7 Office	101A D7	03/01/07	0.98	0.64	0.36 U	0.081 U	0.84	0.098 U	0.69 U	0.14 U	1.8	0.28	0.051 U
A	E6 Utility Room	101A E6 Utility	03/10/05	1.0	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	E6 Janitor Room	101A E6 Janitor	04/22/05	0.98	NA	NA	NA	NA	NA	0.83	NA	NA	0.21 U	NA
B	E5 Office	101B E5	02/07/06	0.93	0.34	0.040 U	0.089	0.64	0.083	1.7 U	0.10	2.6 J	0.24	0.026 U
B	E6 Office	101B E6	04/22/05	1.6	NA	NA	NA	NA	NA	0.69	NA	NA	0.21 U	NA
C	E6 Office	101C E6	04/22/05	1.6	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
C	F5 Office	101C F5	02/07/06	2.0	1.1	0.10	0.065	0.61	0.049 U	1.7 U	0.24	3.8 EJ	0.35	0.026 U
Building 102 — Engineering														
A	A2 Office	102A A2	02/07/06	0.46	0.13	0.040 U	0.089	0.64	0.23	1.7 U	0.18	2.4 J	0.17	0.026 U
A	A2 Office	102A A2-1	03/01/07	0.23	0.081 U	0.36 U	0.081 U	0.85	0.11	0.69 U	0.68	2.1	0.14	0.051 U
A	A2 Office	102A A2	02/10/09	0.15	0.057	0.040 U	0.13	0.96	0.16	0.69 U	0.10	2.3	0.081	0.051 U
A	E10 Office	102A E10	03/10/05	0.82	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	Inside Sump	102A F1	03/10/05	0.82 U	NA	NA	NA	NA	NA	1.6	NA	NA	0.21 U	NA
B	E10 Office	102B E10	02/07/06	0.31 [0.33]	0.065 [0.081]	0.040 U [0.040 U]	0.053 [0.073]	0.61 [0.61]	0.17 [0.20]	1.7 U [1.7 U]	0.50 [0.52]	2.0 J [2.1 J]	0.14 [0.15]	0.026 U [0.026 U]
Building 103 — Engineering														
A	BA1 Breakroom	103A BA1	02/06/06	0.31	0.040 U	0.040 U	0.081	0.73	0.078	1.7 U	0.12	2.5 J	0.22	0.026 U
A	BA1 Breakroom	103A BA1	02/10/09	0.32	0.040 U	0.040 U	0.15	1.1	0.073	0.69 U	0.17	6.4 EJ	0.16	0.051 U
A	C1 Aisle (at ATM)	103A C1	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.66	NA	NA	0.81	NA
A	D4 Itelo Lab	103A D4	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.73	NA	NA	0.54	NA
B	BA1 Office	103B BA1	02/06/06	0.34	0.040 U	0.040 U	0.11	0.77	0.098	1.7 U	0.12	2.9 J	0.21	0.026 U
Basement	A3 Utility Room	103LOB A3	02/02/06	0.83 U	0.62 U	0.61 U	0.62 U	1.0	0.74 U	0.81	1.0 U	12	0.22 U	0.39 U
Basement	A3 Utility Room	103LOB A3	02/06/06	0.35	0.040 U	0.040 U	0.11	0.77	0.10	1.7 U	0.12	2.4 J	0.20	0.026 U
Basement	Conference Room	103LOB CR	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.76	NA	NA	0.21 U	NA
Building 104 — Engineering														
A	D6 Office	104A D6	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	D6 Office	104A D6	02/10/09	0.20	0.077	0.040 U	0.14	0.99	0.093	0.69 U	0.11	2.3	0.064	0.051 U
A	D6 Office	104A D6	02/08/10	0.25	0.13	0.040 U	0.11	0.64	0.32	0.69 U	0.081	1.1	0.11	0.051 U
A	H1 Office	104A H1	02/07/06	0.21	0.061	0.040 U	0.049	0.58	0.068	1.7 U	0.068 U	1.2 J	0.081	0.026 U
A	H2 Office	104A H2	03/01/07	0.22	0.081 U	0.36 U	0.081 U	0.91	0.11	0.69 U	0.15	1.9	0.11 U	0.051 U
B	G1 Office	104B G1	02/07/06	0.82	0.36	0.040 U	0.057	0.61	0.083	1.7 U	0.15	2.7 J	0.20	0.026 U
Building 149 — Pumphouse														
A	Interior	149A INTER NPH	04/22/05	4.9	NA	NA	NA	NA	NA	0.62	NA	NA	**6.3**	NA
A	Interior	149A INTER	02/07/06	0.055 U	0.040 U	0.040 U	0.040 U	0.27	0.063	1.7 U	0.11	0.10 J	0.054 U	0.026 U
Building 151 — Engineering														
A	G1 Maintenance Shop	151A G1	02/07/06	0.28	0.077	0.040 U	0.045	0.73	0.088	1.7 U	0.10	8.7	0.064	0.026 U
A	G1 Maintenance Shop	151A G1	03/01/07	0.47 [0.44]	0.26 [0.23]	0.36 U [0.36 U]	0.081 U [0.081 U]	0.78 [0.75]	0.098 U [0.098 U]	0.69 U [0.69 U]	0.23 [0.20]	6.7 [6.1]	0.11 U [0.11 U]	0.051 U [0.051 U]
Building 154 — Engineering														
A	1C Lab	154A 1C	02/07/06	0.15	0.040 U	0.040 U	0.053	0.54	0.068	1.7 U	0.068 U	3.8 EJ	0.070	0.026 U
A	H1 Lab	154A N1	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.56	NA	NA	0.75	NA

See Notes on Page 7.

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Building Level	Location Description	Location ID	Date Collected	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Benzene	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
Building 201 — Office														
A	B3 Office	201A B3	02/06/06	3.2	1.1	0.23	0.073	0.64	0.049 U	1.7 U	0.21	4.1	0.42	0.026 U
A	B5 Cafeteria	201A B5 Café	03/10/05	16	NA	NA	NA	NA	NA	1.0	NA	NA	0.21 U	NA
A	B5 Cafeteria	201A B5 Caf	04/22/05	43	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.81	NA
A	B5 Cafeteria	201A B5	02/06/06	8.7 [7.6]	8.5 [7.3]	0.34 [0.29]	0.040 U [0.065]	0.61 J [0.77 J]	0.049 U [0.049 U]	1.7 U [1.7 U]	0.11 [0.16]	5.3 [6.4]	0.64 J [0.81 J]	0.026 U [0.026 U]
A	B5 Cafeteria	201A B5	02/18/08	4.1	3.8	0.25	0.081 U	0.42	0.11	0.69 U	0.068 U	3.5	0.27	0.051 U
A	B5 Cafeteria	201A B5	02/10/09	2.4	1.1	0.19	0.13	1.2	0.25	0.69 U	0.13	4.9 EJ	0.25	0.051 U
A	B5 Cafeteria	201A B5	02/08/10	2.7	2.5	0.25	0.13	0.64	0.40	0.69 U	0.14	4.9 EJ	0.34	0.051 U
A	P4 Conference Room	201A P4	03/10/05	2.4	NA	NA	NA	NA	NA	0.62	NA	NA	1.1	NA
A	P4 Conference Room	201A P4 CR	03/28/05	2.5	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	P4 Conference Room	201A P4 CR	04/22/05	1.8 [1.8]	NA	NA	NA	NA	NA	1.3 [0.62]	NA	NA	0.97 [0.21 U]	NA
A	P4 Conference Room	201A P4	02/06/06	1.0	0.31	0.075	0.081	0.64	0.049 U	1.7 U	0.13	2.8 J	0.16	0.026 U
A	Q2 Office	201A Q2	02/06/06	0.76	0.25	0.040 U	0.069	0.64	0.049 U	1.7 U	0.13	2.7 J	0.15	0.026 U
B	A2 Office	201B A2	02/06/06	2.2	1.4	0.17	0.065	0.51	0.049 U	1.7 U	0.14	3.7 J	0.23	0.026 U
B	B5 Cafeteria	201B B5	03/01/07	16 EJ	19 EJ	0.56	0.093	0.96	0.33	0.69 U	0.64	7.0	0.73	0.051 U
B	H2 Sec Center	201B H2	04/22/05	1.9	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
B	N4 Office	201B N4	03/28/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
B	Q2 West Office	201B Q2	04/22/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
C	B2 Exec Office	201C B2 Exec	04/22/05	3.1	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.48	NA
C	B2 Exec Office	201C B2	02/06/06	3.0	1.2	1.3	0.065	0.58	0.049 U	1.7 U	0.31	3.5	**17**	0.026 U
C	B2 Exec Office	201C B2-1	04/01/06	3.6	1.1	0.16	0.097	0.45	0.098	1.7 UD	0.15	11 D	0.34	0.051 U
C	B2 Exec Office	201C B2-2	04/01/06	3.5	1.1	0.18	0.097	0.45	0.10	1.7 UD	0.14	9.8 D	0.40	0.051 U
C	B3 Elevator	201C B3	04/01/06	3.0	1.1	0.14	0.11	0.45	0.12	1.7 UD	0.16	12 D	0.28	0.051 U
C	D2 Admin	201C D3	04/01/06	1.7	0.53	0.091	0.17	0.42	0.098	1.7 UD	0.16	16 D	0.25	0.051 U
C	M2 Admin	201C M2	04/01/06	0.60	0.11	0.040 U	0.20	0.48	0.11	1.7 UD	0.20	12 D	0.18	0.059
C	Q2 West Office	201C Q2	04/01/06	0.53	0.089	0.040 U	0.20	0.45	0.10	1.7 UD	0.21	9.8 D	0.15	0.051 U
D	Top of Elevator	201D ELEV	04/01/06	4.4	2.4	0.16	0.081 U	0.32	0.11	1.7 UD	0.088	4.5 D	0.24	0.051 U
Building 301 — Powerhouse														
A	A3 Powerhouse Floor	301A A3	02/07/06	0.15 [0.16]	0.040 U [0.040 U]	0.040 U [0.040 U]	0.049 [0.065]	1.4 [1.4]	0.049 U [0.049 U]	1.7 U [1.7 U]	0.068 UJ [0.16 J]	5.7 [5.3]	0.054 U [0.54]	0.026 U [0.026 U]
A	A3 Powerhouse Floor	301A A3	02/28/07	0.28 J [0.42 J]	0.13 [0.12]	0.36 U [0.36 U]	0.081 U [0.081 U]	1.6 [1.7]	0.098 U [0.098 U]	0.69 U [0.69 U]	0.19 [0.19]	5.8 [5.9]	0.12 [0.21]	0.051 U [0.051 U]
B	C7 RO Water	301B C7	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
B	D2 Break Room	301B D2	02/07/06	0.14	0.040 U	0.040 U	0.045	0.96	0.098	1.7 U	0.088	3.3 J	0.097	0.026 U
Basement	Inside Sump by A3	301I A3	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
Basement	D4 Powerhouse Floor	301A D4	03/10/05	0.93 [0.82]	NA	NA	NA	NA	NA	0.52 U [0.52 U]	NA	NA	0.21 U [0.21 U]	NA
Basement	301 Basement	301BASE D4	02/08/10	0.25	0.14	0.040 U	0.081 U	0.99	0.054	0.69 U	0.075	3.3	0.054 U	0.051 U
Building 304 — Engineering														
A	C20 Cleanout	304A C20	03/14/05	0.82 U	NA	NA	NA	NA	NA	2.7	NA	NA	0.21 U	NA
A	N16 Office	304A N16	04/21/05	0.55 [0.55]	NA	NA	NA	NA	NA	0.90 [0.69]	NA	NA	0.44 [0.45]	NA
A	N16 Office	304A N16	04/22/05	0.87 [0.82]	NA	NA	NA	NA	NA	0.52 U [0.52 U]	NA	NA	0.21 U [0.21 U]	NA
A	N16 Office	304A N16	02/18/08	0.71	0.12	0.14	0.081 U	0.48	0.078	0.69 U	0.095	7.2 D	0.34	0.051 U
A	N16 Office	304A N16	02/10/09	1.0	0.093	0.12	0.14	1.2	0.078	0.69 U	0.37	7.5 EJ	0.34	0.051 U
A	N16 Office	304A N16	02/08/10	0.16	0.040 U	0.040 U	0.14	1.1	0.16	0.73	0.095	1.4	0.064	0.051 U
A	Q16 Office	304A Q16 office	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.80	NA	NA	**6.2**	NA
A	Q16 Office	304A Q16 office	03/28/05	0.82 U [0.82 U]	NA	NA	NA	NA	NA	0.52 U [0.52 U]	NA	NA	3.2 [0.21]	NA
A	Q16 Office	304A Q16 cab	04/22/05	0.93	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	Q16 Office	304A Q16	02/02/06	1.0	0.62 U	0.61 U	0.62 U	1.0	0.74 U	0.67	1.0 U	12	0.77	0.39 U
A	Q16 Office	304A Q16	02/06/06	0.65	0.089	0.052	0.097	0.67	0.42	1.7 U	0.18	4.1	0.42	0.026 U
A	Q16 Office	304A Q16	02/28/07	0.20	0.081 U	0.36 U	0.081 U	1.1	0.099	0.69 U	0.21	4.6	0.12	0.051 U
A	W14.5 Office	304A W14	04/22/05	1.0	NA	NA	NA	NA	NA	0.56	NA	NA	0.21 U	NA
A	W16 Office	304A W16	03/28/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.48	NA
B	Q16 Office	304B Q16	02/06/06	0.76	0.15	0.087	0.085	0.73	0.22	1.7 U	0.15	4.1	0.64	0.026 U
B	Q16 Office	304B Q16	02/28/07	0.25	0.081 U	0.36 U	0.082	1.3	0.12	0.69 U	0.47	5.1	0.21	0.051 U
B	Q17 Office	304B Q17	04/22/05	0.82 U	NA	NA	NA	NA	NA	1.1	NA	NA	0.70	NA
B	W16 Office	304B W16	03/28/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.59	NA
Building 305 — Manufacturing														
A	A5 Lab	305A A5	03/01/07	0.29 [0.22]	0.081 U [0.081 U]	0.36 U [0.36 U]	0.081 U [0.081 U]	0.76 [0.66]	0.21 J [0.098 UJ]	19 EJ [2.2 J]	0.43 J [0.15 J]	4.3 J [0.57 J]	1.7 J [1.1 J]	0.051 U [0.051 U]
A	A5 Lab	305A A5	05/14/07	0.15	0.081 U	0.36 U	0.081 U	0.37	0.10	0.69 U	0.14 U	10 D	0.31	0.051 U
A	A5 Lab	305A A5	02/08/10	0.11	0.040 U	0.040 U	0.081 U	0.61	0.059	0.69 U	0.11	3.8 EJ	0.75	0.051 U
A	R1 Lab	305A R1	03/10/05	1.3	NA	NA	NA	NA	NA	0.52 U	NA	NA	1.0	NA
A	R1 Lab	305A R1 - A	02/07/06	0.49	0.15	0.040 U	0.053	0.73	0.049 U	1.7 U	0.15	32	0.75	0.026 U
A	Flash X-ray	305A Q2	02/18/08	0.20	0.053	0.040 U	0.081 U	0.48	0.054	0.69 U	0.068	4.5 D	0.70	0.051 U
Building 306 — Chemical Warehouse														
A	892 A5 (Inorganic Mix)	306A A5	03/14/05	0.82 U [0.82 U]	NA	NA	NA	NA	NA	0.52 U [0.52 U]	NA	NA	0.70 [0.21 U]	NA
A	F7 Office	306A F7	02/08/06	1.6	0.17	0.17	0.045	0.83	0.068	1.7 U	0.10	13 D	0.39	0.026 U
A	F7 Office	306A F7	02/28/07	1.5	0.11	0.36 U	0.081 U	1.7	0.11	4.1	0.22	17 EJ	0.40	0.051 U
A	F7 Office	306A F7	02/18/08	0.76	0.053	0.21	0.081 U	0.51	0.059	0.69 U	0.068 U	2.6	0.30	0.051 U
Building 309														
A	A10 PP Office	309A A10	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	C9 Office	309A C9	02/08/06	0.15	0.040 U	0.040 U	0.057	0.89	0.078	1.7 U	0.068 U	2.0 J	0.054	0.026 U
A	C9 Office	309A C9	02/28/07	0.15	0.081 U	0.36 U	0.081 U	1.4	0.10	0.69 U	0.23	4.3	0.11 U	0.051 U
A	C9 Office	309A C9	02/18/08	0.065	0.040 U	0.040 U	0.081 U	0.45	0.088	0.69 U	0.068 U	0.53	0.054 U	0.051 U
A	C14 Break Room	309A C14	02/08/06	0.14	0.040 U	0.040 U	0.057	0.93	0.078	1.7 U	0.11	2.8 J	0.11	0.026 U

See Notes on Page 7.

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Building Level	Location Description	Location ID	Date Collected	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Benzene	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
Building 350/351 — Recycle														
A	Paper Shredder (w/ fan on)	351A B1	06/20/05	1.9	NA	NA	NA	NA	NA	0.53 U	NA	NA	3.3	NA
A	Paper Shredder (w/o fan on)	350A B1	04/22/05	6.4	NA	NA	NA	NA	NA	0.52 U	NA	NA	**8.9**	NA
A	Paper Shredder Area	350A PS	02/07/06	8.2	0.15	0.040 U	0.049	0.64	0.098	1.7 U	0.45	0.94 J	**12**	0.026 U
A	Paper Shredder Area	350A PS-A	02/26/07	5.2 J	0.13	0.36 U	0.081 U	2.5	0.14 J	0.69 U	0.43 U	5.8	**8.3**	0.051 U
A	Paper Shredder Area	350A Paper	02/18/08	2.2	0.073	0.040 U	0.081 U	0.42	0.063	0.69 U	0.16	0.64	3.5	0.051 U
A	Paper Shredder Area	351A B1	02/10/09	2.9	0.093	0.040 U	0.10	1.4	0.083	0.69 U	0.26	2.7	4.4	0.051 U
A	Paper Shredder Area	351A B1	02/08/10	2.7 [2.6]	0.11 [0.10]	0.083 [0.063]	0.081 U [0.081 U]	0.67 [0.64]	0.078 [0.068]	0.69 U [0.69 U]	0.18 [0.21]	1.2 [1.4]	4.5 [4.5]	0.051 U [0.051 U]
A	A2 Plastic Storage Area	350A A2	06/20/05	11	NA	NA	NA	NA	NA	0.53 U	NA	NA	**20**	NA
A	A2 Plastic Storage Area	351A A2	02/07/06	2.8	0.089	0.040 U	0.040	1.5	0.078	1.7 U	0.32	2.4 J	4.4	0.026 U
A	A2 Plastic Storage Area	351A P	02/26/07	8.7 J	0.16	0.36 U	0.086	1.4	0.14 J	0.69 U	0.33 U	0.47	**13 EJ**	0.051 U
A	A2 Plastic Storage Area	351A R2	05/14/07	2.7	0.093	0.36 U	0.081 U	1.6	0.098 U	0.69 U	0.18	6.2	2.9	0.051 U
A	A2 Plastic Storage Area	351A Plastic	02/18/08	5.2	0.14	0.040 U	0.081 U	0.45	0.073	0.69 U	0.34	0.53	**8.6 D**	0.051 U
A	A2 Plastic Storage Area	350A A2	02/10/09	7.6 D	0.18	0.040 U	0.11	1.3	0.45	0.69 U	0.46	1.8	**11 D**	0.051 U
Basement	Backroom (w/o fan on)	350BASE BR recycle	03/14/05	4.0	NA	NA	NA	NA	NA	0.52 U	NA	NA	**7.3**	NA
Basement	Backroom (w/ fan on)	350BASE BR w/fan	04/22/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
Basement	Backroom (w/ fan on)	351BASE BR fan	06/20/05	11	NA	NA	NA	NA	NA	0.53 U	NA	NA	**16**	NA
Basement	Garage (w/ fan on)	351BASE GAR	06/20/05	3.8	NA	NA	NA	NA	NA	0.53 U	NA	NA	**7.2**	NA
Basement	Backroom (w/o fan on)	351BASE BR	02/07/06	3.3	0.15	0.12	0.049	3.0	0.049 U	1.7 U	0.20	5.7	**5.3**	0.026 U
Basement	Back Room	351 Base BR	02/18/08	1.0	0.085	0.040 U	0.081 U	0.45	0.054	0.69 U	0.081	0.53	2.0	0.051 U
Basement	Basement Backroom	351BASE BR	02/10/09	0.76 [1.4]	0.065 [0.11]	0.059 [0.091]	0.089 [0.089]	1.3 [1.2]	0.073 [0.073]	0.69 U [0.69 U]	0.14 [0.16]	2.4 [2.0]	1.6 [2.7]	0.051 U [0.051 U]
Tower Discharge	Tower Exhaust	GWTOWERT	03/01/07	40 E	45 E	8.3 E	0.11	**8.8 E**	0.81	2.9	1.4	13 E	**39 E**	0.89
Tower Discharge	Tower Exhaust	GWTOWER	02/18/08	R	R	R	R	R	R	R	R	R	R	R
Building 352 — Wastewater Treatment														
A	C4 Tank Area	352A C4	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	G1 Utility Room	352A G1	02/07/06	0.25	0.040 U	0.040 U	0.040	0.61	0.063	1.7 U	0.075	0.87 J	0.53	0.026 U
A	G1 Utility Room	352A G1	02/26/07	0.16 J	0.081 U	0.36 U	0.081 U	1.9	0.098 U	0.69 U	0.14 U	3.2	0.29 U	0.051 U
A	G1 Chem Lab	352B G1	02/07/06	0.11 [0.11]	0.040 U [0.040 U]	0.040 U [0.040 U]	0.057 [0.045]	0.54 [0.58]	0.068 [0.073]	1.7 U [1.7 U]	0.068 U [0.068]	0.36 J [0.94 J]	0.064 [0.075]	0.026 U [0.026 U]
Building 899 — Modular Office														
A	A5 Office	899A A5	02/06/06	0.35	0.093	0.040 U	0.073	0.64	0.093	1.7 U	0.10	0.98 J	0.13	0.026 U
A	A5 Office	899B A5	02/06/06	0.22	0.040 U	0.040 U	0.085	0.61	0.078	1.7 U	0.12	1.5 J	0.12	0.026 U
A	A5 Office	899A A5	02/28/07	0.11	0.081 U	0.36 U	0.081 U	1.1	0.098 U	0.69 U	0.33	1.7	0.11 U	0.051 U
A	A6 Office	899A A6	03/14/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
Building 900 — Modular Office														
A	Office	900A	02/08/06	0.11	0.040 U	0.040 U	0.040 U	0.83	0.11	1.7 U	0.068 U	1.7 J	0.054 U	0.026 U
A	Building Entrance	900A ENT	02/28/07	0.12	0.081 U	0.36 U	0.081 U	1.0	0.44	0.69 U	0.35	7.2	0.11 U	0.051 U
A	Building Entrance	900A ENT	02/18/08	0.065	0.040 U	0.040 U	0.081 U	0.70	0.27	0.69 U	0.068 U	4.5 D	0.11	0.051 U
Building 901 — Modular Office														
A	B13 Office	901A B13	03/14/05	0.93	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.75	NA
A	C8 Sec Center	901A C8	02/06/06	0.16	0.040 U	0.040 U	0.057	0.61	0.049 U	1.7 UJ	0.068 U	1.2 J	0.086	0.026 U
A	C8 Sec Center	901A C8	02/28/07	0.17	0.081 U	0.36 U	0.081 U	1.3	0.098 U	0.69 U	0.14 U	3.9	0.11 U	0.051 U
A	C8 Sec Center	901A C8	02/18/08	0.20	0.040 U	0.040 U	0.081 U	0.58	0.063	0.69 U	0.068 U	1.3	0.13	0.051 U
A	C8 Sec Center	901A C8	02/08/10	0.065	0.040 U	0.040 U	0.081 U	0.58	0.088	0.69 U	0.12	0.38	0.054 U	0.051 U
Building 902 — Modular Office														
A	D14 Sec Center	902A D14	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.56	NA	NA	0.21 U	NA
A	D14 Sec Center	902A D14	02/09/10	0.16	0.040 U	0.040 U	0.081 U	0.77	0.073	0.69 U	0.10	2.0	0.13	0.051 U
A	E1 Conference Room	902A E1	02/02/06	0.83 U	0.62 U	0.61 U	0.62 U	1.3	0.74 U	0.85	1.0 U	6.6	0.22 U	0.39 U
A	E1 Conference Room	902A E1	02/06/06	0.15	0.040 U	0.040 U	0.040 U	0.70	0.049 U	1.7 UJ	0.068	0.94 J	0.054 U	0.026 U
A	E1 Conference Room	902A E1	02/28/07	0.11	0.081 U	0.36 U	0.081 U	0.36	0.098 U	0.69 U	0.14 U	0.38 U	0.11 U	0.051 U
A	E1 Conference Room	902A E1	02/18/08	0.14	0.040 U	0.040 U	0.081 U	0.61	0.059	0.69 U	0.068 U	1.3	0.10	0.051 U
A	E1 Conference Room	902A E1	02/08/10	0.065 U	0.049 U	0.048 U	0.12	0.93	0.068	0.80 U	0.14	1.7	0.064 U	0.059 U
Building 903 — Modular Office														
A	B5 Office	903A B5	04/22/05	1.8	NA	NA	NA	NA	NA	1.2	NA	NA	0.54	NA
A	B7 Office	903A B7	03/10/05	3.4	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
A	C5 Office	903A C5	02/07/06	1.8	0.69	0.040 U	0.045	0.64	0.078	1.7 U	0.068	1.3 J	0.16	0.026 U
A	C5 Office	903A C5	03/01/07	0.91	0.51	0.36 U	0.081 U	0.96	0.098 U	0.69 U	0.14 U	1.8	0.16	0.051 U
Industrial Tunnel														
Industrial Tunnel	Tunnel in 001 by Parking Lot with fans	001TUN PL-OFF	03/14/05	52	NA	NA	NA	NA	NA	0.52 U	NA	NA	**15**	NA
Industrial Tunnel	West side of Tunnel with fans off	001TUN WEST	03/14/05	1.2	NA	NA	NA	NA	NA	2.2	NA	NA	1.7	NA
Industrial Tunnel	Tunnel in 001 by Parking Lot with fans	001TUN PL-0N	03/28/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA

See Notes on Page 7.

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Building Level	Location Description	Location ID	Date Collected	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Benzene	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
Ambient														
001 Roof	Bldg 001 N Roof	001R N	02/06/06	0.098	0.040 U	0.040 U	0.040 U	0.51	0.049 U	1.7 U	0.068 U	0.38 J	0.054 U	0.026 U
001 Roof	Bldg 001 S Roof	001R S	02/06/06	0.42	0.14	0.087 U	0.089 U	0.54	0.11 U	3.8 U	0.15 U	6.0 J	0.26	0.056 U
001 Roof	Building 001 SW Corner Roof	001R SW	02/28/07	0.12	0.081 U	0.36 U	0.081 U	1.3	0.098 U	0.69 U	0.14 U	3.7	0.11 U	0.051 U
002 Parking Lot	Parking Lot 002	002PL	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.56	NA	NA	0.70	NA
002 Parking Lot	Parking Lot 002	002P	04/21/05	0.11	NA	NA	NA	NA	NA	0.69 U	NA	NA	0.054 U	NA
002 Parking Lot	Parking Lot 002	002B PL AMB	02/06/06	0.14	0.040 U	0.040 U	0.057	0.86	0.078	1.7 U	0.075	0.90 J	0.070	0.026 U
002 Parking Lot	Parking Lot 002B	002B PL	03/01/07	0.11 U	0.081 U	0.36 U	0.081 U	0.95	0.098 U	0.69 U	0.14 U	1.5	0.11 U	0.051 U
002 Parking Lot	002B Parking Lot	002B PL	02/18/08	0.060	0.040 U	0.040 U	0.081 U	0.54	0.049	0.69 U	0.068 U	0.94	0.054 U	0.051 U
002 Parking Lot	002B Parking Lot	002B PL	02/10/09	0.071	0.040 U	0.040 U	0.093	1.3	0.063	0.69 U	0.10	2.1	0.059	0.051 U
002 Parking Lot	002B Parking Lot	002B PL	02/08/10	0.076	0.040 U	0.040 U	0.10	1.1	0.12	0.69 U	0.13 J	1.1 J	0.054 U	0.051 U
002 Parking Lot	Visitor Parking Lot	002PL Visit	03/28/05	0.82 U	NA	NA	NA	NA	NA	1.7	NA	NA	0.48	NA
002 Roof	Bldg 002 HVAC N Intake	002I N	04/22/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
002 Roof	Bldg 002 HVAC N Intake	002R N	02/06/06	0.32	0.097 U	0.095 U	0.097 U	0.58	0.12 U	4.2 U	0.16 U	0.68 J	0.52	0.061 U
002 Roof	Bldg 002 HVAC S Intake	002I S	04/22/05	1.3	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
002 Roof	Bldg 002 HVAC S Intake	002R S	02/06/06	0.12	0.040 U	0.040 U	0.040 U	0.28	0.059	1.7 U	0.068 U	0.060 J	0.054 U	0.026 U
002 Roof	Building 002 NE Corner Roof	002R NE	02/28/07	0.22	0.081 U	0.36 U	0.081 U	1.4	0.098 U	0.69 U	0.14	2.4	0.22	0.051 U
080 Security	Security Booth Roof	Security Booth Roof	06/18/06	0.055 U	0.040 U	0.79	0.081 U	**35 D**	0.049 U	1.4 U	26 D	300 D	0.15	1.0
080 Fence	Southwest of Building on fence	SWFence	06/18/06	0.14	0.040 U	0.040 U	0.081 U	0.80	0.13	1.4 U	0.088	1.7	0.075	0.051 U
080 Fence	Southwest of Building on fence	080SW FENCE	03/01/07	0.11 U	0.081 U	0.36 U	0.081 U	0.54	0.098 U	0.69 U	0.14 U	0.38 U	0.11 U	0.051 U
080 Fence	Southwest of Building on fence	080SW FENCE	02/18/08	0.060	0.040 U	0.040 U	0.081 U	0.42	0.049 U	0.69 U	0.068 U	0.38	0.054 U	0.051 U
080 Fence	Southwest of Building on fence	080SW FENCE	02/10/09	0.076	0.040 U	0.040 U	0.10	1.5	0.073	0.69 U	0.12	2.2	0.070	0.051 U
080 Fence	Southwest of Building on fence	080SW FENCE	02/08/10	0.055 U	0.040 U	0.040 U	0.081 U	0.61	0.068	0.69 U	0.068 U	0.64	0.054 U	0.051 U
102 Parking Lot	Parking Lot 102	102PL	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
102 Parking Lot	Parking Lot 102	102PL	03/28/05	0.82 U	NA	NA	NA	NA	NA	1.7	NA	NA	0.32	NA
102 Parking Lot	Parking Lot 102	102B PL	02/06/06	0.098	0.040 U	0.040 U	0.045	0.58	0.049 U	1.7 U	0.068 U	0.79 J	0.054 U	0.026 U
102 Parking Lot	Southeast Parking Lot/ Parking Lot 102	PLSE	03/01/07	0.11 U	0.081 U	0.36 U	0.081 U	0.67	0.098 U	0.69 U	0.14 U	0.38 U	0.15	0.051 U
102 Parking Lot	Southeast Parking Lot/ Parking Lot 102	SEPL	02/18/08	0.060	0.040 U	0.040 U	0.081 U	0.45	0.068	0.69 U	0.068 U	0.53	0.054 U	0.051 U
102 Parking Lot	Parking Lot 102	102B PL	02/10/09	0.065	0.040 U	0.040 U	0.11	1.5	0.068	0.69 U	0.10	2.8	0.054 U	0.051 U
103 Parking Lot	Parking Lot 103	103A PL	02/06/06	0.055 U	0.040 U	0.040 U	0.040 U	0.15	0.049 U	1.7 U	0.068 U	0.15 J	0.054 U	0.026 U
149 Parking Lot	Parking Lot at Bldg 149	149A PL	02/06/06	0.14	0.040 U	0.040 U	0.057	0.77	0.078	1.7 U	0.068 U	1.1 J	0.059	0.026 U
201 Roof	Bldg 201 Roof	201R	04/01/06	0.15	0.040 U	0.040 U	0.081 U	0.38	0.078	1.7 UD	0.081	1.2	0.054 U	0.051 U
304 HVAC	Bldg 304 HVAC Intake	304R INTAKE	04/22/05	0.82 U	NA	NA	NA	NA	NA	0.56	NA	NA	0.21 U	NA
306 Roof	Bldg 306 Roof	306A R	02/06/06	0.12	0.040 U	0.040 U	0.049	0.48	0.078	5.2	0.081	0.45 J	0.086	0.026 U
306 Grass	Bldg 306 Grass	306GRASS	03/28/05	0.82 U	NA	NA	NA	NA	NA	2.0	NA	NA	0.38	NA
350 Grass	Bldg 350 Grassy Area	350GRASS	03/10/05	0.82 U	NA	NA	NA	NA	NA	0.52 U	NA	NA	0.21 U	NA
351 Roof	Roof Ambient	351R INTAKE	05/14/07	0.11 U	0.081 U	0.36 U	0.081 U	0.26	0.098 U	0.72	0.14 U	1.1	0.11 U	0.051 U
351 Roof	351 Intake Roof	351R INTAKE	02/18/08	0.13	0.040 U	0.040 U	0.081 U	0.32	0.049 U	0.69 U	0.068 U	0.16 U	0.22	0.051 U
352 Roof	Bldg 352 Roof	352R	02/06/06	0.11	0.040 U	0.040 U	0.065	0.61	0.073	1.7 U	0.068 U	0.53 J	0.054 U	0.028
Parking Lot	Northeast Parking Lot	PLNE	03/01/07	0.11 U	0.081 U	0.36 U	0.081 U	0.80	0.098 U	0.69 U	0.14 U	1.1	0.11 U	0.051 U
Parking Lot	Northeast Parking Lot	NEPL	02/18/08	R	R	R	R	R	R	R	R	R	R	R

See Notes on Page 7.

Table C
On-Site Summary of Analytical Air Results
Lockheed Martin MS2
Owego, New York

Notes:

NA = Not Analyzed.
Concentrations in micrograms per cubic meter ($\mu g/m^3$).
[ ] = Field duplicate sample results are shown in brackets.

Qualifiers:

D = Concentration is based on a diluted sample analysis.
E = The compound was quantitated above the calibration range.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
R = The sample results are rejected.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.