Vapor Intrusion Assessment
Proposed
Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ
334 West Wheeling Street
Lancaster, Ohio

Submitted to:
Fairfield County
Board of Commissioners
210 East Main Street
Lancaster, Ohio 43130

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RELIABILITY OF REPORT - DISCLAIMER

Conclusions reached in this report are based upon the objective data available to the CONSULTANTS at the time of forming their opinions and as presented in the report. The accuracy of the report depends upon the accuracy of these data. Every effort is made to evaluate the information by the methods that generally are recognized to constitute the state of the art at the time of rendering the report and conclusions, and the conclusions reached herein represent our opinions. Subsurface conditions are known to vary both in space and time, and there is inherent risk in the extrapolation of data.

THE CONSULTANTS are not responsible for actual conditions proved to be materially at variance with the data that were available to them and upon which they relied, as presented in the report.

The opinions, conclusions and recommendations shown in the report are put forth for a specific and proposed purpose and for the specific site discussed. The CONSULTANTS are not responsible for any other application, whether of purpose or location, of our opinions, conclusions and recommendations other than as specifically indicated in the report.

EXECUTIVE SUMMARY

This report summarizes work performed and data collected during the soil gas and vapor intrusion assessment conducted under the footprint of the proposed Fairfield County Jail/Public Safety Facility at 334 West Wheeling Street, Lancaster, Ohio. This work was conducted between July 24, 2014 and September 5, 2014 and encompassed two sampling events. A risk assessment was performed using the soil gas data and this report presents the final conclusions of this portion of the work.

This report also summarizes work performed and data collected during the soil gas and vapor intrusion assessment inside the existing Sheriff's Office and Minimum Security Misdemeanor Jail (MSMJ). The first of two sampling events was conducted on August 4 and 5, 2014 inside the existing facility. This report presents the results from the first of two sampling events. Additional sampling will be performed in November 2014 and a separate report presenting the second data collection results and conclusions will be prepared after results are received.

This work was performed to gather specific information on concentrations of naphthalene and mercury in soil gas under the proposed Fairfield County Jail/Public Safety Facility as well as to assess soil gas concentrations of these constituents under and within the existing Sheriff's Office and MSMJ. The investigation was conducted at the Sheriff's Office and MSMJ because the fill materials found under the proposed building footprint of the proposed facility were assumed to be present under the existing building based on historical site usage.

These efforts were performed as a follow-up to the *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"* report dated July 7, 2014. During this initial investigation, the potential exposure to indoor air for workers and residents at the proposed jail was calculated using measured soil concentrations because soil gas was not collected. When these calculations were performed, the concentrations of mercury and naphthalene in the soil indicated a potentially unacceptable health risk that would require installation of a vapor barrier beneath the proposed jail. However, when such a potential risk is calculated using soil concentrations, Ohio EPA recommends that soil gas concentrations be measured and used in subsequent risk calculations.

Therefore, the objectives of this work were to:

1) determine if the vapor intrusion pathway is complete;

2) collect sufficient data to evaluate any complete exposure pathways to residents of the proposed jail;

3) collect sufficient data to evaluate any complete exposure pathways to workers in the proposed jail;

4) evaluate the potential for sub-slab vapors to present an indoor air risk in the existing Sheriff's Office and MSMJ; and

5) use the data collected during this investigation to determine, what, if any mitigation measures may be appropriate.

To achieve these objectives, soil gas samples were collected in six locations under the proposed building footprint of the Fairfield County Jail/Public Safety Facility. The samples were collected from subsurface probes installed coincident with the borings where the concentrations of mercury and naphthalene were highest in the soil. Two sampling efforts were conducted in July and September 2014 to measure soil gas concentrations. Neither mercury nor naphthalene was detected in the soil gas in either of the two sampling events. Risk assessment calculations performed using this soil gas data show that the soil to indoor air pathway does not pose an unacceptable risk to either workers or residents at the proposed Fairfield County Jail/Public Safety Facility. Therefore, the proposed building design does not need to include a vapor barrier.

To further achieve the objectives relating to vapor intrusion to indoor air inside the existing Sheriff's Office and the MSMJ, sub-slab vapor samples were collected at five locations chosen to represent potential exposure in areas of different building usage. These samples were collected to determine whether mercury and/or naphthalene were found under the building slab in concentrations that could migrate to the indoor air. As a precaution, indoor air sampling locations were collocated with the sub-slab vapor samples. The purpose of these samples was to measure concentrations of mercury and naphthalene in indoor air in the event that the sub-slab vapor samples showed concentrations of naphthalene and/or mercury. The first of two sampling events was August 4 and 5, 2014. Neither naphthalene nor mercury was detected in either the sub-slab vapor or indoor air samples. However, the protocol for assessing the vapor intrusion pathway requires that more than one sampling event be conducted before reaching a supportable conclusion. Therefore, a second sampling event will be conducted in November 2014 to allow for sample collection during two different HVAC conditions (i.e., seasonal variations) within the existing building.

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INTRODUCTION

1.1 Introduction

This report presents the results of two air sampling events conducted in the soil gas under the footprint of the proposed Fairfield County Jail/Public Safety Facility at 334 West Wheeling Street, Lancaster, Ohio between July 24, 2014 and September 5, 2014. These efforts were conducted as a follow-up to the July 7, 2014 report, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"*. The report stated that unless a vapor barrier was installed under the new facility, soil concentrations of mercury and naphthalene in the underlying fill materials may pose potentially unacceptable health risks to workers and residents exposed via the inhalation of indoor air in the proposed facility. Ohio EPA guidance (2010) recommends that to account for the increased uncertainty when starting from soil analytical data rather than soil gas data, that the soil gas be sampled and soil gas values used (as opposed to soil values) to evaluate risk.

This report also presents results of the first of two sampling events for indoor air and sub-slab vapor at five locations inside the existing Sheriff's Office and Minimum Security Misdemeanor Jail (MSMJ) that is assumed to be located on fill materials of similar origin and character as the proposed Fairfield County Jail/Public Safety Facility. Samples for mercury and naphthalene were collected on August 4 and 5, 2014.

1.2 Site Location

The footprint of the proposed Fairfield County Jail/Public Safety Facility is situated on four irregular-shaped parcels (current tax parcel numbers 0536001800, 0536001700 (two), and 0536801700) totaling approximately 7.5 acres in size (Figure 1). The property is located within the limits of the City of Lancaster. The site is bounded on the north by West Wheeling Street. Immediately north of Wheeling Street is the Lancaster Miller Park wellfield and water treatment plant. On the west, the site is bounded by the channelized course of the Hocking River (that used to flow through the current site). On the south, the parcels are bounded by the Fairfield County Maintenance Garage (owned by the Fairfield County Commissioners), a former car wash (now owned by the Fairfield County Commissioners), Kings Furniture (property owned by Mitch and Ann D. Endick), Roger Conrad Concrete (property owned by Mary Margaret Kensler), and a billboard (property owned by Jay Nauman), which all front on Lincoln Avenue (US Route 22). On the east, the site is bounded by Memorial Drive (US Route 33), except for the corner of West Wheeling Street and Memorial Drive, which is occupied by Scotts Service Center (an automotive service station, property owned by the Fairfield Paint & Oil Company).

As shown in Figure 1, the current Fairfield County Sheriff's Office and MSMJ occupies the northwest portion of the site. The remainder of the property is either paved or is a concrete slab where another building was previously located. Both the pavement and the concrete slab are currently used as a parking lot. South of the building, the Fairfield County Sheriff's Office has a

Figure 1.
Site location map of proposed Fairfield County Jail/Public Safety Facility.

N
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1 inch = 200 feet

0 50 100 200 300 Feet

small impound lot and a bin for recycling. Small islands of grass and trees for landscaping are present primarily to the west of the current building and along the Hocking River.

1.3 Site Conditions and Previous Investigation

As described in the July 7, 2014 report by Bennett & Williams, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility,"* the proposed jail footprint is underlain by between 7.5 feet to 11 feet of fill materials that consist primarily of foundry sand with occasional brick fragments, glass pieces, coal, wood pieces, shale, limestone and sandstone fragments, slag metal (wire) and ceramic tile. Depths of similar fill materials in previous subsurface investigations have been reported to be between 6 and 18 feet. The proposed jail footprint is also located atop the former channel and floodplain of the Hocking River that was channelized and relocated in the late 1800s to its present position just west of the site.

During the subsurface investigation conducted by Bennett & Williams between March 20 and 31, 2014, borings were installed at ten locations and drilled to the bottom of the fill (Figure 2). Water was encountered in only two of the borings (BW-1 and BW-4) at 9.5 feet and 10 feet, respectively. Two temporary monitoring wells were installed.

During drilling, soil samples were collected for:

1) toxicity characteristic leaching procedure (TCLP) for metals, volatile organic compounds (VOCs) and semi-volatile organic compounds using EPA sample extraction Method 1311 and analytical Methods 6010B/7470A/8260B/8260C;

2) total concentration of "target analyte list" metals using EPA analytical Methods 6010B/7471A;

3) total concentration of "target compound list" VOCs using EPA Methods 5035 and 5035A for sample collection, preservation, and handling in addition to EPA analytical Method 8260B;

4) total concentration of "target compound list" semi-volatile organics using EPA analytical Method 8270C; and

5) "gasoline range organics" (GROs) and "diesel range organics" (DROs) using EPA analytical method 8015C.

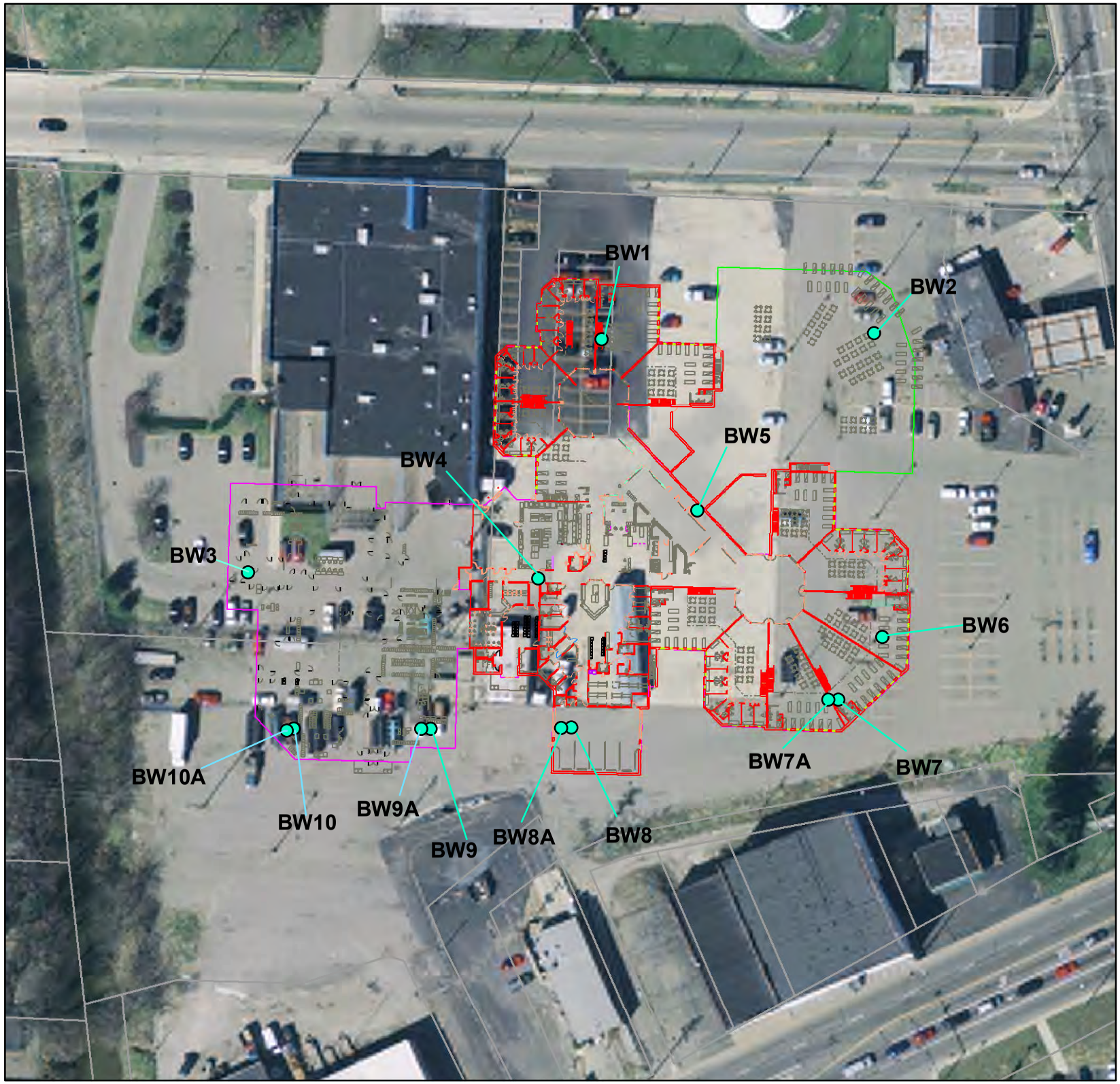

Figure 2.
Soil and groundwater sampling locations from the March 2014 subsurface investigation within the proposed building footprint (Bennett & Williams, July 7, 2014).

Groundwater samples from the temporary monitoring wells were analyzed for:

1) total concentration of the "target analyte list" metals using EPA analytical Methods 6010B/7470B;

2) dissolved concentrations of "target analyte list" metals using EPA analytical Methods 6010B/7470B; and

3) the "target compound list" of VOCs using EPA Method 8260B.

Analytical results of the soil and water is presented in the July 7, 2014 report.

1.4 Scope of Work Development and Objectives

The *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"* report by Bennett & Williams dated July 7, 2014 used concentrations of constituents measured in the fill to evaluate the potential for risk to construction and excavation workers, residents at the proposed jail and workers at the proposed jail. The potential exposure pathway to indoor air for workers and residents at the proposed jail was initially assessed using the measured soil concentrations. Specifically, concentrations of mercury and naphthalene in the soil indicated a potential for a complete pathway from the soil to the indoor air. Based on these initial calculations, a potentially unacceptable health risk that would require installation of a vapor barrier beneath the proposed jail was identified. In cases where a soil to indoor air pathway is calculated using soil (as opposed to soil gas) concentrations, Ohio EPA (2010) recommends that soil gas concentrations be measured and used in additional risk calculations.

Therefore, the objectives were to:

1) determine if the vapor intrusion pathway is complete;

2) collect sufficient data to evaluate any complete exposure pathways to residents of the proposed jail;

3) collect sufficient data to evaluate any complete exposure pathways to workers in the proposed jail;

4) evaluate the potential for sub-slab vapors to present an indoor air risk in the existing Sheriff's Office and MSMJ; and

5) use the data collected during this investigation to determine, what, if any mitigation measures may be appropriate.

To achieve these objectives, soil gas samples were collected from subsurface probes installed coincident with the locations where the mercury and naphthalene were found to be the

highest in the soil samples under the proposed building footprint (Table 1). In addition, a subsurface probe was installed coincident with BW-3 to provide spatial distribution under the proposed building footprint and to correspond to the initial risk assessment calculations. Figure 3 shows the location of the subsurface soil gas probes from which the samples were collected. Note that shallow and deep probes were installed at BW-1 where the fill materials were deeper and concentrations of constituents in the soil were greater.

Table 1. Locations of highest soil concentrations for mercury and naphthalene.

Constituent of Interest/Location	Mercury Concentration in Soil (mg/kg)	Naphthalene Concentration in Soil (mg/kg)
BW-1	57	13
BW-2	8	
BW-4	6.2	
BW-7		0.37

Ohio EPA (2010) recommends that *"two rounds of exterior soil gas data be collected when eliminating vapor intrusion as an exposure pathway"*. It is anticipated that volatilization into soil gas from the fill materials will occur more readily during warmer months of the year. Samples for soil gas were collected in July and September in order to allow for temporal variation to be assessed as part of this investigation.

For site-specific evaluation of vapor intrusion to indoor air within the existing Sheriff's Office and MSMJ, sampling locations were chosen to represent potential exposure in areas of different building usage. Five locations were chosen for sub-slab vapor samples. As a precaution, indoor air samples were collocated with the sub-slab vapor samples. The purpose of the indoor air samples was to measure concentrations of mercury and naphthalene in indoor air in the event that the sub-slab vapor samples showed concentrations of mercury and/or naphthalene.

The five sub-slab vapor and collocated indoor air samples included two located in the Sheriff's Office and three in the MSMJ. The locations in the Sheriff's Office were chosen to represent office space and conference room spaces in two separated areas of use. The three samples in the MSMJ were chosen to represent: 1) a common area for prisoners where air flow was restricted, 2) an area immediately adjacent to the men's dormitory where stagnant air could accumulate, and 3) a closet area immediately adjacent to the women's dormitory. Based on sample equipment and the time necessary to collect samples, samples in the dormitories were not collected. The sample locations were chosen to similarly provide spatial coverage within the building, where possible. Figure 4 shows the location of the collocated indoor air and sub-slab samples.

Sampling frequency for indoor air samples was chosen to be in two separate quarters to allow for sampling using two different HVAC conditions (i.e., seasonal variation) within the existing Sheriff's Office and MSMJ. Samples were collected in August and are anticipated to be collected in November when the air conditioning mode is not being used.

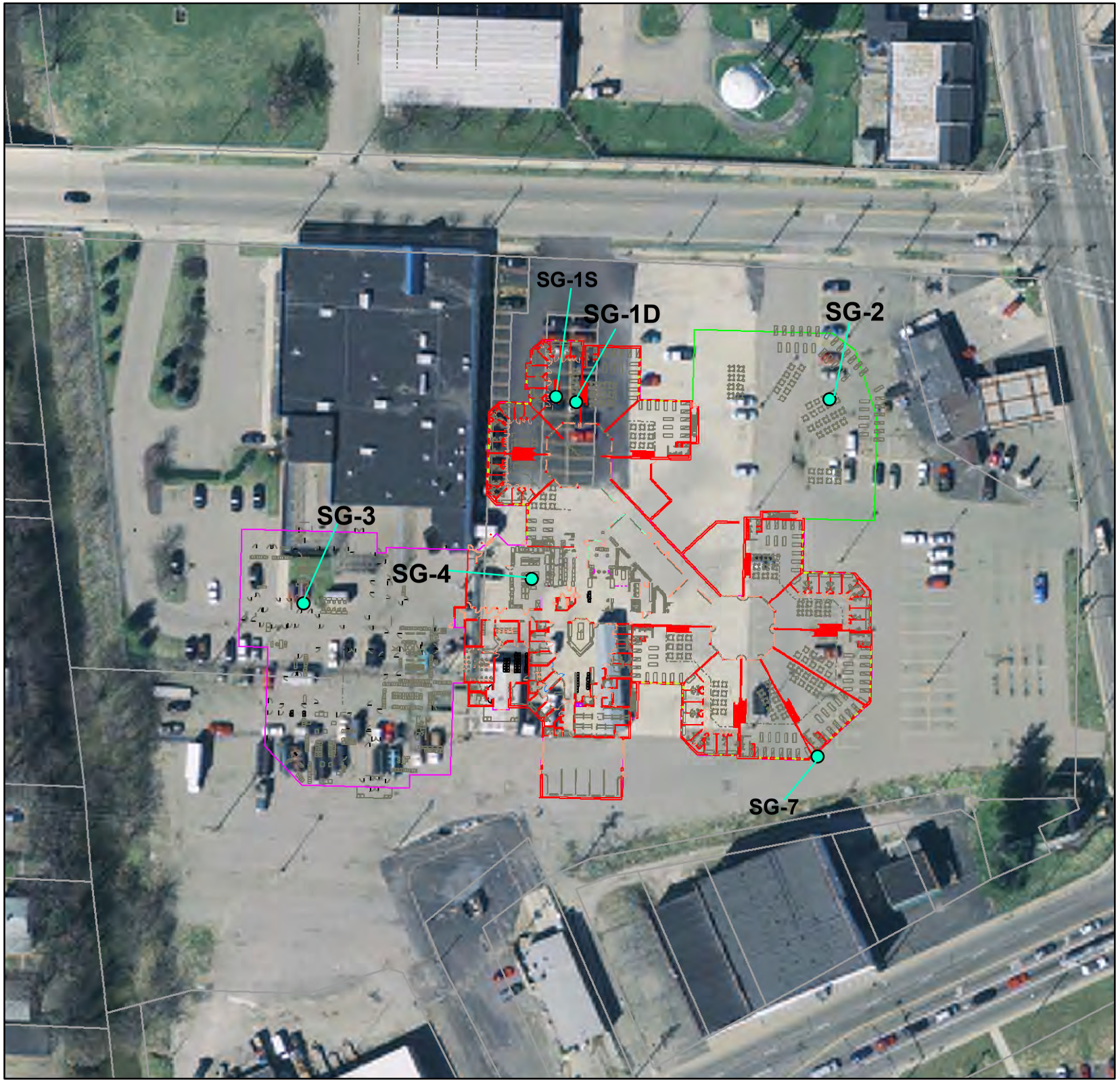

Figure 3.
Soil gas sampling locations.

N
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1 inch = 91 feet

0 25 50 100 150 Feet

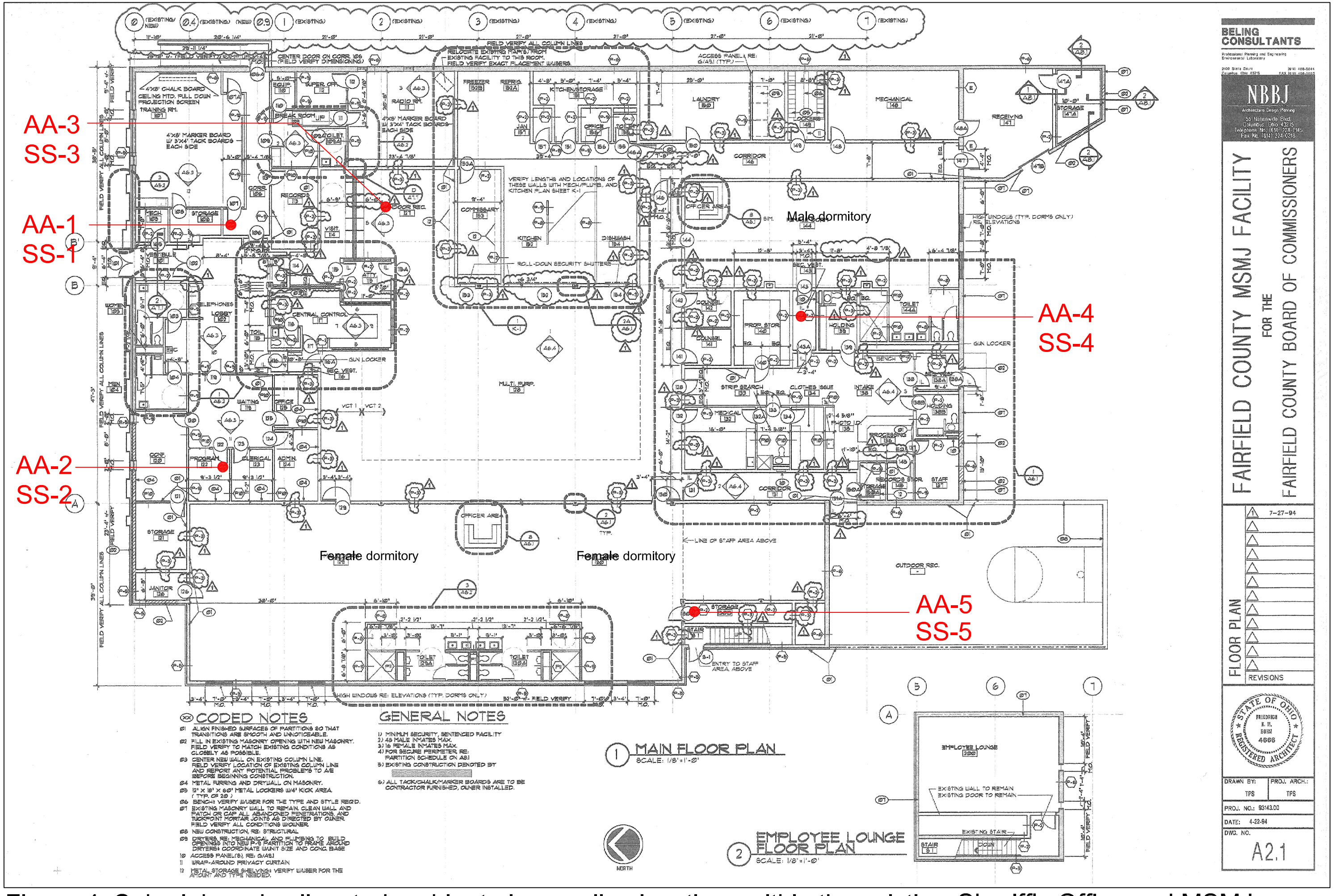


Figure 4. Sub-slab and collocated ambient air sampling locations within the existing Sheriff's Office and MSMJ.

SECTION 2
SAMPLING PROGRAM

2.1 Introduction

This section describes the sampling program conducted between July and September 2014 at the proposed jail site and the adjacent Fairfield County Sheriff's Office and MSMJ. The sampling program included:

1) installation of six subsurface soil gas probes at five locations (SG-1S, SG-1D, SG-2, SG-3, SG-4, and SG-7) coincident with previous soil sampling locations where the highest concentrations of mercury and naphthalene were detected in the soil (Figures 2 and 3);

2) one pre-screening visual building inspection of the Sheriff's Office and MSMJ of accessible areas to identify potential sampling locations where conditions could be minimized to interfere with indoor air sampling results (e.g., away from hallways and loading docks where frequent air exchanges were expected, and as close as practical to dormitory areas for residents to avoid equipment/sample tampering);

3) installation of five sub-slab vapor monitoring points (SS-1 through SS-5), including two locations in the Sheriff's Office and three in the MSMJ chosen based on resident and worker exposure areas coupled with spatial distribution because no foundation cracks were visible or mentioned by individuals familiar with the building (Figure 4);

4) collection of soil gas samples for mercury from six subsurface soil gas probe locations during two separate sampling events;

5) collection of soil gas samples for naphthalene from two subsurface soil gas probe locations (SG-1D and SG-7) during two separate sampling events;

6) collection of sub-slab vapor samples for mercury from five sub-slab vapor monitoring points;

7) collection of sub-slab vapor samples for naphthalene from two sub-slab vapor monitoring points (SS-1 and SS-4); and

8) collection of five indoor ambient air samples for mercury and naphthalene adjacent to each sub-slab monitoring point.

2.2 Pre-Sampling Activities

2.2.1 Installation of Subsurface Soil Gas Probes

The locations of subsurface soil gas probes were chosen to be coincident with previous soil borings where the concentrations of mercury and naphthalene in the soil were the greatest (BW-1, BW-2, BW-4 and BW-7) (Table 1) (Figures 2 and 3). One additional location (BW-3) was chosen for monitoring to achieve better spatial coverage and complement the previous risk assessment calculations. Ohio EPA guidance (2010) recommends sampling approximately five feet below the surface to minimize infiltration of air from the surface toward the probe resulting in short-circuiting of airflow from the surface. Ohio EPA (2010) also recommends that additional vertical samples be collected approximately ten feet below the surface, where possible. After evaluating the depth of fill in the borings and the depth to water (Table 2), only one location (BW-1) was deemed to be appropriate for installation of a deep subsurface soil gas probe. A target depth of 8.5 feet for the deeper subsurface soil gas probe was chosen in order to minimize water contact with the probe in the event of a fluctuating water table.

Table 2. Depth of fill and depth to water encountered in previous subsurface investigation (Bennett & Williams, July 2014).

Boring	Depth of Fill (feet)	Depth to water (feet)
BW-1	11	9.5
BW-2	9	None
BW-3	7.5	None
BW-4	10	10
BW-7	7.8	None

On July 10, 2014, we met with representatives from Fairfield County to mark the locations in the field and to discuss potential underground obstacles when installing the subsurface probes. The subsurface soil gas probes were located approximately five feet from the abandoned borings/temporary monitoring wells. Once the locations were marked, the Ohio Utilities Protection Service (OUPS) was called. OUPS must be called at least 48 hours but no more than 10 working days (excluding weekends and legal holidays) before digging. Similar to the previous subsurface investigation at the site, OUPS informed us that their network did not include Lancaster sewer or storm lines. We used the map provided on March 18, 2014 by Jason Westfall, Industrial Pretreatment Coordinator for the City of Lancaster, to recheck for underground sewer and storm lines at the proposed subsurface soil gas probe locations. OUPS did not notify us of potential underground lines at the proposed locations. Similarly, no underground sewer and storm lines were indicated on the map from the City.

The six subsurface soil gas monitoring probes were installed on July 17, 2014 by Wrights Drilling using an AMS Powerprobe 9630 Pro-D direct push drilling rig. All borings were drilled either through asphalt or concrete. The concrete was cut with a concrete saw prior to drilling. Drilling rods with 2 1/4-inch outside diameter (OD) and 1 3/8-inch inside diameter (ID) were advanced to a target depth of five feet below ground at BW-2, BW-3, BW-4 and BW-7. The

rods were removed from the borehole and a 2 ½-inch stainless steel tip attached to a 5-inch 3/8-inch diameter stainless steel 100 mesh screen and 2-inch stainless fitting attached to ¼-inch Teflon® tubing was lowered to a depth of five feet. Number 4 silica sand was added around the screen and tubing to approximately 2 feet below the surface. The sand was extended approximately 2 ½ feet above the screen in order to create a larger reservoir for soil gas due to concerns raised by the laboratory that an inadequate volume of soil gas would be available to extract to reach the desired detection limits for mercury and naphthalene. Benseal® was added to approximately 4 inches below the surface and hydrated. The Teflon® tubing was cut to fit within the protector and a petcock was added to the top of the Teflon® tubing and placed in the closed position. A protective cover with an ABS skirt was cut and fitted to make the protector mount flush with the asphalt or concrete. Quickrete® was placed around the outside of the surface protectors and the concrete was finished using a float.

During the installation of the two subsurface soil gas probes at BW-1, BW-1D was drilled to a target depth of 8.5 feet and the drilling rods removed. When the gas probe was lowered into the borehole, the borehole had collapsed to 6 feet and it was not possible to advance the sampling tip to the target depth. Then the fill materials collapsed around the sampling tip and screen to a depth of 5 1/2 feet below the surface. At this point, it was not possible to remove the tip, so the sand pack was extended approximately 3 ½ feet above the screen to create a soil gas reservoir and this location was designated as BW-1S.

The subsurface gas probe at BW-1D was drilled to the target depth of 8.5 feet below ground surface. The hollow drilling rods were left in place and the tip and Teflon® tubing were installed inside the rods to a depth of 8.5 feet. The sand pack was emplaced by pouring the sand inside the rods, pulling up and placing more sand until the sand pack was approximately six feet above the screen to create a soil gas reservoir. Both subsurface soil gas probes at BW-1 were completed similar to the other probes. Completion diagrams for the subsurface soil gas probes are in Appendix A. Appendix B contains pictures of installation of the subsurface soil gas probes.

During the installation of the subsurface soil gas probes, all fill materials were containerized by temporarily placing the drilling cuttings in plastic five-gallon buckets. At the completion of the drilling process, the fill materials were placed in a 55-gallon drum that contained soil from March 20, 2014 subsurface investigation that was awaiting approval for disposal at Pine Grove Landfill. The cuttings were added to the drum labeled 3/20/14 Soil, BW-1, BW-2, BW-3. All five of the drums containing soil were disposed at Pine Grove Landfill, Amanda, Ohio on September 11, 2014 by employees of Fairfield County. Similarly, the three drums containing water that was generated during the March 20 and 21, 2014 drilling activities and the subsequent sampling of the temporary monitoring wells were disposed at the Tussing Road Water Reclamation Facility on July 18, 2014.

2.2.2 Installation of Sub-Slab Vapor Sampling Points

Prior to the installation of the sub-slab vapor sampling points, Fairfield County personnel provided as-built drawings from the remodeling of the building in 1994 when it was purchased by Fairfield County and converted to the Sheriff's Office and the MSMJ. Based on our review of the drawings and in subsequent conversations with maintenance staff for the building, it was determined that electrical and plumbing chases were located above ground and not beneath the slab. We were advised that sewer lines were the only active utilities beneath the slab. After conversations with the maintenance staff, the five locations chosen for sub-slab monitoring were determined not likely to be above sewer lines.

Two sampling locations were in the Sheriff's Office in the northern part of the building. Location 1 was in a hallway immediately adjacent to a conference room along an internal wall on the eastern side of the main entrance (Figure 4). Location 2 was in a small conference room in the Duty Office flanked by offices for personnel on either side on the western side of the main entrance. Three sampling locations were chosen in the MSMJ. Location 3 was in a resident visiting area east of the main dining room. This location was not near any doors and chosen to represent the anticipated static air conditions. Location 4 was in a closed dead end hallway immediately adjacent to the male dormitory and represented the area furthest to the southeast where a sample could be collected due to access issues. Location 5 was in a locked closet in the female dormitory on the eastern side of the facility. This location was on an internal wall that was as close to the residents as was possible due to security issues. Based on conversations with Fairfield County maintenance personnel, none of these areas were known to have had broken fluorescent bulbs (a potential source of mercury) and no mothballs (a potential source of naphthalene) were known to be used or stored in the building.

The five sub-slab vapor sampling points (SS-1 through SS-5) were installed on July 18, 2014 at the Fairfield County Sheriff's Office and MSMJ. Locations SS-1, SS-3 and SS-4 were installed through linoleum tiles. Location SS-2 was installed through carpet and location SS-5 was installed directly through a concrete floor.

Each sub-slab vapor monitoring point was installed by drilling a shallow 1 ½ -inch diameter outer hole in the concrete slab to a depth of 1 ¾ inches using a Hilti TE-60 Combihammer. A drill guide provided in the Vapor-Pin™ Contractor's kit was placed in the pre-drilled hole, and a 5/8-inch hole was drilled through the remainder of the slab. Excess cuttings from the drilling were removed with a wet-dry shop vacuum. The hole was cleaned with a long-handled brush. The approximately 3-inch long stainless steel Vapor-Pin™ barbed sampling fitting (3/8-inch barb on top and 7/8-inch barb on the bottom) with a silicon sleeve on the bottom barb was then hammered into place with the provided installation tool and a dead-blow hammer. A small plastic cap was placed over the top barbed fitting and a flush-mount stainless steel cap was threaded onto the fitting and tightened with a #14 Spanner driver.

It was necessary to drill two holes at location SS-1 prior to the successful installation of the sub-slab vapor monitoring point. During drilling of the 5/8-inch hole deeper in the concrete slab, what appeared to be a wire wound metal cable was encountered. Although there was no observed problem caused by drilling through cable, the sharp edges of the cut wires would have

potentially posed a problem with the installation of the silicon sleeve around the Vapor Pin™. Therefore, a second hole was drilled and the Vapor Pin™ installed in the second hole. The first hole in the concrete slab was plugged by Fairfield County personnel the next day with cement floor patch. Appendix C contains pictures of the installation of the sub-slab vapor sampling points.

2.3 Sampling Activities

2.3.1 Subsurface Soil Gas Sampling

2.3.1.1 Integrity Testing

The subsurface soil gas sampling points were integrity tested on July 24, 2014 and September 4, 2014 using ultra high purity helium as the tracer gas. At each location, the sampling port was isolated from the outdoor ambient air using a helium leak detection shroud. The tracer gas was introduced into the shroud enclosure at approximately 10 psi while the ambient air was vented from the enclosure. The subsurface gas sampling points were monitored for the presence of the tracer gas using a sampling rate of approximately 1 L/min and a MGD-2002 portable handheld gas detection meter to determine the concentration of the tracer gas in the purged vapor sample. The subsurface soil gas sampling points were pumped for approximately five minutes while the helium was present in the shroud. The standard for leakage was to be if the helium concentration in the purge vapor exceeded one percent (1%) of the concentration within the enclosure, then the sampling point would need to be re-sealed. All subsurface soil gas sampling points recorded 0 percent (0 %), and passed the integrity testing. Soil gas samples were collected following the helium integrity test. Appendix D contains pictures of the integrity testing of the subsurface soil gas sampling points.

2.3.1.2 Mercury

Samples for mercury were collected on July 24 and 25, 2014 and September 4 and 5, 2014 from SG-1S, SG-1D, SG-2, SG-3, SG-4 and SG-7 (Figure 3). A duplicate sample was collected from SG-2 on July 24, 2014 and from SG-7 on September 5, 2014. Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a mercury "calibration tube" (a mercury tube that would not subsequently be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) was obtained from Test America. The inlet end of the tube holder was connected to the calibrator by 3/8-inch silicon tubing.

Mercury samples were collected from all six subsurface soil gas monitoring points by placing a 3/8-inch silicon sleeve over the petcock barb and inserting a ¼-inch Teflon® tube into the silicon sleeve. The Teflon® tubing was inserted into 3/8-inch silicon sleeve that was also placed over the inlet end of a Gilian universal holder system (THH-S-225). A small zip tie was placed over the silicon sleeve and the end of the tube holder to minimize leakage. Both ends of the glass mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) from Test America were

broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. Vinyl tubing (1/4-inch ID) was attached to the outlet end of the tube holder and connected to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC. Samples were collected by pumping at a rate of 200 mL/min for 45 minutes, resulting in a total pumped air volume of 9 liters. Samples were monitored continuously during collection. Appendix E contains pictures of the collection of the mercury soil gas samples.

After sample collection, the mercury tubes were removed from the Gilian tube holders and caps were placed on each end of the tube. One field blank was collected by breaking both ends of the mercury tube and placing caps on both ends. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. According to Test America, the mercury samples did not need to be cooled, so the samples were placed in a box with packing material and a chain-of-custody was prepared. The samples collected on July 24 and 25, 2014 were shipped via Federal Express to Test America, Phoenix, AZ for analysis. The samples collected on September 4 and 5, 2014 were delivered to the Test America Service Center in Columbus, Ohio for shipping to Test America, Phoenix, Arizona for analysis.

2.3.1.3 Naphthalene

Samples for naphthalene were collected on July 24, 2014 and September 4, 2014. Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by attaching a naphthalene "calibration tube" (a tube that would not subsequently be used to collect a sample) to the inlet end of the pump via a 3/8-inch Tygon® tubing sleeve and ¼-inch ID vinyl tubing. The naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) was obtained from Test America. The inlet end of the tube was connected to the calibrator by 3/8-inch Tygon® tubing.

Naphthalene samples were collected from two subsurface soil gas probes at locations where the greatest soil concentrations of naphthalene were measured in the March 2014 subsurface investigation (SG-1D and SG-4). The number of naphthalene samples was limited to two samples based on conversations with Test America personnel and Ohio EPA personnel wherein there was concern that there would not be enough soil gas present to pump for 11 ½ hours at 200 mL/min. In the end, these concerns were unfounded and the samples were collected successfully.

Samples collected on July 24, 2014 were collected by placing a 3/8-inch silicon sleeve over the petcock barb and inserting ¼-inch Teflon® tubing into the silicon sleeve. The Teflon® tubing was inserted into 3/8-inch Tygon® sleeve that was also placed over the inlet end of the naphthalene tube after both ends of the glass tube had been broken with a pair of needle nose pliers. Small zip ties were placed over the Tygon® sleeve and the Teflon® tubing to minimize leakage. The naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) from Test America was oriented with the flow arrow pointing toward the pump. A second Tygon® sleeve was placed on the outlet end of the naphthalene tube and secured to ¼-inch vinyl tubing with a small zip tie. The vinyl tubing was connected to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC. Samples were collected by pumping at a rate of 200 mL/min for 690 minutes (11 ½

hours), resulting in a total pumped air volume of 138 liters. Due to the long pumping time, the pumps were monitored at maximum intervals of 15 minutes to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Samples collected on September 4, 2014 were collected the same except a Gilian Universal Tube Holder system (THHH-L-240) was used to hold the naphthalene tube and a silicon sleeve on the discharge side of the tube system was not needed. Appendix F contains pictures of collection of the naphthalene soil gas samples.

After sample collection, tight-fitting caps were placed on both ends of the naphthalene tubes. One field blank was collected by breaking both ends of the naphthalene tube and placing caps on both ends. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. The samples were placed on ice in a cooler with packing material to avoid damage during shipping and a chain-of-custody was prepared. The samples collected on July 24 and 25, 2014 were shipped via Federal Express to Test America, West Sacramento, California for analysis. The samples collected on September 4, 2014 were placed on ice and delivered to the Test America Service Center in Columbus, Ohio for shipping to West Sacramento, California for analysis.

2.3.2 Sub-Slab Vapor Sampling

2.3.2.1 Integrity Testing

The sub-slab vapor sampling points were tested for leakage immediately before collecting the first of two sets of sub-slab vapor samples on August 4, 2014. Testing performed inside the Sheriff's Office and the MSMJ was conducted with a Deputy escort. The test was conducted in accordance with the manufacturer's instructions for the Vapor Pin™ assembly. The stainless steel cover was removed by using a #14 Spanner tool. The plastic cap on the Vapor Pin™ was left on and distilled water was poured into the annulus surrounding the Vapor Pin™. Care was taken not to add water higher than the elevation of the top of the Vapor Pin™. No observations of air bubbles were made when the distilled water was first added to the hole. The distilled water was allowed to hydrate the concrete in the immediate vicinity of the Vapor Pin™ while the sampling pump was calibrated. The water level around the Vapor Pin™ was noted and sample collection was initiated. During the first five minutes of sample collection, the water level around the Vapor Pin™ was critically observed. No water level changes at any of the sub-slab vapor sampling locations were observed during this time. The Vapor Pins™ were then considered to have integrity and sample collection was continued. If there had been evidence of air bubbles or a noticeable water level drop, the sampling would have been discontinued and either another Vapor Pin™ installed or the defective one re-sealed and re-tested.

2.3.2.2 Naphthalene

The first of two sub-slab vapor monitoring events was conducted for naphthalene on August 4, 2014. Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a naphthalene "calibration tube" (a tube that would not subsequently

be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) was obtained from Test America. The inlet end of the tube was connected to the calibrator by 3/8-inch Tygon® tubing.

Naphthalene samples were collected from two sub-slab Vapor Pins™, one inside the Sheriff's Office (SS-1) and the other inside the MSMJ (SS-5) (Figure 4). The number of naphthalene samples was limited to two samples based on conversations with Test America personnel and Ohio EPA personnel wherein there was concern that there would not be enough sub-slab gas present to pump for 11 ½ hours at 200 mL/min. In the end, these concerns were unfounded and the samples were collected successfully.

Samples were collected by removing the stainless steel cover and cap from the Vapor Pin™ and placing a 3/8-inch silicon sleeve over the stainless steel barb and inserting ¼-inch Teflon® tubing into the silicon sleeve. The Teflon® tubing was inserted into 3/8-inch silicon sleeve that was also placed over the inlet end of a Gilian universal holder system. A small zip tie was placed over the silicon sleeve and the end of the tube holder to minimize leakage. Both ends of the glass naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) from Test America were broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. Vinyl tubing (1/4-inch ID) was attached to the outlet end of the tube holder and connected to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC. Samples were collected by pumping at a rate of 200 mL/min for 690 minutes (11½ hours), resulting in a total pumped air volume of 138 liters. Due to the long pumping time, the pumps were monitored at approximately intervals of 15 minutes (access permitting) to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Appendix G contains pictures of the collection of the naphthalene sub-slab vapor samples.

After sample collection, tight-fitting caps were placed on both ends of the naphthalene tubes. One field blank was collected by breaking both ends of the naphthalene tube and placing caps on both ends. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. The samples were placed on ice in a cooler with packing material to avoid damage and held overnight on ice. The samples were re-packed with fresh ice the next morning and taken back to the site. Personnel from the Test America Service Center in Columbus, Ohio picked up the naphthalene samples at the site at approximately 10:00 am on August 5, 2014, repacked the samples and shipped them to Test America in West Sacramento, California for analysis.

2.3.2.3 Mercury

The first of two sub-slab vapor monitoring events was conducted for mercury on August 5, 2014 at the five sub-slab vapor monitoring points (SS-1, SS-2, SS-3, SS-4, and SS-5) (Figure 4). Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a mercury "calibration tube" (a mercury tube that would not subsequently be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end

of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) was obtained from Test America. The inlet end of the tube holder was connected to the calibrator by 3/8-inch silicon tubing.

Mercury samples were collected from all five sub-slab vapor monitoring points by placing a 3/8-inch silicon sleeve over the petcock barb and inserting a ¼-inch Teflon® tube into the silicon sleeve. The Teflon® tubing was inserted into 3/8-inch silicon sleeve that was also placed over the inlet end of a Gilian universal holder system. A small zip tie was placed over the silicon sleeve and the end of the tube holder to minimize leakage. Both ends of the glass mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) from Test America were broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. Vinyl tubing (1/4-inch ID) was attached to the outlet end of the tube holder and connected to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC. Samples were collected by pumping at a rate of 200 mL/min for 45 minutes, resulting in a total pumped air volume of 9 liters. Samples were monitored continuously during collection. Appendix G contains pictures of the collection of the mercury sub-slab vapor samples.

After sample collection, the mercury tubes were removed from the Gilian tube holders and caps were placed on each end of the tube. One field blank was collected by breaking both ends of the mercury tube and placing caps on both ends. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. According to Test America, the mercury samples did not need to be cooled, so the samples were placed in a box with packing material and a chain-of-custody was prepared. The samples were delivered to the Test America Service Center in Columbus, Ohio on August 6, 2014 for packing and shipment to Test America, Phoenix, AZ for analysis.

2.3.3 Indoor Ambient Air Sampling

2.3.3.1 Naphthalene

The first of two indoor ambient air sampling events was conducted for naphthalene on August 4, 2014. Indoor ambient air sampling locations were collocated with the five sub-slab vapor sampling points (even though naphthalene was only collected at two sub-slab vapor sampling points due to concerns about available gas volume). Samples for naphthalene were collected at five locations (AA-1, AA-2, AA-3, AA-4, and AA-5) (Figure 4). The indoor air samples were collected during the same timeframe as the two collocated sub-slab vapor samples at SS-1 and SS-5.

Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a naphthalene "calibration tube" (a tube that would not subsequently be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) was obtained from Test America. The inlet end of the tube was connected to the calibrator by 3/8-inch Tygon® tubing.

Samples were collected by connecting ¼-inch ID vinyl tubing to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC to the outlet end of a Gilian universal holder system. Both ends of the glass naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) from Test America were broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. The tubes were elevated to a representative breathing zone exposure height (Table 3) by attaching the tube holder to the top of an expandable tripod. Samples were collected by pumping at a rate of 230 mL/min for 600 minutes, resulting in a total pumped air volume of 138 liters. Due to the long pumping time, the pumps were monitored at approximately intervals of 15 minutes (access permitting) to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Appendix G contains pictures of the collection of the naphthalene indoor ambient air samples.

Table 3. Sampling height for naphthalene in indoor air.

Sampling Location	Height of intake above floor (feet)
AA-1	4.77
AA-2	5.00
AA-3	5.04
AA-4	4.89
AA-5	5.07

After sample collection, tight-fitting caps were placed on both ends of the naphthalene tubes. An additional field blank was not collected for the collocated indoor air samples because ten or less total samples were collected this day. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. The samples were placed on ice in a cooler with packing material to avoid damage and held overnight on ice. The samples were re-packed with fresh ice the next morning and taken back to the site. Personnel from the Test America Service Center in Columbus, Ohio picked up the naphthalene samples at the site at approximately 10:00 am on August 5, 2014, repacked the samples and shipped them to Test America in West Sacramento, California for analysis.

2.3.3.2 Mercury

The first of two indoor ambient air sampling events was conducted for mercury on August 5, 2014. Indoor ambient air sampling locations were collocated with the five sub-slab vapor sampling points. Samples for mercury were collected at five locations (AA-1, AA-2, AA-3, AA-4, and AA-5) (Figure 4). The indoor air samples were collected during the same timeframe as the collocated sub-slab vapor samples.

It should be noted that upon our arrival at location AA-3 on August 4, 2014 to collect indoor air samples for naphthalene that three boxes of fluorescent lightbulbs were found to be stored temporarily under a table immediately adjacent to SS-3 and AA-3. These fluorescent bulbs had not been stored there during the installation of the sub-slab Vapor Pins™ on July 18, 2014. Upon our request, the fluorescent bulbs were removed from the area on August 4, 2014. Samples for mercury were not collected until August 5, 2014.

Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a mercury "calibration tube" (a mercury tube that would not subsequently be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) was obtained from Test America. The inlet end of the tube holder was connected to the calibrator by 3/8-inch silicon tubing.

Samples were collected by connecting ¼-inch ID vinyl tubing to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC to the outlet end of a Gilian universal holder system. Both ends of the glass mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) from Test America were broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. The tubes were elevated to a representative breathing zone exposure height (Table 4) by attaching the tube holder to the top of an expandable tripod. Samples were collected by pumping at a rate of 100 mL/min for 480 minutes, resulting in a total pumped air volume of 48 liters. Due to the long pumping time, the pumps were monitored at approximately intervals of 15 minutes (access permitting) to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Appendix G contains pictures of the collection of the mercury indoor ambient air samples.

Table 4. Sampling height for mercury in indoor air.

Sampling Location	Height of intake above floor (feet)
AA-1	4.7
AA-2	4.98
AA-3	5.0
AA-4	4.88
AA-5	4.85

After sample collection, the mercury tubes were removed from the Gilian tube holders and caps were placed on each end of the tube. An additional field blank was not collected for the collocated indoor air samples because ten or less total samples were collected this day. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. According to Test America, the mercury samples did not need to be cooled, so the samples were placed in a box with packing material and a chain-of-custody was prepared. The samples were delivered to the Test America Service Center in Columbus, Ohio on August 6, 2014 for packing and shipment to Test America, Phoenix, AZ for analysis.

2.4 Post Sampling Activities

2.4.1 Abandonment of Soil Gas Probes

The six soil gas probes were abandoned on September 24, 2014. The probes were abandoned by removing the protective metal cover and attempting to "pull" the tubing and petcock from ground. With the exception of location SG-1S, all tubing was successfully removed. At SG-1S, the tubing was left in place.

After the tubing was removed, Benseal was used to fill the hole left by the tubing, or in the case of SG-1S, to fill the tubing until no more Benseal could be added. The metal ring that formed the protective casing was chiseled from the concrete and removed. The remaining hole was filled with Quickrete and smoothed at the surface. Appendix H contains pictures of the abandonment procedures.

SECTION 3
ANALYTICAL RESULTS

3.1 Introduction

The scope of work of this project was to collect soil gas samples for mercury and naphthalene from the footprint of the proposed Fairfield County Jail/Public Safety Facility to supplement soil data collected during March 2014 and reported in the July 7, 2014 report, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"* (Bennett & Williams, 2014). Similarly, sub-slab vapor samples and indoor air samples for mercury and naphthalene were collected from the existing Fairfield County Sheriff's Office and the MSMJ. Results from two subsurface soil gas sampling events (July 24 and 25, 2014 as well as September 4 and 5, 2014) are presented in the following sections. Similarly, the results of the first of two sub-slab and indoor air sampling events (August 4 and 5, 2014) are presented.

3.2 Subsurface Soil Gas Results

3.2.1 Mercury

One sample was collected from each of the six subsurface soil gas sampling points for mercury on July 24 and 25, 2014 and September 4 and 5, 2014. A duplicate sample was collected from SG-2 on July 24, 2014 and from SG-7 on September 5, 2014. Samples were analyzed by NIOSH Method 6009 by Test America in Phoenix, Arizona. Table 5 shows the date sampled, sample location and analytical results. Appendices I and J contain the laboratory results for mercury for the July and September sampling events, respectively. The results show that mercury was not detected above the laboratory reporting limit.

Table 5. Measured concentrations of mercury in subsurface soil gas.

Sampling Location	July 24/25, 2014 Concentration ($mg/m^{3)}$	September 4/5, 2014 Concentration ($mg/m^{3)}$
SG-1S	<0.00289	<0.00289
SG-1D	<0.00289	<0.00289
SG-2	<0.00289	<0.00289
SG-3	<0.00289	<0.00289
SG-4	<0.00289	<0.00289
SG-7	<0.00289	<0.00289

3.2.2 Naphthalene

One sample was collected from each of two subsurface soil gas sampling points for naphthalene on July 24, 2014 and September 4, 2014. Samples were collected using the sampling methodology in Method TO-13A using XAD-2® media and analyzed by Method 8270C SIM by Test America in Sacramento, California. Table 6 shows the date sampled, sample location and analytical results. Appendices K and L contain the laboratory results for naphthalene for the July 24, 2014 and September 4, 2014 sampling events, respectively. The results show that naphthalene was not detected above the laboratory reporting limit.

Table 6. Measured concentrations of naphthalene in subsurface soil gas.

Sampling Location	July 24, 2014 Concentration (ug/L)	September 4, 2014 Concentration (ug/L)
SG-1D	<0.0072	<0.0072
SG-7	<0.0072	<0.0072

3.3 Sub-Slab Vapor Results

3.3.1 Mercury

One sample was collected from each of the five sub-slab vapor sampling points for mercury on August 5, 2014. Samples were analyzed by NIOSH Method 6009 by Test America in Phoenix, Arizona. Table 7 shows the sample location and analytical results. Appendix M contains the laboratory results for mercury. The results show that mercury was not detected above the laboratory reporting limit.

Table 7. Measured concentrations of mercury in sub-slab vapor (August 5, 2014).

Sampling Location	Concentration (mg/m^3)
SS-1	<0.000289
SS-2	<0.000289
SS-3	<0.000289
SS-4	<0.000289
SS-5	<0.000289

3.3.2. Naphthalene

One sample was collected from each of two sub-slab vapor sampling points for naphthalene on August 4, 2014. Samples were collected using the sampling methodology in Method TO-13A using XAD-2® media and analyzed by Method 8270C SIM by Test America in Sacramento, California. Table 8 shows the sample location and analytical results. Appendix N contains the laboratory results for naphthalene. The results show that naphthalene was not detected above the laboratory reporting limit.

Table 8. Measured concentrations of naphthalene in sub-slab vapor (August 4, 2014).

Sampling Location	Concentration (ug/L)
SS-1	<0.0072
SS-5	<0.0072

3.4 Indoor Air Results

3.4.1 Mercury

One sample for mercury was collected from each of the five sampling locations that were collocated with the sub-slab vapor sampling points on August 5, 2014. Samples were analyzed by NIOSH Method 6009 by Test America in Phoenix, Arizona. Table 9 shows the sample location and analytical results. Appendix M contains the laboratory results for mercury. The results show that mercury was not detected above the laboratory reporting limit.

Table 9. Measured concentrations of mercury in indoor air (August 5, 2014).

Sampling Location	Concentration (mg/m^3)
AA-1	<0.000543
AA-2	<0.000543
AA-3	<0.000543
AA-4	<0.000543
AA-5	<0.000543

3.4.2. Naphthalene

One sample for naphthalene was collected from each of the five indoor air sampling locations that were collocated with the sub-slab vapor sampling points on August 4, 2014. Samples were collected using the sampling methodology in Method TO-13A using XAD-2® media and analyzed by Method 8270C SIM by Test America in Sacramento, California. Table 10 shows the sample location and analytical results. Appendix N contains the laboratory results for naphthalene. The results show that naphthalene was not detected above the laboratory reporting limit.

Table 10. Measured concentrations of naphthalene in indoor air (August 4, 2014).

Sampling Location	Concentration (ug/L)
AA-1	<0.0072
AA-2	<0.00723
AA-3	<0.0072
AA-4	<0.0072
AA-5	<0.0072

SECTION 4
RESULTS OF THE PREVIOUS RISK ASSESSMENT

The site of the proposed Fairfield County Jail/Public Safety Facility in located in an urban area, in downtown Lancaster, Ohio. Currently, the Fairfield County Sheriff's Office and MSMJ is adjacent to the proposed footprint of the new facility. Previously, the site had been filled using primarily foundry sand. The proposed future land use is for the Fairfield County Jail/Public Safety Facility. The site is supplied by both sanitary sewers and municipal water.

Given the current and future land use envisioned at the site, the populations with the potential to be impacted are current and future adult residents of the prison, current and future adults working at the jail and onsite workers involved in future excavation and construction. The current and proposed prison facilities do not have capacity for juvenile offenders and any child visitors can be expected to be onsite only for short periods of time while visiting adult offenders.

Possible exposure routes for onsite excavation and construction workers include: ingestion, inhalation and dermal contact. Ingestion of chemicals of concern is not a significant concern because water at the site is not used as a drinking water source and the site is supplied by municipal water. However, during excavation and construction, on-site workers may be exposed to chemicals of concern through dermal contact and inhalation of outdoor air (Table 11).

Table 11. Exposure pathways for risk assessment

Land Use	Potentially Exposed Population	Exposure Route, Media and Exposure Point
Future		
Construction and Excavation	On-site Workers	Dermal contact with chemicals of concern in soil during excavation and construction
Construction and Excavation	On-site Workers	Inhalation of chemicals of concern during excavation and construction
Future and Current		
Industrial	On-site Workers	Inhalation of chemicals of concern in indoor air
Residential	On-site Adult Residents	Inhalation of chemicals of concern in indoor air

As discussed in the July 7, 2014 report, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"*, based on the concentrations of COCs in the soil, construction/excavation workers are expected to have an increased dermal risk

due to arsenic if they are onsite fulltime more than 90 days. This risk can be managed by requiring workers (as part of a health and safety plan) to wear gloves and long sleeves. Workers should also be reminded that showering after work will further reduce their exposure risk.

In addition, construction/excavation workers are expected to have an unacceptable increased inhalation risk due to mercury if they are onsite fulltime more than 200 days. This risk can be managed (as part of a health and safety plan) by limiting either the number of hours and/or the number of days of exposure for the worker. Therefore, no additional data collection or risk assessment is required for construction and excavation workers.

Possible exposure routes for current and future adult residents at the proposed Fairfield County Jail/Public Safety Facility include: ingestion, inhalation and dermal contact. Ingestion of chemicals of concern is not a significant concern because water at the site is not used as a drinking water source and the site is supplied by municipal water. The dermal exposure route for residents will not be a complete pathway because the plans for the proposed jail call for covering the soil with asphalt and there is currently no exposed soil. However, residents may be exposed to chemicals of concern through inhalation of indoor air (Table 11).

Possible exposure routes for current and future adult workers at the proposed Fairfield County Jail/Public Safety Facility include: ingestion, inhalation and dermal contact. Ingestion of chemicals of concern is not a significant concern because water at the site is not used as a drinking water source and the site is supplied by municipal water. The dermal exposure route for workers will not be a complete pathway because the plans for the proposed jail call for covering the soil with asphalt and there is currently no exposed soil. However, workers may be exposed to chemicals of concern through inhalation of indoor air (Table 11).

The results from the risk assessment for future land uses indicated that naphthalene has a hazard quotient of 0.118 for workers in the proposed Sheriff's office via the inhalation of indoor air. However, the hazard quotient for the inhalation of mercury in indoor air was an order of magnitude higher. In all five scenarios investigated, the hazard quotient for mercury exceeded one (1). These calculations are based on the analysis of bulk soil, which introduces increased uncertainty in the risk analysis. Ohio EPA (2010) recommends further data collection (including soil gas sampling and analysis) prior to a definitive determination of risk.

The risk to future workers and residents at the proposed Fairfield County Jail/Public Safety Facility is assessed in Section 5 using soil gas concentrations of mercury and naphthalene. The risks to current workers and residents at the MSMJ are assessed in Sections 6 (sub-slab gas analysis) and 7 (ambient air analysis).

SECTION 5
RISK ASSESSMENT – FUTURE WORKERS AND RESIDENTS

5.1 Calculating Exposure Concentrations

Concentrations of mercury and naphthalene in indoor air in the proposed jail, proposed jail and possible expansion, and proposed Sheriff's Office were estimated using the Johnson and Ettinger (1991) model. Version 3.1 of the model was used (Environmental Quality Management, 2004).

Inputs to the Johnson and Ettinger model can be grouped as chemical-specific, soil, building, and exposure scenarios. Default chemical input parameters were used as provided in the look-up tables within the Johnson and Ettinger model and concentrations of mercury and naphthalene in subsurface soil gas were used from Tables 5 and 6. Because all samples returned non-detect values, half the reporting limit was used as the default "concentration" in the soil gas for the purposes of the risk assessment as recommended by USEPA guidance (1991). Input values used for all model runs pertaining to soil conditions at the site are listed in Table 12. Parameters describing the proposed buildings are provided in Table 13. The three scenarios investigated were for the proposed jail; the proposed jail and possible expansion; and the Sheriff's Office.

Exposure scenarios were investigated for jail inmates and adults working at the facilities (Table 14). For the purposes of this assessment, residents were assumed to be exposed to the air inside the building for one year with continuous exposure 365 days a year. (According to Fairfield County personnel, the average stay in the Fairfield County jail is 14 days. However, for misdemeanors under ORC 2929.24, there are times when sentences can add to 360 days. Further, if there is a felony 5 charge, which is rare in Fairfield County, the time could exceed a year depending on multiple factors. Reportedly, the longest duration recently has been 18 months.) For adult workers in the proposed jail and Sheriff's office, the exposure time was 25 years (USEPA recommended value for commercial/industrial exposure scenarios) with exposure 250 days a year (50 weeks a year, 5 days a week).

5.2 Non-Carcinogenic Risks

Results from the Johnson and Ettinger model are summarized in Table 15. No hazard indices greater than one (1) were reported for the scenarios investigated during this risk assessment. This indicates that mercury and naphthalene do not pose a threat to worker or resident health via the inhalation of indoor air in the proposed jail, proposed jail and possible expansion, and proposed Sheriff's Office.

Table 12. Input parameters for the Johnson and Ettinger model - soil parameters.

Parameter	Input Value	Units	Rationale
Average soil temperature	10	^{o}C	Default
Soil gas sampling depth, below grade	152	cm	Must be greater than depth below grade to bottom of enclosed floor space
Thickness of soil stratum A	152	cm	Soil stratum total depth must equal soil sampling depth
Soil stratum A SCS soil type	LS		Based on data from borings
Stratum A soil dry bulk density	1.62	g/cm^3	Model default for LS soil type
Stratum A soil total porosity	0.39		Model default for LS soil type
Stratum A soil water filled porosity	0.076	cm^3/cm^3	Model default for LS soil type

Table 13. Input parameters for the Johnson and Ettinger model - building parameters.

Parameter	Scenario	Input Value	Units	Rationale
Enclosed space floor thickness		10	cm	Model default
Soil-building pressure differential		40	$g/cm\text{-}s^2$	Model default
Enclosed floor space length	Proposed jail	7161	cm	Based on area weighted average of one story and two story areas of the proposed building
	Proposed jail and expansion	8258	cm	
	Proposed Sheriff's Office	4838	cm	
Enclosed floor space width	Proposed jail	7161	cm	Based on area weighted average of one story and two story areas of the proposed building
	Proposed jail and expansion	8258	cm	
	Proposed Sheriff's office	4838	cm	
Enclosed space height	Proposed jail	538	cm	Based on the area of the proposed building
	Proposed jail and expansion	555	cm	
	Proposed Sheriff's office	305	cm	
Floor-wall seam crack width		0.1	cm	Model default
Indoor air exchange rate		1	1/hr	Data from consultant engineers designing the HVAC system

Table 14. Input parameters for the Johnson and Ettinger model - exposure scenarios.

Parameter	Scenario	Input Value	Units	Rationale
Averaging time for carcinogens		70	years	USEPA default
Averaging time for non-carcinogens	Adult resident	1	years	Averaging time equals exposure duration for non-carcinogens
	Adult worker	25	years	
Exposure duration	Adult resident	1	years	See text
	Adult worker	25	years	
Exposure frequency	Adult resident	365	days/year	See text
	Adult worker	250	days/year	

Table 15. Results from the Johnson and Ettinger Model based on soil gas measurements.

Parameter	Scenario	Hazard quotient from vapor intrusion to indoor air (non-carcinogenic)
Mercury	Residential proposed jail	6.6E-05
	Residential proposed jail and expansion	5.6E-05
	Worker proposed jail	4.5E-05
	Worker proposed jail and expansion	3.8E-05
	Worker proposed Sheriff's office	1.1E-04
Naphthalene	Residential proposed jail	1.7E-5
	Residential proposed jail and expansion	1.4E-5
	Worker proposed jail	1.2E-5
	Worker proposed jail and expansion	9.8E-6
	Worker proposed Sheriff's office	3.0E-5

5.3 Uncertainty Associated with Indoor Air Risk Analysis

The Johnson and Ettinger model is a screening model that takes into account both convective and diffusive mechanisms and estimates the transport of contaminant vapors from soils into buildings located immediately above the contaminated soil. The Johnson and Ettinger model is a one-dimensional analytical model that takes into account contaminant attenuation as contaminants move from soil into soil gas into buildings. There is limited experimental data to assist in the definition of input parameters. Therefore, unless site-specific data were available, recommended model defaults were used to create a conservative estimate of vapor concentration.

In addition to the uncertainty associated with soil analytical information, the Johnson and Ettinger model has the following assumptions/limitations (according to Environmental Quality Management, 2004):

1. *"Contaminant vapors enter the structure primarily through cracks and openings in the walls and foundation.*

2. *Convective transport occurs primarily within the building zone of influence and vapor velocities decrease rapidly with increasing distance from the structure.*

3. *Diffusion dominates vapor transport between the source of contamination and the building zone of influence.*

4. *All vapors originating from below the building will enter the building unless the floor and walls are perfect vapor barriers.*

5. *All soil properties in any horizontal plane are homogenous.*

6. *The contaminant is homogenously distributed within the zone of contamination.*

7. *The areal extent of contamination is greater than that of the building floor in contact with the soil.*

8. *Vapor transport occurs in the absence of convective water movement within the soil column (i.e., evaporation of infiltration), and in the absence of mechanical dispersion.*

9. *The model does not account for transformation processes (e.g., biodegradation, hydrolysis, etc.).*

10. *The soil layer in contact with the structure floor and walls is isotropic with respect to permeability.*

11. *Both the building ventilation rate and the difference in dynamic pressure between the interior of the structure and the soil surface are constant values."*

Despite these assumptions and inherent limitations of the Johnson and Ettinger model, the model results have compared favorably to experimental case histories and three-dimensional numerical modeling of radon transport into homes (Ohio EPA, 2010). The recommended use of the Johnson and Ettinger model is to identify sites that may require further assessment with respect to the indoor air pathway. The model should be used only to assess whether a risk-exposure level may be exceeded at the site. It should not be used to predict the exact concentrations of contaminants in indoor air at a facility.

SECTION 6
RISK ASSESSMENT – CURRENT WORKERS AND RESIDENTS
SUB-SLAB GAS AND INDOOR AIR MONITORING

As mentioned in Section 3, concentrations of mercury and naphthalene in both sub-slab vapor samples and indoor air were not detected above the laboratory detection limit during the August 4 and 5, 2014 sampling event. These preliminary data indicate that the vapor intrusion pathway into the existing building does not pose a risk to worker and/or residents. Although these results compare favorably with the risk assessment performed using the soil gas data outside the building for the vapor intrusion pathway, two sampling events are needed to confirm the results prior to making a definitive conclusion. Therefore, a risk assessment will be performed for the sub-slab and indoor air once the second sampling event is performed in November 2014.

SECTION 7
SUMMARY AND CONCLUSIONS

8.1 Proposed Jail and Sheriff's Office

Two soil gas sampling events for mercury and naphthalene were performed in July and September 2014 under the footprint of the proposed Fairfield County Jail/Public Safety Facility. No mercury or naphthalene was recorded in any soil gas probes above the laboratory detection limits. A risk assessment for future workers and residents at the proposed Fairfield County Jail/Public Safety Facility demonstrated no increased non-carcinogenic risks to either workers or residents at the proposed facility. Therefore, it is not necessary to include a vapor barrier between the fill and the proposed building in the construction plans.

8.2 Current Sheriff's Office and MSMJ

The first of two sub-slab vapor monitoring and indoor air monitoring events was performed in August 2014. No mercury or naphthalene was recorded in any sub-slab vapor pins or in the indoor air above the laboratory detection limits. Therefore, based on this sampling event, no concentrations of naphthalene and/or mercury are attributed to a vapor intrusion pathway. However, the protocol for assessing the vapor intrusion pathway requires more than one sampling event be conducted before reaching a supportable conclusion. Therefore, a second sampling event will be conducted in November 2014 to allow for seasonal variation within the existing building.

SECTION 8
REFERENCES

Bennett & Williams, July 7, 2014. Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility, 334 West Wheeling Street, Lancaster, Ohio. 601 pp.

Environmental Quality Management, 2004. User's guide for evaluating subsurface vapor intrusion into buildings. Report prepared for Industrial Economic Incorporated. EPA contract number 68-W-02-33, work assignment 004, PN 030224.0002, 133 pp.

Ohio EPA, May 2010. Sample Collection and Evaluation of Vapor Intrusion to Indoor Air, For Remedial Response and Voluntary Action Programs, Guidance Document, Division of Environmental Response and Revitalization, 114 pp.

USEPA, 2009. Risk assessment guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for inhalation risk assessment). Office of Superfund Remediation and Technology Innovation, EPA/540/R/070/002, 68 pp.

Appendix A

Completion Diagrams for the Subsurface Soil Gas Probes

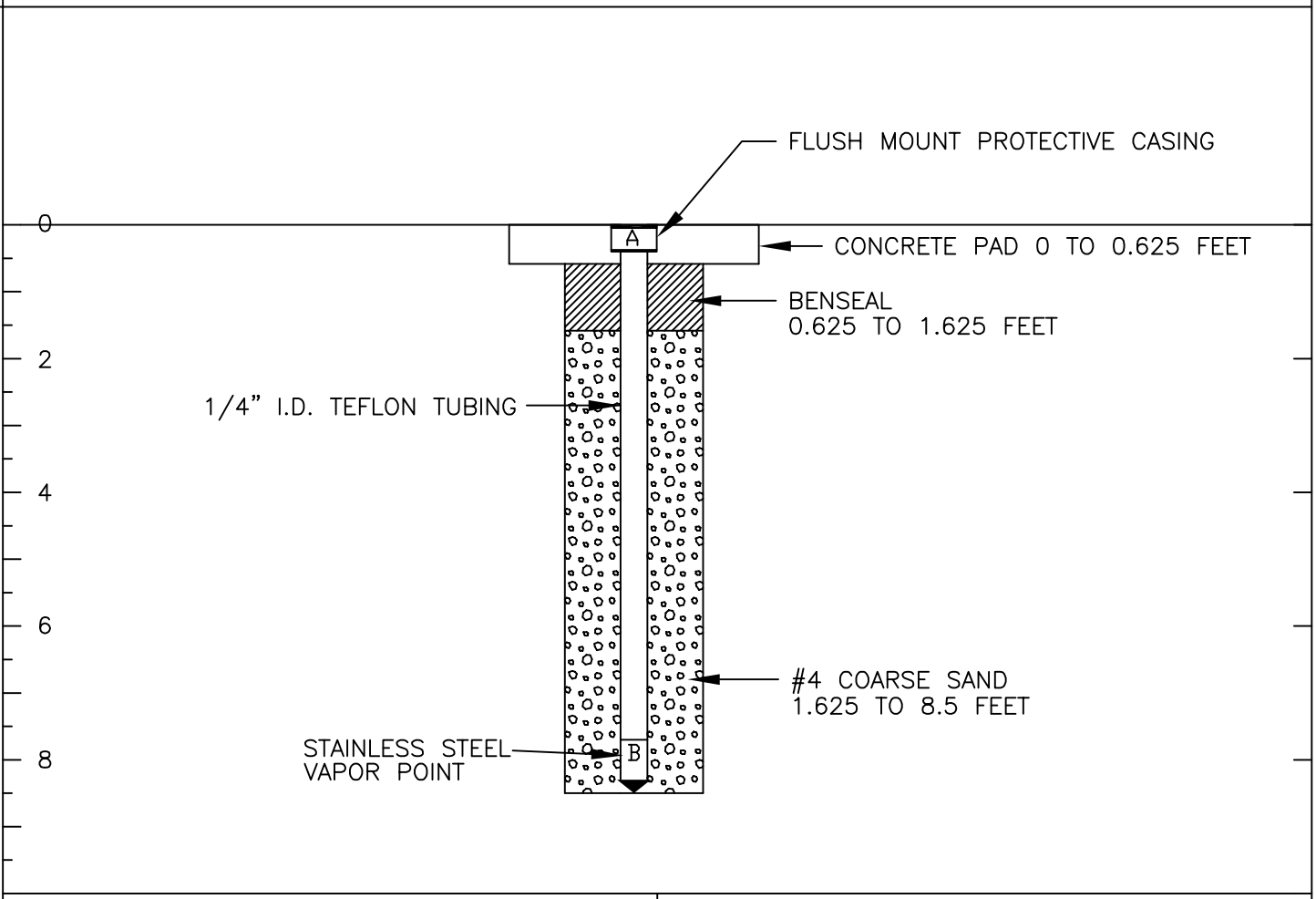
BENNETT & WILLIAMS

ENVIRONMENTAL CONSULTANTS, INC.

Project 14–04 Fairfield Co. – Jail	BORING NO. SG–1D
Location 324 W. Wheeling St., Lancaster, OH	ELEV. TOC
Drilling Agency WRIGHTS DRILLING	STATIC WATER LEVEL NONE ENCOUNTERED
Date Constructed 7/17/2014	SCREENED INTERVAL 7.9–8.3 FEET
Comments	TOTAL DEPTH 8.5 FEET

DEPTH

CONSTRUCTION DIAGRAM FOR SUBSURFACE SOIL GAS MONITORING PROBES



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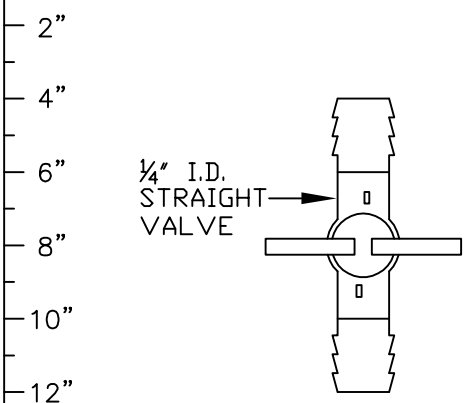

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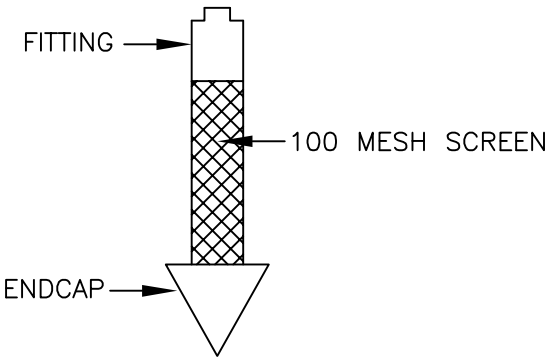


PROJECT NAME 14–04 Fairfield Co. – Jail

LOG OF BORING NUMBER – SG–1D

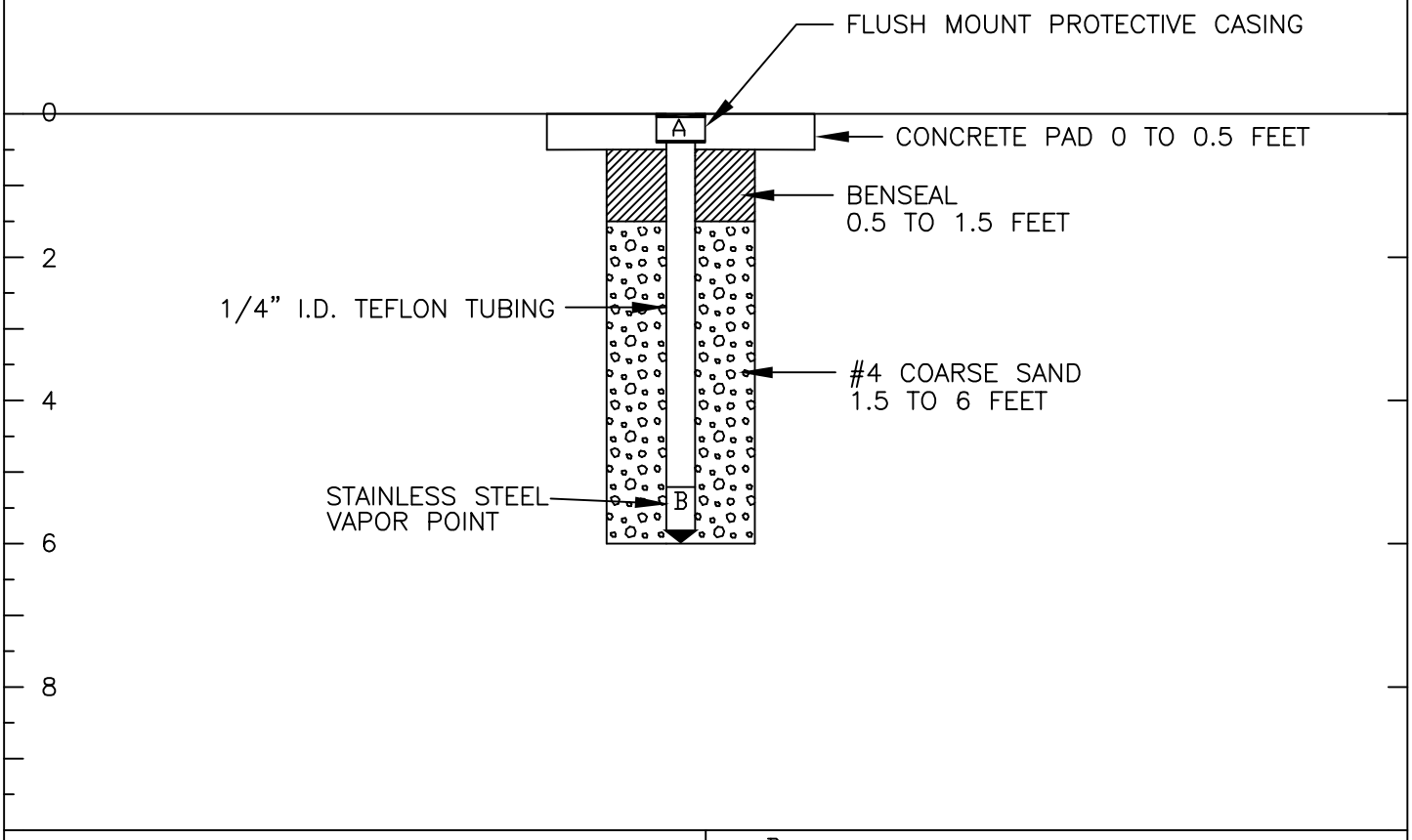
BENNETT & WILLIAMS

ENVIRONMENTAL CONSULTANTS, INC.

Project 14–04 Fairfield Co. – Jail	BORING NO. SG–1S
Location 324 W. Wheeling St., Lancaster, OH	ELEV. TOC
Drilling Agency WRIGHTS DRILLING	STATIC WATER LEVEL NONE ENCOUNTERED
Date Constructed 7/17/2014	SCREENED INTERVAL 5.4–5.8 FEET
Comments	TOTAL DEPTH 6 FEET

DEPTH

CONSTRUCTION DIAGRAM FOR SUBSURFACE SOIL GAS MONITORING PROBES



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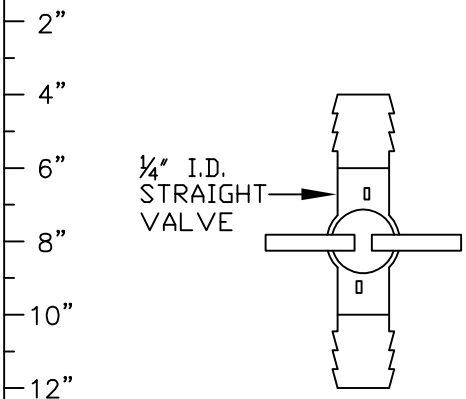

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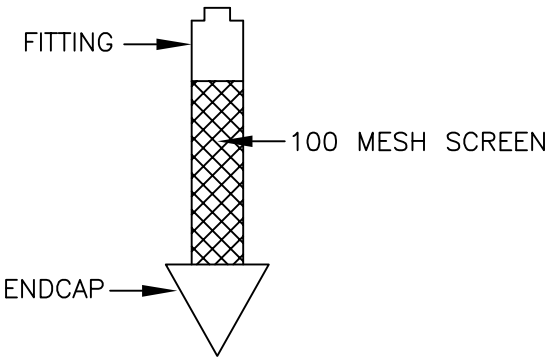


PROJECT NAME 14–04 Fairfield Co. – Jail

LOG OF BORING NUMBER – SG–1S

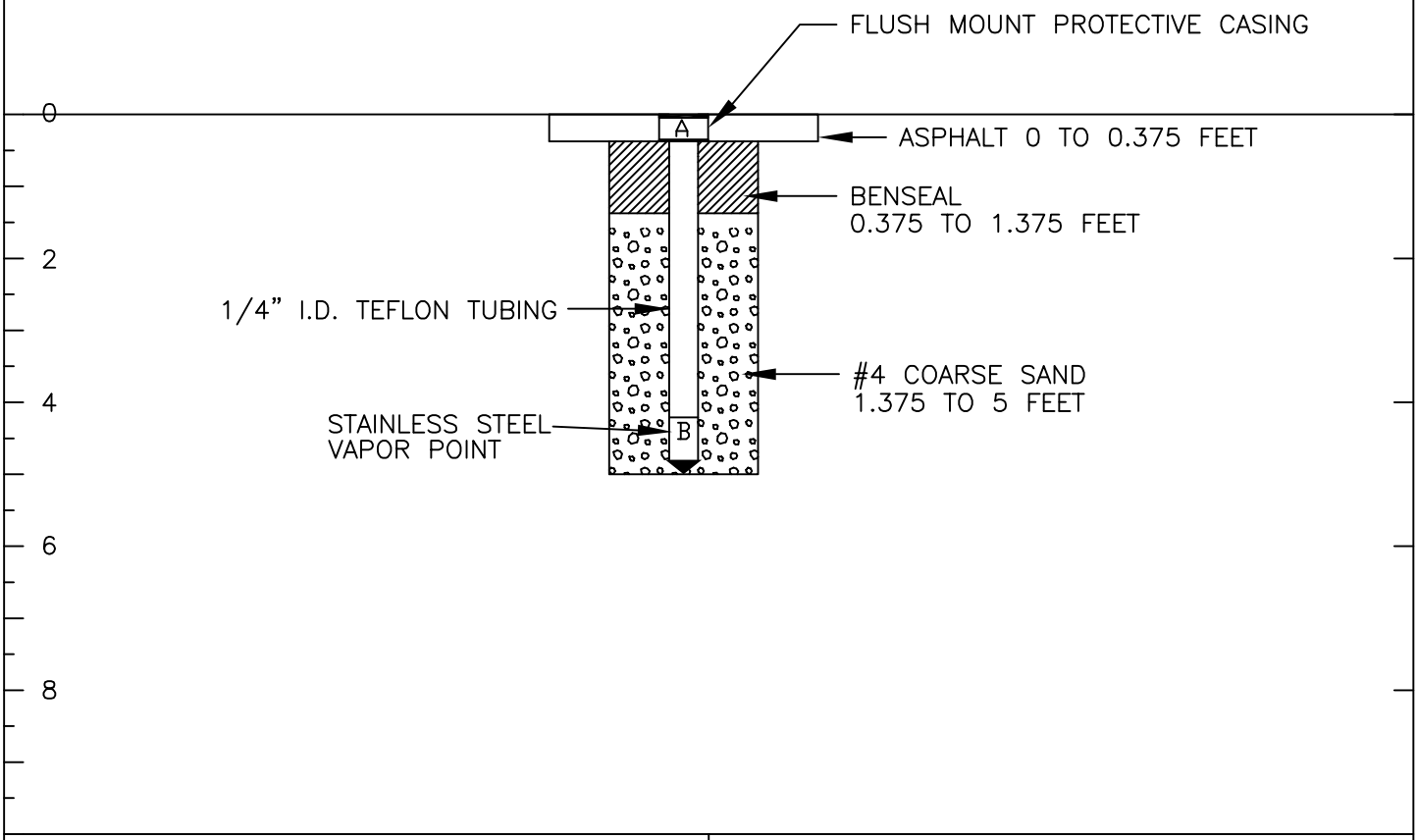
BENNETT & WILLIAMS

ENVIRONMENTAL CONSULTANTS, INC.

Project 14–04 Fairfield Co. – Jail	BORING NO. SG–2
Location 324 W. Wheeling St., Lancaster, OH	ELEV. TOC
Drilling Agency WRIGHTS DRILLING	STATIC WATER LEVEL NONE ENCOUNTERED
Date Constructed 7/17/2014	SCREENED INTERVAL 4.4–4.8 FEET
Comments	TOTAL DEPTH 5 FEET

DEPTH

CONSTRUCTION DIAGRAM FOR SUBSURFACE SOIL GAS MONITORING PROBES



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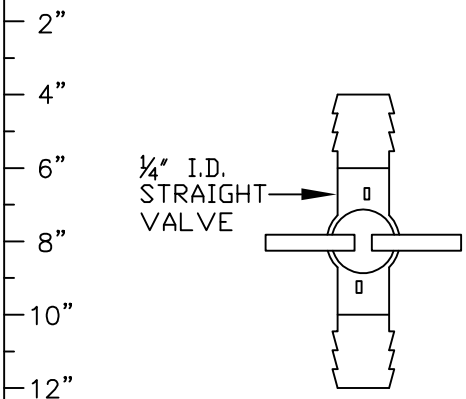

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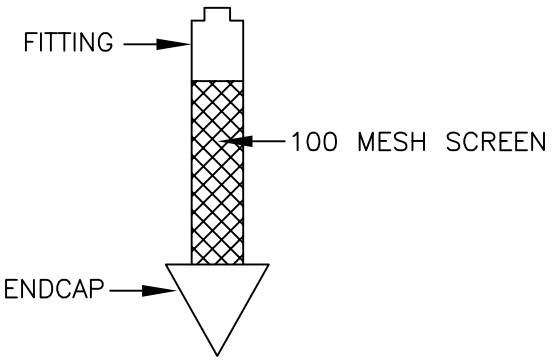


PROJECT NAME 14–04 Fairfield Co. – Jail

LOG OF BORING NUMBER – SG–2

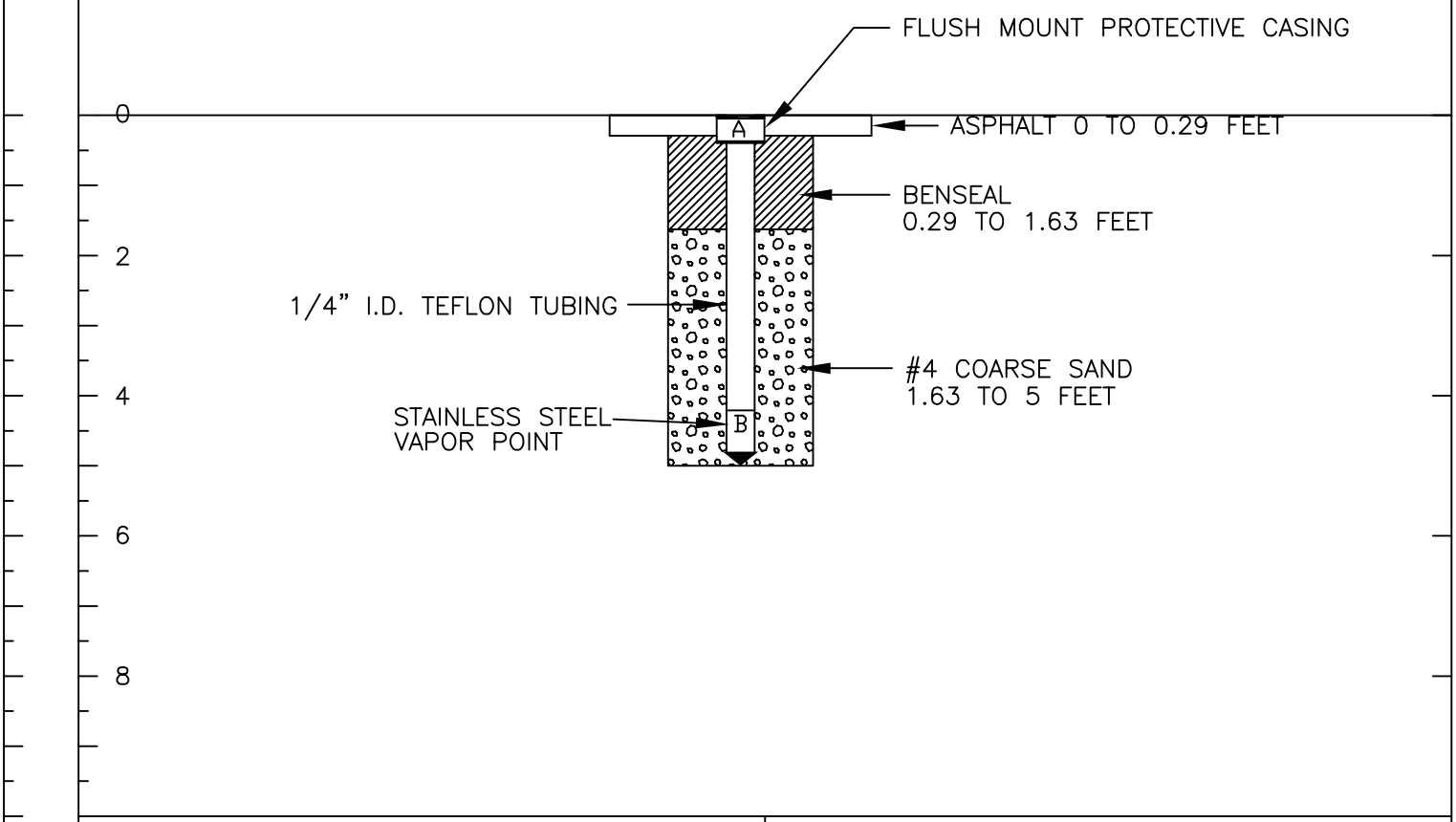
BENNETT & WILLIAMS

ENVIRONMENTAL CONSULTANTS, INC.

Project 14–04 Fairfield Co. – Jail	BORING NO. SG–3
Location 324 W. Wheeling St., Lancaster, OH	ELEV. TOC
Drilling Agency WRIGHTS DRILLING	STATIC WATER LEVEL NONE ENCOUNTERED
Date Constructed 7/17/2014	SCREENED INTERVAL 4.4–4.8 FEET
Comments	TOTAL DEPTH 5 FEET

DEPTH

CONSTRUCTION DIAGRAM FOR SUBSURFACE SOIL GAS MONITORING PROBES



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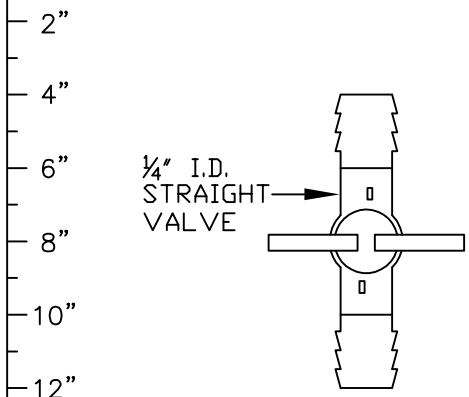

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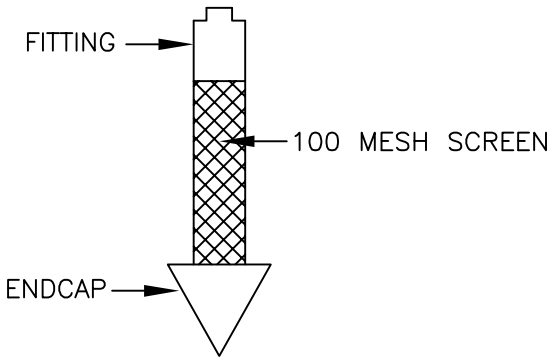


PROJECT NAME 14–04 Fairfield Co. – Jail

LOG OF BORING NUMBER – SG–3

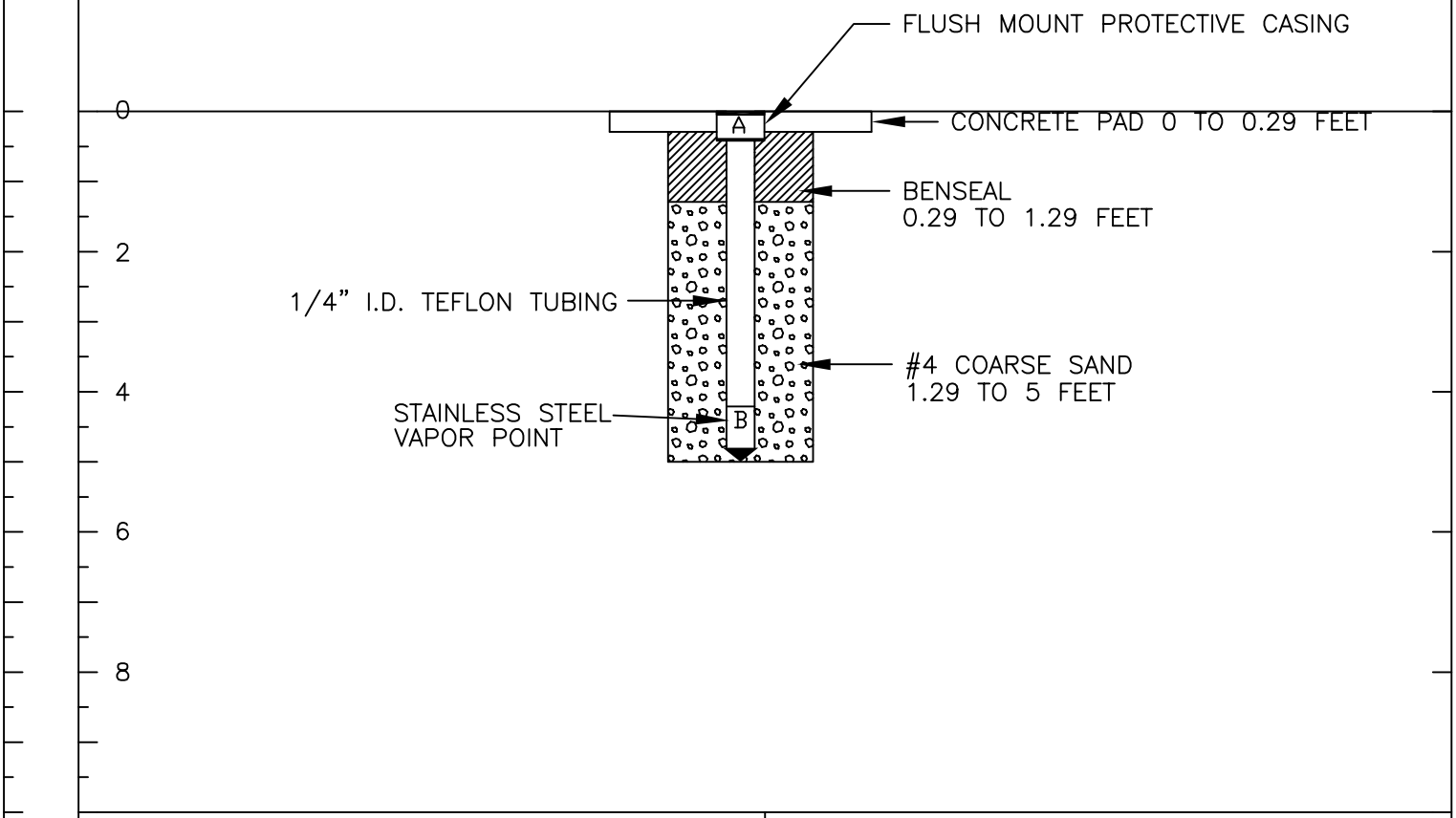
BENNETT & WILLIAMS

ENVIRONMENTAL CONSULTANTS, INC.

Project 14–04 Fairfield Co. – Jail	BORING NO. SG–4
Location 324 W. Wheeling St., Lancaster, OH	ELEV. TOC
Drilling Agency WRIGHTS DRILLING	STATIC WATER LEVEL NONE ENCOUNTERED
Date Constructed 7/17/2014	SCREENED INTERVAL 4.4–4.8 FEET
Comments	TOTAL DEPTH 5 FEET

DEPTH

CONSTRUCTION DIAGRAM FOR SUBSURFACE SOIL GAS MONITORING PROBES



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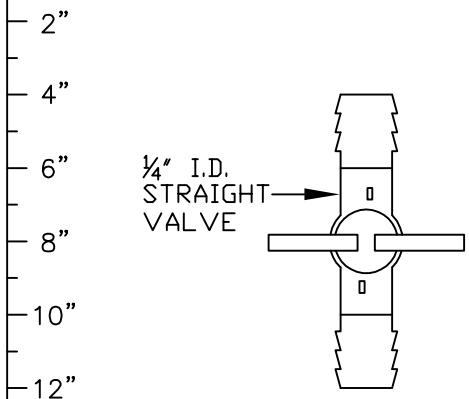

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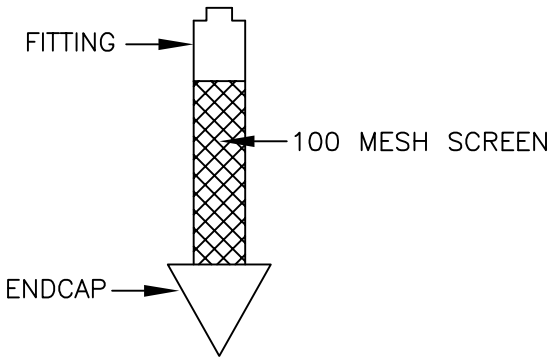


PROJECT NAME 14–04 Fairfield Co. – Jail

LOG OF BORING NUMBER – SG–4

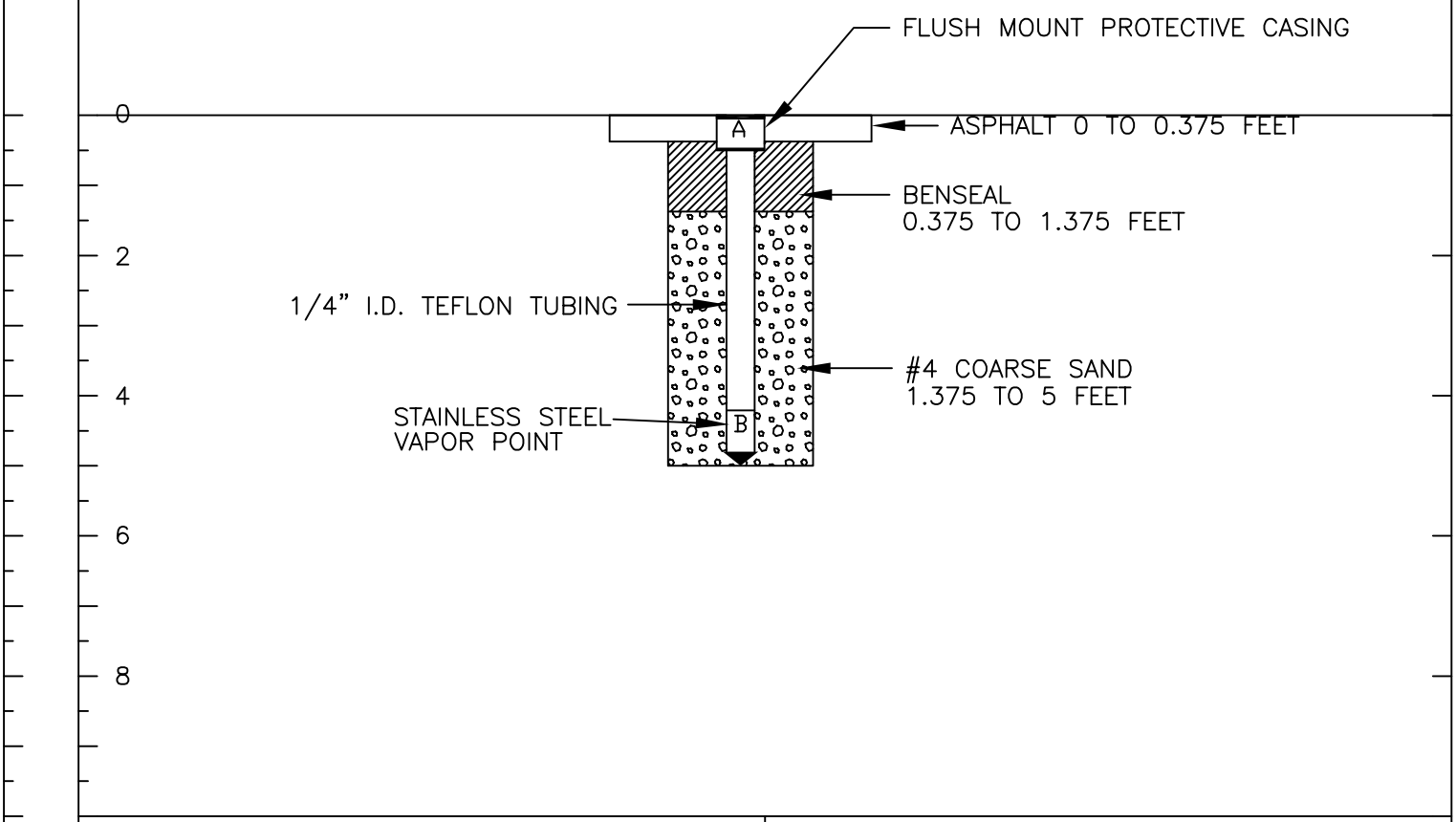
BENNETT & WILLIAMS

ENVIRONMENTAL CONSULTANTS, INC.

Project 14–04 Fairfield Co. – Jail	BORING NO. SG–7
Location 324 W. Wheeling St., Lancaster, OH	ELEV. TOC
Drilling Agency WRIGHTS DRILLING	STATIC WATER LEVEL NONE ENCOUNTERED
Date Constructed 7/17/2014	SCREENED INTERVAL 4.4–4.8 FEET
Comments	TOTAL DEPTH 5 FEET

DEPTH

CONSTRUCTION DIAGRAM FOR SUBSURFACE SOIL GAS MONITORING PROBES



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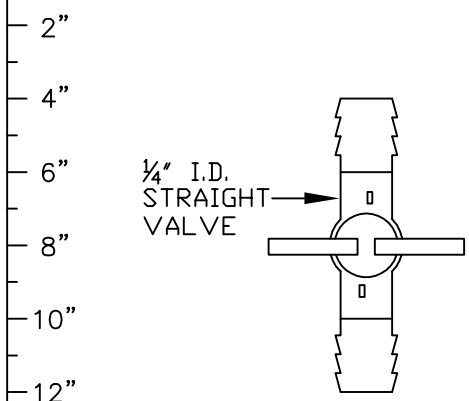

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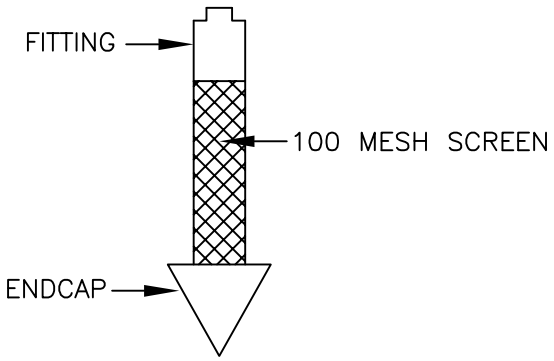


PROJECT NAME 14–04 Fairfield Co. – Jail

LOG OF BORING NUMBER – SG–7

Appendix B

Photographs of Installation of Subsurface Soil Gas Probes

B-1. Drilling rig advancing rods to desired depth (July 17, 2014).

B-2. Collection of drilling cuttings in bucket before placement in 55 gallon drum (July 17, 2014).

B-3. Soil vapor tip and Teflon® tubing before installation in subsurface (July 17, 2014).

B-4. Installing sand pack around Teflon® tubing and vapor point (July 17, 2014).

B-5. Ready to install Benseal above the sand pack (July 17, 2014).


B-6. Hydrating Benseal after placement (July 17, 2014).

B-7. Petcock attached to top of Teflon® tubing and surface protector ready for installation (July 17, 2014).

B-8. Installing surface protector around petcock (July 17, 2014).

B-9. Petcock inside completed surface protector (July 17, 2014).

B-10. Completed subsurface soil gas sampling point (July 17, 2014).

Appendix C

Photographs of Installation of Sub-Slab Vapor Sampling Points

C-1. Drilling a shallow 1 ½ -inch diameter outer hole in the concrete slab (July 18, 2014).


C-2. Drilling 5/8-inch hole through concrete slab using drilling guide (July 18, 2014).

C-3. Vapor Pin™ with silicon sleeve prior to installation (July 18, 2014).

C-4. Installing Vapor Pin™ in drilled hole in concrete slab (July 18, 2014).

C-5. Installed Vapor Pin™ with cap on top (July 18, 2014).

C-6. Completed Vapor Pin™ installation (left) with flush-mounted protective cover and drilled hole where subsurface wrapped wire cable prevented installation of Vapor Pin™ prior to filling (July 18, 2014).

Appendix D

Photographs of Integrity Testing of Subsurface Soil Gas Sampling Points

D-1. Connecting tubing to subsurface soil gas probe in preparation for integrity testing with shroud at left (July 24, 2014).

D-2. Shroud in place over subsurface soil gas probe and helium ready for flooding of shroud (July 24, 2014).

D-3. Inserting portable handheld gas detection meter to confirm presence of helium in shroud prior to pumping from the subsurface soil gas probe (July 24, 2014).

D-4. Measuring concentration of helium in subsurface soil gas probe (September 4, 2014).

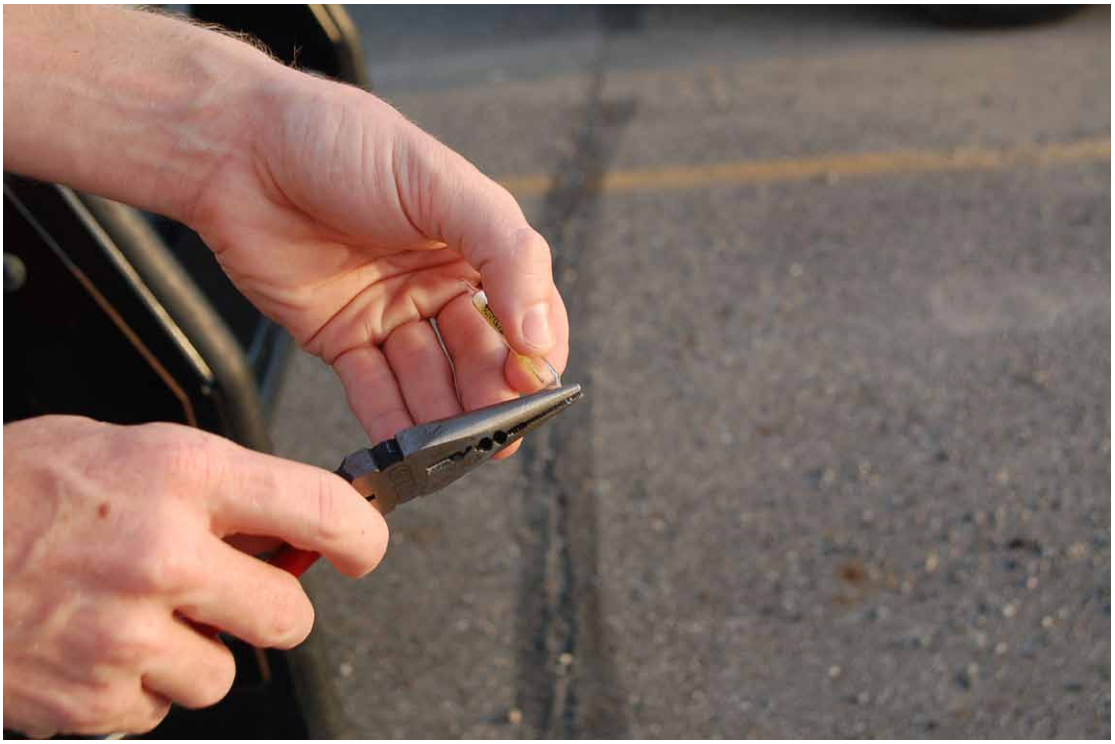
D-5. MGD-2002 portable handheld gas detection meter showing 0 ppm helium during a subsurface soil gas probe leak detection test (July 24, 2014).

Appendix E

Photographs of Collection of Mercury Soil Gas Samples

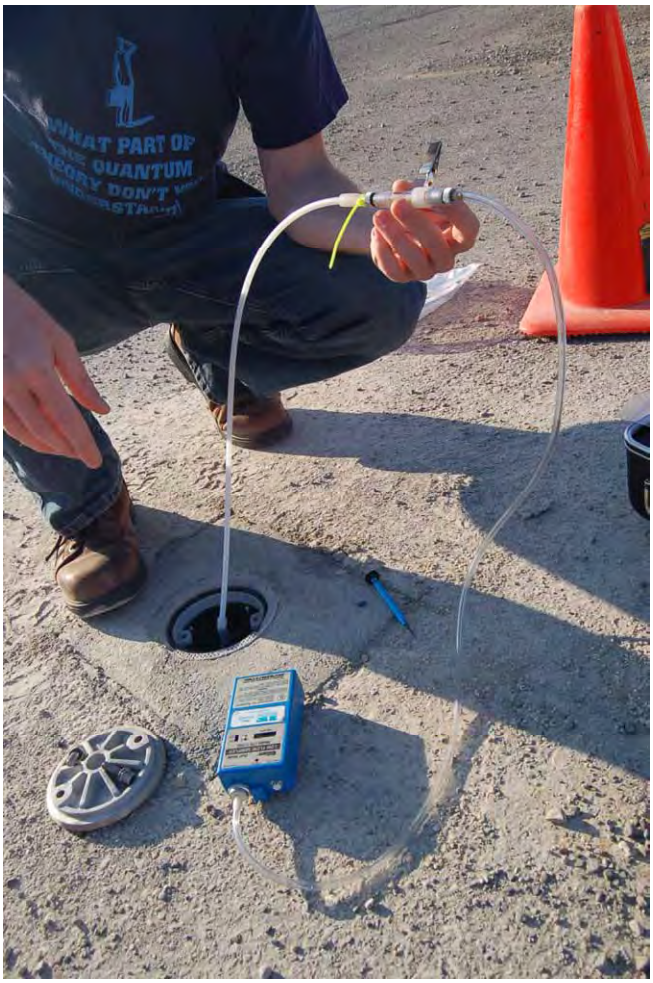
E-1. Calibration of Gilian low flow sampling pump using DryCal flow meter and mercury "calibration tube" (July 25, 2014).

E-2. Mercury tube prior to opening ends for sample collection (September 5, 2014).



E-3. Breaking off end of tube using needle nose pliers in preparation for sample collection (September 5, 2014).

E-4. Placement of new mercury tube in Gilian tube holder (July 25, 2014).



E-5. Collection of mercury sample (July 25, 2014).

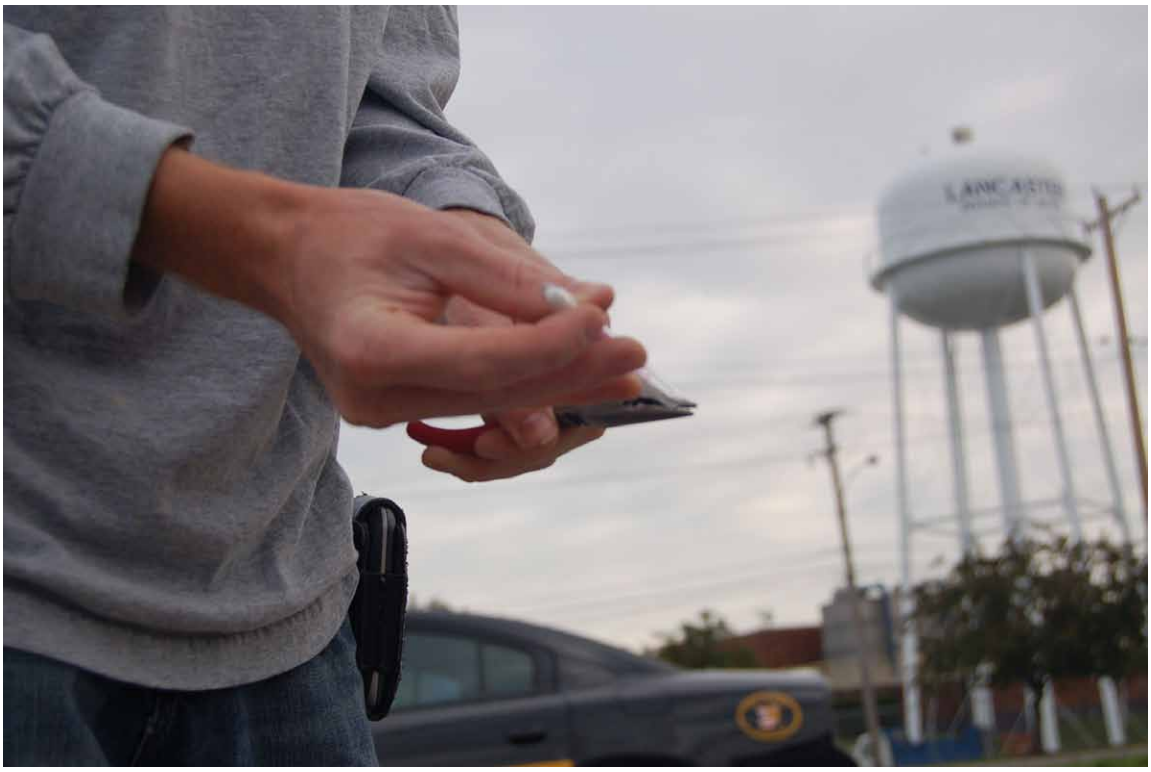
E-6. Mercury sample after collection with tight fitting caps and label ready for shipment to the laboratory (July 25, 2014).

Appendix F

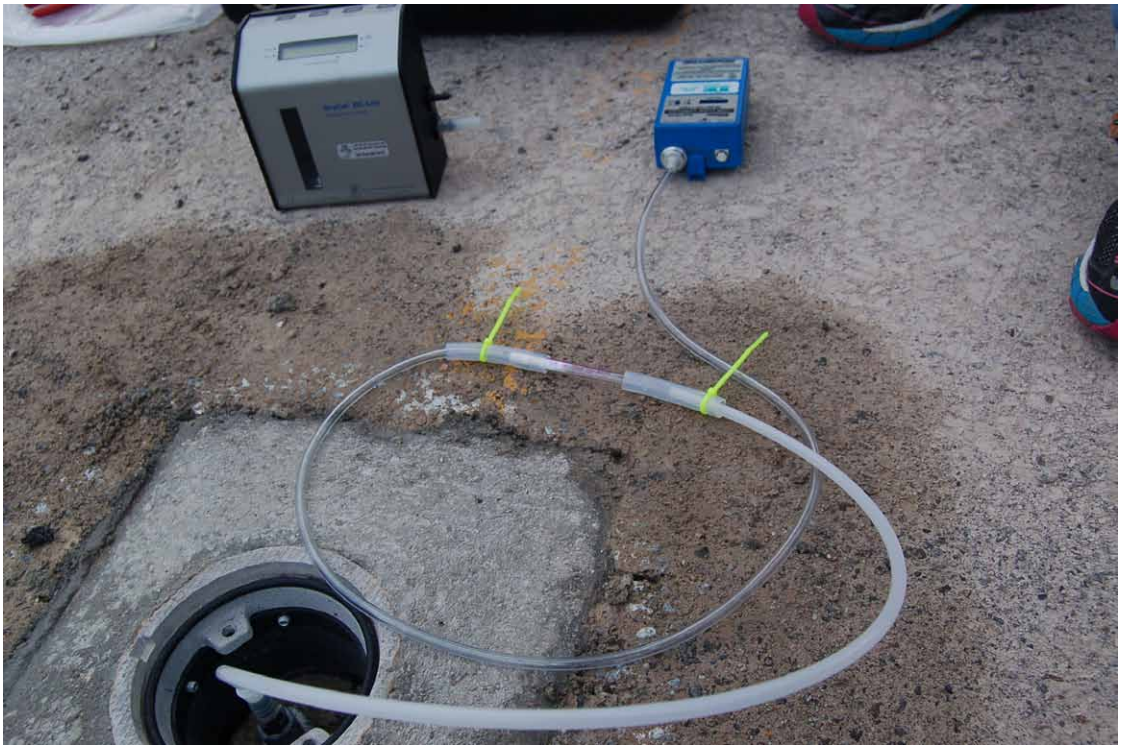
Photographs of Collection of Naphthalene Soil Gas Samples

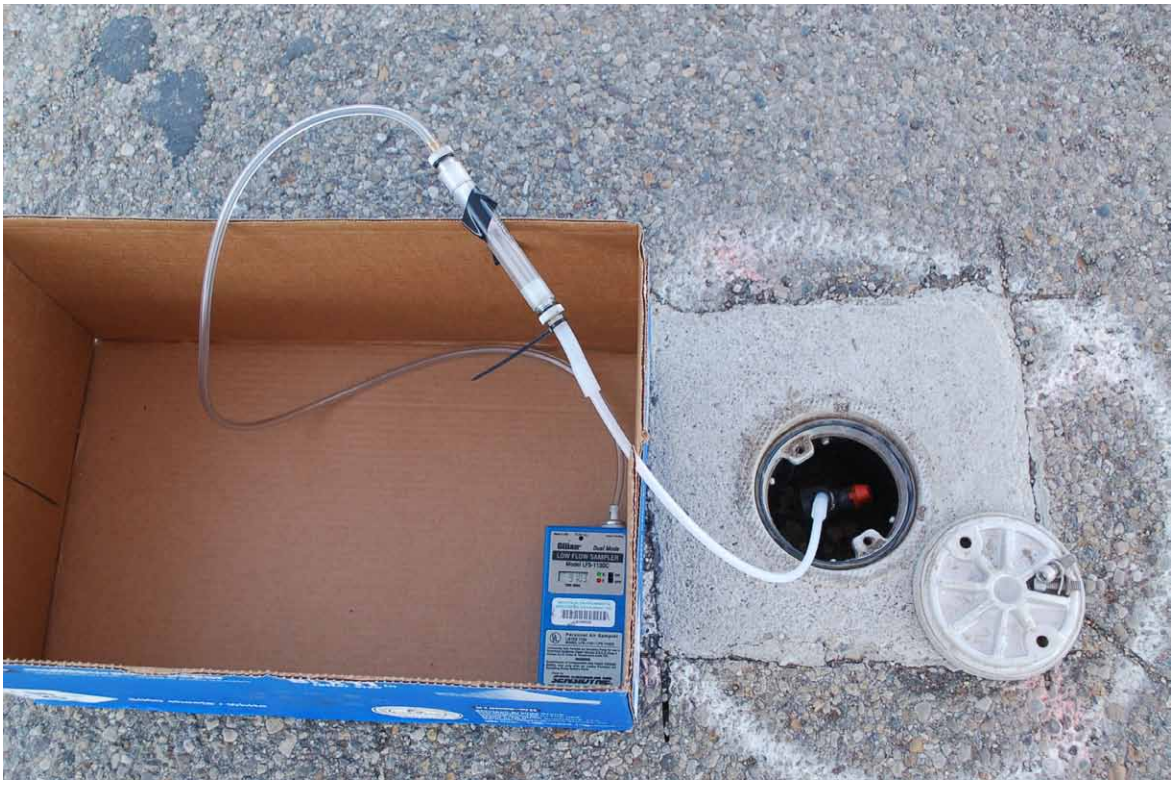
F-1. Calibration of Gilian low flow sampling pump using DryCal flow meter and naphthalene "calibration tube" (July 24, 2014).

F-2. Naphthalene tube prior to placement in the Gilian Universal Tube Holder System (Sesptember 4, 2014).



F-3. Breaking the ends off the naphthalene tube prior to sample collection (July 24, 2014).


F-4. Collection of naphthalene sample without use of Gilian Universal Tube holder (July 24, 2014).



F-5. Collection of naphthalene sample using Gilian Universal Tube Holder System (September 4, 2014).

F-6. Naphthalene sample after collection with tight fitting caps and label ready for shipment to the laboratory (September 4, 2014).

Appendix G

Photographs of Collection of Sub-Slab and Indoor Air Samples

G-1. Calibration of Gilian low flow sampling pump at SS-1 using DryCal flow meter and naphthalene “calibration tube” (August 4, 2014).

G-2. Collecting sub-slab samples for naphthalene at SS-5 and calibrating a second pump for collection of co-located indoor air sample at AA-5 (August 4, 2014).

G-3. Collection of naphthalene indoor air sample at AA-4 (August 4, 2014).

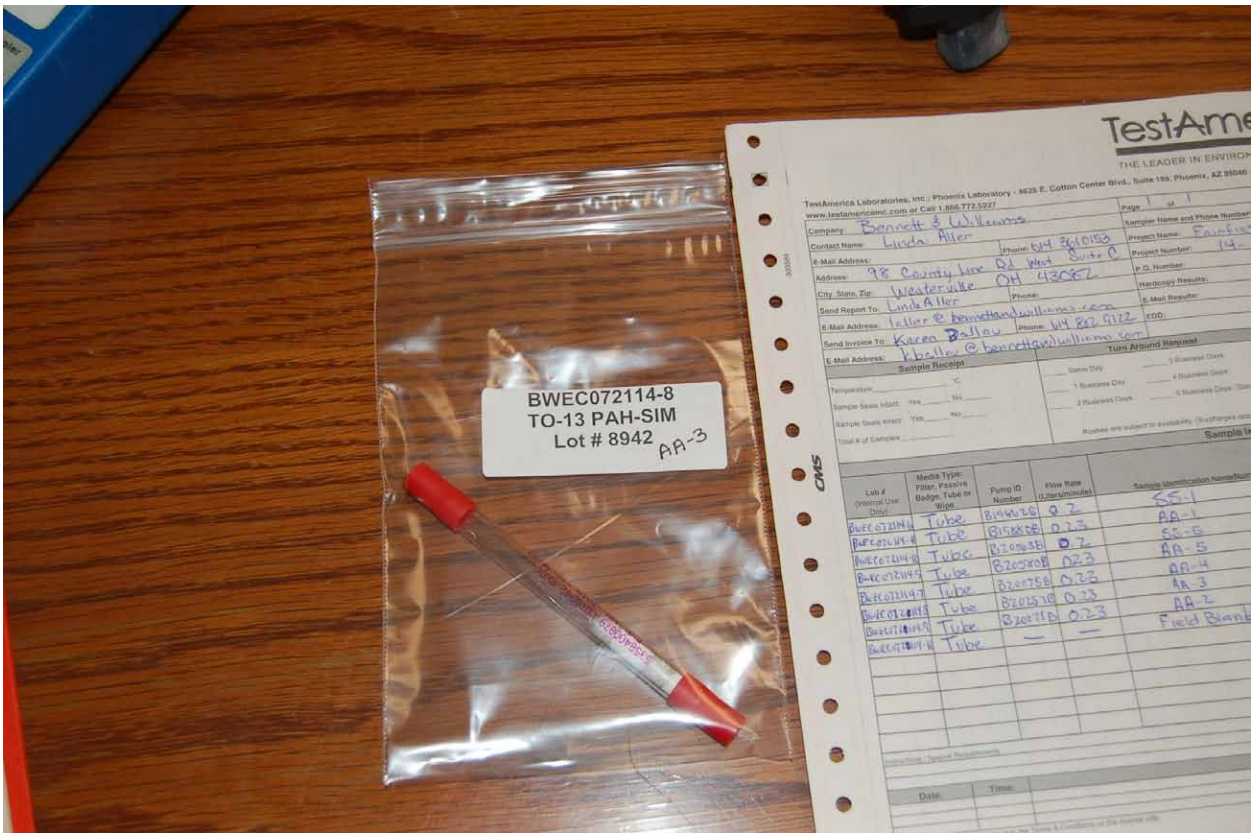
G-4. Simultaneous collection of sub-slab vapor and indoor air naphthalene samples at SS-1 and AA-1 (August 4, 2014).

G-5. Collection of indoor air sample for naphthalene at AA-2 (August 4, 2014).

G-6. Collection of indoor air sample at AA-5 (August 4, 2014).

G-7. Collection of sub-slab sample for mercury at SS-2 (August 5, 2014).

G-8. Preparing to collect indoor air sample for mercury at AA-3 (August 5, 2014).



G-9. Naphthalene sample tube after sample collection showing tight-fitting end caps, label and chain of custody (August 4, 2014).

Appendix H

Photographs of Abandonment of Subsurface Gas Probes

H-1. Removal of protective cap prior to abandonment of the subsurface gas probe (September 24, 2014).

H-2. Removal of petcock and tubing from ground (September 24, 2014).

H-3. Adding Benseal to fill place where tubing was removed (September 24, 2014).


H-4. Removing metal ring portion of the protector (September 24, 2014).

H-5. Adding Quickrete to former subsurface gas probe location (September 24, 2014).


H-6. Completed abandonment of subsurface gas probe (September 24, 2014).

Appendix I

Analytical Results of Subsurface Soil Gas Samples for Mercury (July 24 and 25, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-28742-1
Client Project/Site: Fairfield Co - Phase 2

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Authorized for release by:
8/4/2014 4:45:29 PM

Carlene McCutcheon, Project Manager II
(602)659-7612
carlene.mccutcheon@testamericainc.com

Analyses included in this report were performed by TestAmerica Phoenix, 4625 E. Cotton Center Boulevard, Building 3, Suite 189, Phoenix, AZ 85040.

TestAmerica Phoenix (Lab ID 154268) is accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program for the analytical techniques noted on the scope of accreditation for the following methods:

NIOSH 0500, NIOSH 0600, NIOSH 1003, NIOSH 1005, NIOSH 1007, NIOSH 1010, NIOSH 1015, NIOSH 1022, NIOSH 1300, NIOSH 1400, NIOSH 1401, NIOSH 1403, NIOSH 1405, NIOSH 1450, NIOSH 1457, NIOSH 1500, NIOSH 1501, NIOSH 1550, NIOSH 1602, NIOSH 1604, NIOSH 1606, NIOSH 1609, NIOSH 1610, NIOSH 1611, NIOSH 1613, NIOSH 1615, NIOSH 2000, NIOSH 2016, NIOSH 2532, NIOSH 2546, NIOSH 2551, NIOSH 5000, NIOSH 5039, NIOSH 5503, NIOSH 5506, NIOSH 5523, NIOSH 5600, NIOSH 6006, NIOSH 6009, NIOSH 6010, NIOSH 6013, NIOSH 7300, NIOSH 7303, NIOSH 7600, NIOSH 7903, NIOSH 9100, NIOSH 9102, EPA IP-6A, EPA IP-6C, OSHA 7, OSHA 42, OSHA 47, OSHA 48, OSHA 64, OSHA 69, OSHA 111, OSHA ID-121, OSHA ID-125G, OSHA ID-140, OSHA ID-188, OSHA ID-215, OSHA 1001, OSHA 1002, OSHA 1003, OSHA 1004, OSHA 1005, OSHA 1007, OSHA 1009, OSHA 1014 and OSHA Chemical and Sampling Information for Silane. Volatile organic compounds on 3M Organic Vapor Monitors, Assay Technology Passive Monitors and SKC Passive Monitors. Formaldehyde and other aldehydes and ketones on Assay Technology passive monitor and SKC Umex 100 passive sampler by EPA TO-11A and OSHA 1007. Radiello diffusive sampler for hydrogen sulfide.

TestAmerica Phoenix also holds NELAC accreditation through the State of Oregon (AZ100001) for the analytical techniques noted on the scope of accreditation and the State of New York (11898) for NIOSH 6009, NIOSH 7300, EPA TO-10A, EPA TO-11A and EPA TO-17.

Analytical Comments:

Unless otherwise noted, all method blanks and laboratory control spikes met method and/or laboratory quality control objectives for the analyses included in this report.

Unless otherwise noted, sample results have been corrected for method blank values.

NIOSH Method 7300 analyses are performed using a modified digestion procedure to eliminate the use of perchloric acid.

Carlene McCutcheon
Project Manager II
8/4/2014 4:45:29 PM

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 550-28742-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-28742-1

Comments
No additional comments.

Receipt
The samples were received on 7/28/2014 10:50 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 20.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

IH - Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-28742-1	BW-2	Air	07/24/14 00:00	07/28/14 10:50
550-28742-2	BW-3	Air	07/24/14 00:00	07/28/14 10:50
550-28742-3	BW-4	Air	07/24/14 00:00	07/28/14 10:50
550-28742-4	BW2-D	Air	07/24/14 00:00	07/28/14 10:50
550-28742-5	BW1-D	Air	07/25/14 00:00	07/28/14 10:50
550-28742-6	BW-7	Air	07/25/14 00:00	07/28/14 10:50
550-28742-7	BW-1	Air	07/25/14 00:00	07/28/14 10:50
550-28742-8	Field Blank	Air	07/25/14 00:00	07/28/14 10:50

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Client Sample ID: BW-2 **Lab Sample ID: 550-28742-1**

No Detections.

Client Sample ID: BW-3 **Lab Sample ID: 550-28742-2**

No Detections.

Client Sample ID: BW-4 **Lab Sample ID: 550-28742-3**

No Detections.

Client Sample ID: BW2-D **Lab Sample ID: 550-28742-4**

No Detections.

Client Sample ID: BW1-D **Lab Sample ID: 550-28742-5**

No Detections.

Client Sample ID: BW-7 **Lab Sample ID: 550-28742-6**

No Detections.

Client Sample ID: BW-1 **Lab Sample ID: 550-28742-7**

No Detections.

Client Sample ID: Field Blank **Lab Sample ID: 550-28742-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Client Sample ID: BW-2

Lab Sample ID: 550-28742-1
Date Collected: 07/24/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:20	1

Client Sample ID: BW-3

Lab Sample ID: 550-28742-2
Date Collected: 07/24/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:22	1

Client Sample ID: BW-4

Lab Sample ID: 550-28742-3
Date Collected: 07/24/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:23	1

Client Sample ID: BW2-D

Lab Sample ID: 550-28742-4
Date Collected: 07/24/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:25	1

Client Sample ID: BW1-D

Lab Sample ID: 550-28742-5
Date Collected: 07/25/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:26	1

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Client Sample ID: BW-7

Lab Sample ID: 550-28742-6

Date Collected: 07/25/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:28	1

Client Sample ID: BW-1

Lab Sample ID: 550-28742-7

Date Collected: 07/25/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	07/31/14 14:31	07/31/14 17:29	1

Client Sample ID: Field Blank

Lab Sample ID: 550-28742-8

Date Collected: 07/25/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50
Sample Air Volume: 0 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260				0.0260	07/31/14 14:31	07/31/14 17:31	1

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Method: 6009 - Mercury (CVAA)

Lab Sample ID: MB 550-40885/12-A
Matrix: Air
Analysis Batch: 40905

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40885

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.0260		0.0260		ug/Sample		07/31/14 14:31	07/31/14 16:51	1

Lab Sample ID: LCS 550-40885/13-A
Matrix: Air
Analysis Batch: 40905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40885

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.500	0.5746		ug/Sample		115	74 - 127		

Lab Sample ID: LCSD 550-40885/14-A
Matrix: Air
Analysis Batch: 40905

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40885

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.500	0.5730		ug/Sample		115	74 - 127	0	20

QC Association Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

IH - Metals

Prep Batch: 40885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-28742-1	BW-2	Total/NA	Air	Tube Prep	
550-28742-2	BW-3	Total/NA	Air	Tube Prep	
550-28742-3	BW-4	Total/NA	Air	Tube Prep	
550-28742-4	BW2-D	Total/NA	Air	Tube Prep	
550-28742-5	BW1-D	Total/NA	Air	Tube Prep	
550-28742-6	BW-7	Total/NA	Air	Tube Prep	
550-28742-7	BW-1	Total/NA	Air	Tube Prep	
550-28742-8	Field Blank	Total/NA	Air	Tube Prep	
LCS 550-40885/13-A	Lab Control Sample	Total/NA	Air	Tube Prep	
LCSD 550-40885/14-A	Lab Control Sample Dup	Total/NA	Air	Tube Prep	
MB 550-40885/12-A	Method Blank	Total/NA	Air	Tube Prep	

Analysis Batch: 40905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-28742-1	BW-2	Total/NA	Air	6009	40885
550-28742-2	BW-3	Total/NA	Air	6009	40885
550-28742-3	BW-4	Total/NA	Air	6009	40885
550-28742-4	BW2-D	Total/NA	Air	6009	40885
550-28742-5	BW1-D	Total/NA	Air	6009	40885
550-28742-6	BW-7	Total/NA	Air	6009	40885
550-28742-7	BW-1	Total/NA	Air	6009	40885
550-28742-8	Field Blank	Total/NA	Air	6009	40885
LCS 550-40885/13-A	Lab Control Sample	Total/NA	Air	6009	40885
LCSD 550-40885/14-A	Lab Control Sample Dup	Total/NA	Air	6009	40885
MB 550-40885/12-A	Method Blank	Total/NA	Air	6009	40885

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Client Sample ID: BW-2

Lab Sample ID: 550-28742-1
Matrix: Air
Date Collected: 07/24/14 00:00
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:20	JRC	TAL PHX

Client Sample ID: BW-3

Lab Sample ID: 550-28742-2
Matrix: Air
Date Collected: 07/24/14 00:00
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:22	JRC	TAL PHX

Client Sample ID: BW-4

Lab Sample ID: 550-28742-3
Matrix: Air
Date Collected: 07/24/14 00:00
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:23	JRC	TAL PHX

Client Sample ID: BW2-D

Lab Sample ID: 550-28742-4
Matrix: Air
Date Collected: 07/24/14 00:00
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:25	JRC	TAL PHX

Client Sample ID: BW1-D

Lab Sample ID: 550-28742-5
Matrix: Air
Date Collected: 07/25/14 00:00
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:26	JRC	TAL PHX

Client Sample ID: BW-7

Lab Sample ID: 550-28742-6
Matrix: Air
Date Collected: 07/25/14 00:00
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:28	JRC	TAL PHX

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Client Sample ID: BW-1

Lab Sample ID: 550-28742-7

Date Collected: 07/25/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:29	JRC	TAL PHX

Client Sample ID: Field Blank

Lab Sample ID: 550-28742-8

Date Collected: 07/25/14 00:00
Matrix: Air
Date Received: 07/28/14 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			40885	07/31/14 14:31	JRC	TAL PHX
Total/NA	Analysis	6009		1	40905	07/31/14 17:31	JRC	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Laboratory: TestAmerica Phoenix

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA-LAP, LLC	IHLAP		154268	07-01-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Method	Method Description	Protocol	Laboratory
6009	Mercury (CVAA)	NIOSH	TAL PHX

Protocol References:

NIOSH = NIOSH Manual Of Analytical Methods, National Institute For Occupational Safety And Health, 4th Edition, August 1994.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

550 - 28742

550-28742 Chain of Custody

Company: Bennett & Williams		Page 1 of 1	
Contact Name: Linda Aller		Sampler Name and Phone Number: Linda Aller 614 361 0153	
E-Mail Address: laller@bennettandwilliams	Phone: 614 361 0153	Project Name: Fairfield Co - Phase 2	
Address: 98 County Line Rd West - Suite C		Project Number: 14-04	
City, State, Zip: Westerville, OH 43082		P.O. Number:	Data Package:
Send Report To: Linda Aller	Phone:	Hardcopy Results: Y N	Standard Level II:
E-Mail Address:		E-Mail Results: (Y) N	Level III:
Send Invoice To: Karen Ballou	Phone: 614 882 9122	EDD: Y N	Level IV:
E-Mail Address: kballou@bennettandwilliams.com			

Temperature 20.0 °C AV
Sample Seals Intact: Yes____ No____
Sample Seals Intact: Yes____ No____
Total # of Samples:____

____ Same Day ____ 3 Business Days
____ 1 Business Day ____ 4 Business Days
____ 2 Business Days ____ 5 Business Days (Standard)

Rushes are subject to availability. (Surcharges apply)

										NIOSH 6009 / Hg
-1	Tube	B198598	0.2	BW2	7-24-14	0852	0937		9L	X
-2	Tube	B198598	0.2	BW3	7-24-14	1024	1109		9L	X
3	Tube	B198598	0.2	BW4	7-24-14	1436	1521		9L	X
-4	Tube	B198598	0.2	BW2-D	7-24-14	1534	1619		9L	X
-5	Tube	B198763	0.2	BW1-D	7-25-14	0755	0840		9L	X
-6	Tube	B198763	0.2	BW7	7-25-14	0855	0940		9L	X
-7	Tube	B198263	0.2	BW1	7-25-14	0955	1040		9L	X
-8	Tube	—	—	Field Blank	7-25-14	1045	—		—	X

Instructions / Special Requirements:

7/25/14	11:00	Linda K. Aller to Fed X	
7/28/14	1000		[signature]

All services are performed subject to the Terms & Conditions on the reverse side.

TAL-8225 (0414)

8/_/2014

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 550-28742-1

Login Number: 28742

List Source: TestAmerica Phoenix

List Number: 1

Creator: Shoemaker, Cory M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	Check done at department level as required.

Measurement Uncertainty Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 550-28742-1

Analysis Method	Prep Method	Analyte	Percent Uncertainty (+/-)
6009	Tube Prep	Mercury	7.1

The uncertainty values represent an expanded uncertainty using a coverage factor of K = 2 to approximate a 95% confidence interval.

Appendix J

Analytical Results of Subsurface Soil Gas Samples for Mercury (September 4 and 5, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-31103-1
TestAmerica Sample Delivery Group: 14-04
Client Project/Site: Fairfield County

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Authorized for release by:
9/14/2014 11:20:04 AM

Carlene McCutcheon, Project Manager II
(602)659-7612
carlene.mccutcheon@testamericainc.com

Analyses included in this report were performed by TestAmerica Phoenix, 4625 E. Cotton Center Boulevard, Building 3, Suite 189, Phoenix, AZ 85040.

TestAmerica Phoenix (Lab ID 154268) is accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program for the analytical techniques noted on the scope of accreditation for the following methods:

NIOSH 0500, NIOSH 0600, NIOSH 1003, NIOSH 1005, NIOSH 1007, NIOSH 1010, NIOSH 1015, NIOSH 1022, NIOSH 1300, NIOSH 1400, NIOSH 1401, NIOSH 1403, NIOSH 1405, NIOSH 1450, NIOSH 1457, NIOSH 1500, NIOSH 1501, NIOSH 1550, NIOSH 1602, NIOSH 1604, NIOSH 1606, NIOSH 1609, NIOSH 1610, NIOSH 1611, NIOSH 1613, NIOSH 1615, NIOSH 2000, NIOSH 2016, NIOSH 2532, NIOSH 2546, NIOSH 2551, NIOSH 5000, NIOSH 5039, NIOSH 5503, NIOSH 5506, NIOSH 5523, NIOSH 5600, NIOSH 6006, NIOSH 6009, NIOSH 6010, NIOSH 6013, NIOSH 7300, NIOSH 7303, NIOSH 7600, NIOSH 7903, NIOSH 9100, NIOSH 9102, EPA IP-6A, EPA IP-6C, OSHA 7, OSHA 42, OSHA 47, OSHA 48, OSHA 64, OSHA 69, OSHA 111, OSHA ID-121, OSHA ID-125G, OSHA ID-140, OSHA ID-188, OSHA ID-215, OSHA 1001, OSHA 1002, OSHA 1003, OSHA 1004, OSHA 1005, OSHA 1007, OSHA 1009, OSHA 1014 and OSHA Chemical and Sampling Information for Silane. Volatile organic compounds on 3M Organic Vapor Monitors, Assay Technology Passive Monitors and SKC Passive Monitors. Formaldehyde and other aldehydes and ketones on Assay Technology passive monitor and SKC Umex 100 passive sampler by EPA TO-11A and OSHA 1007. Radiello diffusive sampler for hydrogen sulfide.

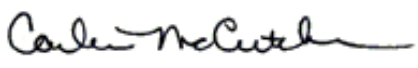
TestAmerica Phoenix also holds NELAC accreditation through the State of Oregon (AZ100001) for the analytical techniques noted on the scope of accreditation and the State of New York (11898) for NIOSH 6009, NIOSH 7300, EPA TO-10A, EPA TO-11A and EPA TO-17.

Analytical Comments:

Unless otherwise noted, all method blanks and laboratory control spikes met method and/or laboratory quality control objectives for the analyses included in this report.

Unless otherwise noted, sample results have been corrected for method blank values.

NISOH Method 7300 analyses are performed using a modified digestion procedure to eliminate the use of perchloric acid.



Carlene McCutcheon
Project Manager II
9/14/2014 11:20:04 AM

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 550-31103-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-31103-1

Comments
No additional comments.

Receipt
The samples were received on 9/6/2014 9:30 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 20.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

IH - Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-31103-1	SG - 3	Air	09/04/14 00:00	09/06/14 09:30
550-31103-2	SG - 2	Air	09/04/14 00:00	09/06/14 09:30
550-31103-3	SG - 4	Air	09/04/14 00:00	09/06/14 09:30
550-31103-4	SG - 1S	Air	09/05/14 00:00	09/06/14 09:30
550-31103-5	SG - 7	Air	09/05/14 00:00	09/06/14 09:30
550-31103-6	SG - 1D	Air	09/05/14 00:00	09/06/14 09:30
550-31103-7	SG - 7D	Air	09/05/14 00:00	09/06/14 09:30
550-31103-8	Field Blank	Air	09/05/14 00:00	09/06/14 09:30

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Client Sample ID: SG - 3 **Lab Sample ID: 550-31103-1**

No Detections.

Client Sample ID: SG - 2 **Lab Sample ID: 550-31103-2**

No Detections.

Client Sample ID: SG - 4 **Lab Sample ID: 550-31103-3**

No Detections.

Client Sample ID: SG - 1S **Lab Sample ID: 550-31103-4**

No Detections.

Client Sample ID: SG - 7 **Lab Sample ID: 550-31103-5**

No Detections.

Client Sample ID: SG - 1D **Lab Sample ID: 550-31103-6**

No Detections.

Client Sample ID: SG - 7D **Lab Sample ID: 550-31103-7**

No Detections.

Client Sample ID: Field Blank **Lab Sample ID: 550-31103-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Client Sample ID: SG - 3

Lab Sample ID: 550-31103-1

Date Collected: 09/04/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 13:53	1

Client Sample ID: SG - 2

Lab Sample ID: 550-31103-2

Date Collected: 09/04/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 13:55	1

Client Sample ID: SG - 4

Lab Sample ID: 550-31103-3

Date Collected: 09/04/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 13:56	1

Client Sample ID: SG - 1S

Lab Sample ID: 550-31103-4

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 13:58	1

Client Sample ID: SG - 7

Lab Sample ID: 550-31103-5

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 14:03	1

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Client Sample ID: SG - 1D

Lab Sample ID: 550-31103-6

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 14:04	1

Client Sample ID: SG - 7D

Lab Sample ID: 550-31103-7

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 9 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	09/12/14 09:07	09/12/14 14:06	1

Client Sample ID: Field Blank

Lab Sample ID: 550-31103-8

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30
Sample Air Volume: 0 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260				0.0260	09/12/14 09:07	09/12/14 14:07	1

Method: 6009 - Mercury (CVAA)

Lab Sample ID: MB 550-44390/12-A
Matrix: Air
Analysis Batch: 44451

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 44390

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.0260		0.0260		ug/Sample		09/12/14 09:07	09/12/14 13:36	1

Lab Sample ID: LCS 550-44390/13-A
Matrix: Air
Analysis Batch: 44451

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 44390

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.500	0.5653		ug/Sample		113	74 - 127		

Lab Sample ID: LCSD 550-44390/14-A
Matrix: Air
Analysis Batch: 44451

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 44390

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.500	0.5625		ug/Sample		112	74 - 127	0	20

QC Association Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

IH - Metals

Prep Batch: 44390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-31103-1	SG - 3	Total/NA	Air	Tube Prep	
550-31103-2	SG - 2	Total/NA	Air	Tube Prep	
550-31103-3	SG - 4	Total/NA	Air	Tube Prep	
550-31103-4	SG - 1S	Total/NA	Air	Tube Prep	
550-31103-5	SG - 7	Total/NA	Air	Tube Prep	
550-31103-6	SG - 1D	Total/NA	Air	Tube Prep	
550-31103-7	SG - 7D	Total/NA	Air	Tube Prep	
550-31103-8	Field Blank	Total/NA	Air	Tube Prep	
LCS 550-44390/13-A	Lab Control Sample	Total/NA	Air	Tube Prep	
LCSD 550-44390/14-A	Lab Control Sample Dup	Total/NA	Air	Tube Prep	
MB 550-44390/12-A	Method Blank	Total/NA	Air	Tube Prep	

Analysis Batch: 44451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-31103-1	SG - 3	Total/NA	Air	6009	44390
550-31103-2	SG - 2	Total/NA	Air	6009	44390
550-31103-3	SG - 4	Total/NA	Air	6009	44390
550-31103-4	SG - 1S	Total/NA	Air	6009	44390
550-31103-5	SG - 7	Total/NA	Air	6009	44390
550-31103-6	SG - 1D	Total/NA	Air	6009	44390
550-31103-7	SG - 7D	Total/NA	Air	6009	44390
550-31103-8	Field Blank	Total/NA	Air	6009	44390
LCS 550-44390/13-A	Lab Control Sample	Total/NA	Air	6009	44390
LCSD 550-44390/14-A	Lab Control Sample Dup	Total/NA	Air	6009	44390
MB 550-44390/12-A	Method Blank	Total/NA	Air	6009	44390

Client Sample ID: SG - 3

Lab Sample ID: 550-31103-1
Matrix: Air
Date Collected: 09/04/14 00:00
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 13:53	JRC	TAL PHX

Client Sample ID: SG - 2

Lab Sample ID: 550-31103-2
Matrix: Air
Date Collected: 09/04/14 00:00
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 13:55	JRC	TAL PHX

Client Sample ID: SG - 4

Lab Sample ID: 550-31103-3
Matrix: Air
Date Collected: 09/04/14 00:00
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 13:56	JRC	TAL PHX

Client Sample ID: SG - 1S

Lab Sample ID: 550-31103-4
Matrix: Air
Date Collected: 09/05/14 00:00
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 13:58	JRC	TAL PHX

Client Sample ID: SG - 7

Lab Sample ID: 550-31103-5
Matrix: Air
Date Collected: 09/05/14 00:00
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 14:03	JRC	TAL PHX

Client Sample ID: SG - 1D

Lab Sample ID: 550-31103-6
Matrix: Air
Date Collected: 09/05/14 00:00
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 14:04	JRC	TAL PHX

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Client Sample ID: SG - 7D

Lab Sample ID: 550-31103-7

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 14:06	JRC	TAL PHX

Client Sample ID: Field Blank

Lab Sample ID: 550-31103-8

Date Collected: 09/05/14 00:00
Matrix: Air
Date Received: 09/06/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			44390	09/12/14 09:07	JRC	TAL PHX
Total/NA	Analysis	6009		1	44451	09/12/14 14:07	JRC	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Laboratory: TestAmerica Phoenix

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA-LAP, LLC	IHLAP		154268	07-01-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Method	Method Description	Protocol	Laboratory
6009	Mercury (CVAA)	NIOSH	TAL PHX

Protocol References:

NIOSH = NIOSH Manual Of Analytical Methods, National Institute For Occupational Safety And Health, 4th Edition, August 1994.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

31103

9/14/2014

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

Lab Number:

Company: Bennett & Williams Environmental Consultants		Page 1 of 1	
Contact Name: Linda Aller		Sampler Name and Phone Number: Linda Aller / Matthew Swartz / Kerry Zwiersehke	
E-Mail Address:	Phone: (614) 361 0153	Project Name: Fairfield County	
Address: 9x Commerce Park Drive East	Suite C	Project Number: 14-34	
City, State, Zip: Westerville	OH 43082	P.O. Number: —	Data Package:
Send Report To: Linda Aller	Phone: (614) 361 0153	Hardcopy Results: Y (N)	Standard Level II:
E-Mail Address: laller@bennettandwilliams.com		E-Mail Results: (Y) N	Level III:
Send Invoice To: Linda Aller	Phone: (614) 361 0153	EDD: Y N	Level IV:
E-Mail Address: laller@bennettandwilliams.com			

Sample Receipt

Temperature 20 °C
Sample Seals Intact Yes ____ No ____
Sample Seals Intact Yes ____ No ____
Total # of Samples ____

NO ICE

Turn Around Request

____ Same Day ____ 3 Business Days
____ 1 Business Day ____ 4 Business Days
____ 2 Business Days X 5 Business Days (Standard)

Rushes are subject to availability (Surcharges apply)

550-31103 Chain of Custody

Sample Information

Lab # (Internal Use Only)	Media Type: Filter, Passive Badge, Tube or Wipe	Pump ID Number	Flow Rate (Liters/minute)	Sample Identification Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled (Badge Only)	Total Volume (Liters)	Area Wiped in cm2	Sampling Temperature (°C)	Sampling Pressure (mmHg)	Analysis Method(s)/Analyte(s): Nickel Compounds
-01	Tube	B200150	0.200	SG-3	9/4/14	11:24	12:09p	45	9	—	—	—	X
-02	Tube	B200150	0.2	SG-2	9/4/14	12:31p	1:16p	45	9	—	—	—	X
-03	Tube	B200150	0.2	SG-4	9/4/14	1:32p	2:17p	45	9	—	—	—	X
-04	Tube	B199308	0.2	SG-15	9/5/14	8:01a	8:46a	45	9	—	—	—	X
-05	Tube	B198803	0.2	SG-7	9/5/14	9:00a	9:45a	45	9	—	—	—	X
-06	Tube	B199308	0.2	SG-10	9/5/14	10:02	10:47	45	9	—	—	—	X
-07	Tube	B198805	0.2	SG-70	9/5/14	11:00	11:45	45	9	—	—	—	X
-08	Tube	—	—	Field Blank	9/5/14	—	10:02	—	—	—	—	—	X

Instructions / Special Requirements

Date:	Time:	Samples Relinquished By:	Received By:
9/5/14	1:10p	Linda K. Aller	9-5-14 Gina Rivera 13:10
9-5-14	13:10	Gina Rivera, TestAmerica	9-6-14 0930

All services are performed subject to the Terms & Conditions on the reverse side

TAL-8225 (0414)

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 550-31103-1
SDG Number: 14-04

Login Number: 31103
List Number: 1
Creator: Doerr, Bret C

List Source: TestAmerica Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Measurement Uncertainty Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County

TestAmerica Job ID: 550-31103-1
SDG: 14-04

Analysis Method	Prep Method	Analyte	Percent Uncertainty (+/-)
6009	Tube Prep	Mercury	7.1

The uncertainty values represent an expanded uncertainty using a coverage factor of K = 2 to approximate a 95% confidence interval.

Appendix K

Analytical Results of Subsurface Soil Gas Samples for Napthalene (July 24, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-8587-1
Client Project/Site: Fairfield Co - Phase 2

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Beth Riley

Authorized for release by:
8/7/2014 9:30:33 AM

Beth Riley, Project Manager II
(714)258-8610
beth.riley@testamericainc.com

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-8587-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-8587-1

Receipt
The samples were received on 7/25/2014 8:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0º C.

GC/MS Semi VOA
Method(s) 8270C SIM: All QC and field samples were diluted 10X prior to analysis. If no additional dilutions were required, all reported results were used from this dilution data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

Client Sample ID: BW1-D — **Lab Sample ID: 320-8587-1**

No Detections.

Client Sample ID: BW7 — **Lab Sample ID: 320-8587-2**

No Detections.

Client Sample ID: FIELD BLANK — **Lab Sample ID: 320-8587-3**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: BW1-D

Lab Sample ID: 320-8587-1

Date Collected: 07/24/14 19:10
Matrix: Air
Date Received: 07/25/14 08:50
Sample Container: PUF

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		07/30/14 09:51	08/05/14 03:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*83*		*25 - 150*	*07/30/14 09:51*	*08/05/14 03:33*	*1*

Client Sample ID: BW7

Lab Sample ID: 320-8587-2

Date Collected: 07/24/14 19:37
Matrix: Air
Date Received: 07/25/14 08:50
Sample Container: PUF

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		07/30/14 09:51	08/05/14 04:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*73*		*25 - 150*	*07/30/14 09:51*	*08/05/14 04:10*	*1*

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-8587-3

Date Collected: 07/24/14 18:55
Matrix: Air
Date Received: 07/25/14 08:50
Sample Container: PUF

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		07/30/14 09:51	08/05/14 04:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*68*		*25 - 150*	*07/30/14 09:51*	*08/05/14 04:46*	*1*

Isotope Dilution Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		ıphthalene-							
Lab Sample ID	**Client Sample ID**	**(25-150)**							
320-8587-1	BW1-D	83							
320-8587-2	BW7	73							
320-8587-3	FIELD BLANK	68							
LCS 320-48549/2-B	Lab Control Sample	75							
MB 320-48549/1-B	Method Blank	71							

Surrogate Legend

Naphthalene-d8 = Naphthalene-d8

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 320-48549/1-B
Matrix: Air
Analysis Batch: 48986

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48550

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		07/30/14 09:51	08/05/14 02:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*71*		*25 - 150*	*07/30/14 09:51*	*08/05/14 02:20*	*1*

Lab Sample ID: LCS 320-48549/2-B
Matrix: Air
Analysis Batch: 48986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48550

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			0.00200	0.00195		ug/L		97	60 - 120		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Naphthalene-d8	*75*		*25 - 150*

QC Association Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

GC/MS Semi VOA

Pre Prep Batch: 48549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-8587-1	BW1-D	Total/NA	Air	PUF to Air	
320-8587-2	BW7	Total/NA	Air	PUF to Air	
320-8587-3	FIELD BLANK	Total/NA	Air	PUF to Air	
LCS 320-48549/2-B	Lab Control Sample	Total/NA	Air	PUF to Air	
MB 320-48549/1-B	Method Blank	Total/NA	Air	PUF to Air	

Prep Batch: 48550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-8587-1	BW1-D	Total/NA	Air	TO-13A	48549
320-8587-2	BW7	Total/NA	Air	TO-13A	48549
320-8587-3	FIELD BLANK	Total/NA	Air	TO-13A	48549
LCS 320-48549/2-B	Lab Control Sample	Total/NA	Air	TO-13A	48549
MB 320-48549/1-B	Method Blank	Total/NA	Air	TO-13A	48549

Analysis Batch: 48986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-8587-1	BW1-D	Total/NA	Air	8270C SIM	48550
320-8587-2	BW7	Total/NA	Air	8270C SIM	48550
320-8587-3	FIELD BLANK	Total/NA	Air	8270C SIM	48550
LCS 320-48549/2-B	Lab Control Sample	Total/NA	Air	8270C SIM	48550
MB 320-48549/1-B	Method Blank	Total/NA	Air	8270C SIM	48550

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

Client Sample ID: BW1-D

Lab Sample ID: 320-8587-1

Date Collected: 07/24/14 19:10

Matrix: Air

Date Received: 07/25/14 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					48549	07/30/14 09:48	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	48550	07/30/14 09:51	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	48986	08/05/14 03:33	YPH	TAL SAC

Client Sample ID: BW7

Lab Sample ID: 320-8587-2

Date Collected: 07/24/14 19:37

Matrix: Air

Date Received: 07/25/14 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					48549	07/30/14 09:48	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	48550	07/30/14 09:51	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	48986	08/05/14 04:10	YPH	TAL SAC

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-8587-3

Date Collected: 07/24/14 18:55

Matrix: Air

Date Received: 07/25/14 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					48549	07/30/14 09:48	SKV	TAL SAC
Total/NA	Prep	TO-13A			1 meter3	0.5 mL	48550	07/30/14 09:51	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	1 meter3	0.5 mL	48986	08/05/14 04:46	YPH	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	CA200005	01-29-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

Method	Method Description	Protocol	Laboratory
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL SAC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8587-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-8587-1	BW1-D	Air	07/24/14 19:10	07/25/14 08:50
320-8587-2	BW7	Air	07/24/14 19:37	07/25/14 08:50
320-8587-3	FIELD BLANK	Air	07/24/14 18:55	07/25/14 08:50

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

Lab Number:

Company: Bennett & Williams
Page 1 of 1
Contact Name: Linda Aller
Sampler Name and Phone Number: Linda Aller 614 361 0153
E-Mail Address:
Phone: 614 361 0153
Project Name: Fairfield Co - Phase 2
Address: 98 County Line Rd West - Suite C
Project Number: 14-04
City, State, Zip: Westerville, OH 43082
P.O. Number:
Data Package:
Send Report To: Linda Aller
Phone:
Hardcopy Results: Y N
Standard Level II:
E-Mail Address: laller@bennettandwilliams.com
E-Mail Results: (Y) N
Level III:
Send Invoice To: Karen Ballou
Phone: 614 882 9122
EDD: Y N
Level IV:
E-Mail Address: kballou@bennettandwilliams

Sample Receipt

Temperature 5.0 °C
Sample Seals Intact Yes X No
Sample Seals Intact Yes No
Total # of Samples

Turn Around Request

Same Day
1 Business Day
2 Business Days
3 Business Days
4 Business Days
5 Business Days (Standard)

Rushes are subject to availability (Surcharges apply)

Sample Information

Lab ID (Internal Use Only)	Media Type Filter, Passive Badge, Summa, Tube, Wipe	Canister/Flow Controller Number	Flow Rate (Liters/minute)	Sample Identification Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled (Badge Only)	Total Volume (Liters)	Area Wiped (in/cm2)	Sampling Temperature (°C)	Sampling Pressure (mmHg)	TO-13 SIM							
BWEC072114-1	Tube	B202588	0.2	BW1-D	7/24/14	07:40	1910		138				X							
BWEC072114-2	Tube	B19876B	0.2	BW7	7/24/14	0807	1937		138				X							
BWEC072114-3	Tube	—	—	Field Blank	7/24/14		1855		—				X							

320-8587 Chain of Custody

Instructions / Special Requirements

Date	Time	Samples Relinquished By	Received By
7/24/14	7:45p	Linda K Aller sealing for Fed-X	Stephanie Edwards 7/25/14 8:50

5.0°C

All services are performed subject to the Terms & Conditions on the reverse side

TAL-8225 (0414)

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 320-8587-1

Login Number: 8587

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	seal
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix L

Analytical Results of Subsurface Soil Gas Samples for Napthalene (September 4, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-9263-1
Client Project/Site: Fairfield Co

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Beth Riley

Authorized for release by:
9/12/2014 8:41:44 AM

Beth Riley, Project Manager II
(714)258-8610
beth.riley@testamericainc.com

Table of Contents

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-9263-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-9263-1

Receipt
The samples were received on 9/6/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

GC/MS Semi VOA
Method(s) 8270C SIM: All QC and field samples were diluted 10X prior to analysis. If no additional dilutions were required, all reported results were used from this dilution data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Client Sample ID: SG-1D — **Lab Sample ID: 320-9263-1**

No Detections.

Client Sample ID: SG-7 — **Lab Sample ID: 320-9263-2**

No Detections.

Client Sample ID: FIELD BLANK — **Lab Sample ID: 320-9263-3**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Client Sample ID: SG-1D

Lab Sample ID: 320-9263-1

Date Collected: 09/04/14 08:02
Matrix: Air
Date Received: 09/05/14 09:00
Sample Container: PUF

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		09/09/14 13:24	09/10/14 17:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*61*		*25 - 150*	*09/09/14 13:24*	*09/10/14 17:08*	*1*

Client Sample ID: SG-7

Lab Sample ID: 320-9263-2

Date Collected: 09/04/14 11:02
Matrix: Air
Date Received: 09/05/14 09:00
Sample Container: PUF

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		09/09/14 13:24	09/10/14 17:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*69*		*25 - 150*	*09/09/14 13:24*	*09/10/14 17:45*	*1*

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-9263-3

Date Collected: 09/04/14 00:00
Matrix: Air
Date Received: 09/05/14 09:00
Sample Container: PUF

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		09/09/14 13:24	09/10/14 18:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*67*		*25 - 150*	*09/09/14 13:24*	*09/10/14 18:22*	*1*

Isotope Dilution Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	NPT (25-150)							
320-9263-1	SG-1D	61							
320-9263-2	SG-7	69							
320-9263-3	FIELD BLANK	67							
LCS 320-51897/2-B	Lab Control Sample	72							
MB 320-51897/1-B	Method Blank	70							

Surrogate Legend

NPT = Naphthalene-d8

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 320-51897/1-B
Matrix: Air
Analysis Batch: 52040

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 51902

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		09/09/14 13:24	09/10/14 15:55	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*70*		*25 - 150*	*09/09/14 13:24*	*09/10/14 15:55*	*1*

Lab Sample ID: LCS 320-51897/2-B
Matrix: Air
Analysis Batch: 52040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 51902

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			0.00200	0.00238		ug/L		119	60 - 120		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Naphthalene-d8	*72*		*25 - 150*

QC Association Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

GC/MS Semi VOA

Pre Prep Batch: 51897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-9263-1	SG-1D	Total/NA	Air	PUF to Air	
320-9263-2	SG-7	Total/NA	Air	PUF to Air	
320-9263-3	FIELD BLANK	Total/NA	Air	PUF to Air	
LCS 320-51897/2-B	Lab Control Sample	Total/NA	Air	PUF to Air	
MB 320-51897/1-B	Method Blank	Total/NA	Air	PUF to Air	

Prep Batch: 51902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-9263-1	SG-1D	Total/NA	Air	TO-13A	51897
320-9263-2	SG-7	Total/NA	Air	TO-13A	51897
320-9263-3	FIELD BLANK	Total/NA	Air	TO-13A	51897
LCS 320-51897/2-B	Lab Control Sample	Total/NA	Air	TO-13A	51897
MB 320-51897/1-B	Method Blank	Total/NA	Air	TO-13A	51897

Analysis Batch: 52040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-9263-1	SG-1D	Total/NA	Air	8270C SIM	51902
320-9263-2	SG-7	Total/NA	Air	8270C SIM	51902
320-9263-3	FIELD BLANK	Total/NA	Air	8270C SIM	51902
LCS 320-51897/2-B	Lab Control Sample	Total/NA	Air	8270C SIM	51902
MB 320-51897/1-B	Method Blank	Total/NA	Air	8270C SIM	51902

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Client Sample ID: SG-1D

Lab Sample ID: 320-9263-1

Date Collected: 09/04/14 08:02

Matrix: Air

Date Received: 09/05/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					51897	09/09/14 13:20	CFR	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	51902	09/09/14 13:24	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	52040	09/10/14 17:08	YPH	TAL SAC

Client Sample ID: SG-7

Lab Sample ID: 320-9263-2

Date Collected: 09/04/14 11:02

Matrix: Air

Date Received: 09/05/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					51897	09/09/14 13:20	CFR	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	51902	09/09/14 13:24	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	52040	09/10/14 17:45	YPH	TAL SAC

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-9263-3

Date Collected: 09/04/14 00:00

Matrix: Air

Date Received: 09/05/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					51897	09/09/14 13:20	CFR	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	51902	09/09/14 13:24	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	52040	09/10/14 18:22	YPH	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	CA200005	01-29-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Method	Method Description	Protocol	Laboratory
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL SAC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-9263-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-9263-1	SG-1D	Air	09/04/14 08:02	09/05/14 09:00
320-9263-2	SG-7	Air	09/04/14 11:02	09/05/14 09:00
320-9263-3	FIELD BLANK	Air	09/04/14 00:00	09/05/14 09:00

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

Lab Number:

Company: Bennett & Williams Environmental Consultants	Page 1 of 1
Contact Name: Linda Aller	Sampler Name and Phone Number: Linda Aller / Matthew Swartz / Kerry Zwierschke
E-Mail Address: — Phone: 614 361 0153	Project Name: Fairfield Co
Address: 98 County Line Rd West Suite C	Project Number: 14-04
City, State, Zip: Westerville, OH 43082	P.O. Number: — Data Package:
Send Report To: Linda Aller — Phone: (614) 361-0153	Hardcopy Results: Y (N) — Standard Level II:
E-Mail Address: laller@bennettandwilliams.com	E-Mail Results: (Y) N — Level III:
Send Invoice To: Linda Aller — Phone: (614) 361-0153	EDD: Y N — Level IV:
E-Mail Address: laller@bennettandwilliams.com	

Sample Receipt

Temperature ______ °C

Sample Seals Intact Yes____ No____

Sample Seals Intact Yes____ No____

Total # of Samples ______

Turn Around Requested

___ Same Day ___ 3 Business Days

___ 1 Business Day ___ 4 Business Days

___ 2 Business Days X 5 Business Days (Standard)

Rushes are subject to availability (Surcharges apply)

320-9263 Chain of Custody

Sample Information / **Analysis Method(s)/Analyte(s)**

Sample ID (Lab Use Only)	Media Type	Media ID Number	Flow Rate (Liters/min)	Sample Identification/Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled	Total Volume (Liters)	Area Wiped (cm2)	Sampling Temperature (°C)	Sampling Pressure (mmHg)	TO-13 PAH-SIM
BWEC072114-12	Tube	B198768	0.24/min	SG-1D	9/4/14	8:02A	7:32P	690	138	—	—	—	X
BWEC072114-13	Tube	B213568	0.24/min	SG-7	9/4/14	11:02A	10:32P	690	138	—	—	—	X
BWEC072114-14	Tube	—	—	Field Blank	9/4/14	—	8:00P	—	—	—	—	—	X

Instructions / Special Requirements

Date	Time	Samples Relinquished By	Received By
9/5/14	1:05p	Linda Aller	9-5-14 Gina Rivera 13:05
9-5-14	13:10	Gina Rivera TestAmerica	[signature] 9-6-14 900 3.8°C

TAL-8225 (0414)

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 320-9263-1

Login Number: 9263

List Source: TestAmerica Sacramento

List Number: 1

Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix M

Analytical Results of Sub-Slab Vapor Samples And Indoor Air for Mercury (August 5, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-29350-1
TestAmerica Sample Delivery Group: 14-04
Client Project/Site: Fairfield County-Phase II

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Authorized for release by:
8/18/2014 8:37:36 AM

Carlene McCutcheon, Project Manager II
(602)659-7612
carlene.mccutcheon@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Analyses included in this report were performed by TestAmerica Phoenix, 4625 E. Cotton Center Boulevard, Building 3, Suite 189, Phoenix, AZ 85040.

TestAmerica Phoenix (Lab ID 154268) is accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program for the analytical techniques noted on the scope of accreditation for the following methods:

NIOSH 0500, NIOSH 0600, NIOSH 1003, NIOSH 1005, NIOSH 1007, NIOSH 1010, NIOSH 1015, NIOSH 1022, NIOSH 1300, NIOSH 1400, NIOSH 1401, NIOSH 1403, NIOSH 1405, NIOSH 1450, NIOSH 1457, NIOSH 1500, NIOSH 1501, NIOSH 1550, NIOSH 1602, NIOSH 1604, NIOSH 1606, NIOSH 1609, NIOSH 1610, NIOSH 1611, NIOSH 1613, NIOSH 1615, NIOSH 2000, NIOSH 2016, NIOSH 2532, NIOSH 2546, NIOSH 2551, NIOSH 5000, NIOSH 5039, NIOSH 5503, NIOSH 5506, NIOSH 5523, NIOSH 5600, NIOSH 6006, NIOSH 6009, NIOSH 6010, NIOSH 6013, NIOSH 7300, NIOSH 7303, NIOSH 7600, NIOSH 7903, NIOSH 9100, NIOSH 9102, EPA IP-6A, EPA IP-6C, OSHA 7, OSHA 42, OSHA 47, OSHA 48, OSHA 64, OSHA 69, OSHA 111, OSHA ID-121, OSHA ID-125G, OSHA ID-140, OSHA ID-188, OSHA ID-215, OSHA 1001, OSHA 1002, OSHA 1003, OSHA 1004, OSHA 1005, OSHA 1007, OSHA 1009, OSHA 1014 and OSHA Chemical and Sampling Information for Silane. Volatile organic compounds on 3M Organic Vapor Monitors, Assay Technology Passive Monitors and SKC Passive Monitors. Formaldehyde and other aldehydes and ketones on Assay Technology passive monitor and SKC Umex 100 passive sampler by EPA TO-11A and OSHA 1007. Radiello diffusive sampler for hydrogen sulfide.

TestAmerica Phoenix also holds NELAC accreditation through the State of Oregon (AZ100001) for the analytical techniques noted on the scope of accreditation and the State of New York (11898) for NIOSH 6009, NIOSH 7300, EPA TO-10A, EPA TO-11A and EPA TO-17.

Analytical Comments:

Unless otherwise noted, all method blanks and laboratory control spikes met method and/or laboratory quality control objectives for the analyses included in this report.

Unless otherwise noted, sample results have been corrected for method blank values.

NIOSH Method 7300 analyses are performed using a modified digestion procedure to eliminate the use of perchloric acid.

Carlene McCutcheon
Project Manager II
8/18/2014 8:37:36 AM

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 550-29350-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-29350-1

Comments
No additional comments.

Receipt
The samples were received on 8/7/2014 9:30 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 20.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

IH - Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-29350-1	AA-1	Air	08/05/14 00:00	08/07/14 09:30
550-29350-2	AA-2	Air	08/05/14 00:00	08/07/14 09:30
550-29350-3	AA-3	Air	08/05/14 00:00	08/07/14 09:30
550-29350-4	AA-4	Air	08/05/14 00:00	08/07/14 09:30
550-29350-5	AA-5	Air	08/05/14 00:00	08/07/14 09:30
550-29350-6	SS-5	Air	08/05/14 00:00	08/07/14 09:30
550-29350-7	SS-4	Air	08/05/14 00:00	08/07/14 09:30
550-29350-8	SS-1	Air	08/05/14 00:00	08/07/14 09:30
550-29350-9	SS-2	Air	08/05/14 00:00	08/07/14 09:30
550-29350-10	SS-3	Air	08/05/14 00:00	08/07/14 09:30
550-29350-11	Field Blank	Air	08/05/14 00:00	08/07/14 09:30

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Client Sample ID: AA-1 — **Lab Sample ID: 550-29350-1**

No Detections.

Client Sample ID: AA-2 — **Lab Sample ID: 550-29350-2**

No Detections.

Client Sample ID: AA-3 — **Lab Sample ID: 550-29350-3**

No Detections.

Client Sample ID: AA-4 — **Lab Sample ID: 550-29350-4**

No Detections.

Client Sample ID: AA-5 — **Lab Sample ID: 550-29350-5**

No Detections.

Client Sample ID: SS-5 — **Lab Sample ID: 550-29350-6**

No Detections.

Client Sample ID: SS-4 — **Lab Sample ID: 550-29350-7**

No Detections.

Client Sample ID: SS-1 — **Lab Sample ID: 550-29350-8**

No Detections.

Client Sample ID: SS-2 — **Lab Sample ID: 550-29350-9**

No Detections.

Client Sample ID: SS-3 — **Lab Sample ID: 550-29350-10**

No Detections.

Client Sample ID: Field Blank — **Lab Sample ID: 550-29350-11**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Client Sample ID: AA-1

Lab Sample ID: 550-29350-1
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30
Sample Air Volume: 48 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000543			0.0260	08/13/14 13:46	08/13/14 15:02	1

Client Sample ID: AA-2

Lab Sample ID: 550-29350-2
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30
Sample Air Volume: 48 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000543			0.0260	08/13/14 13:46	08/13/14 15:04	1

Client Sample ID: AA-3

Lab Sample ID: 550-29350-3
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30
Sample Air Volume: 48 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000543			0.0260	08/13/14 13:46	08/13/14 15:05	1

Client Sample ID: AA-4

Lab Sample ID: 550-29350-4
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30
Sample Air Volume: 48 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000543			0.0260	08/13/14 13:46	08/13/14 15:11	1

Client Sample ID: AA-5

Lab Sample ID: 550-29350-5
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30
Sample Air Volume: 48 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000543			0.0260	08/13/14 13:46	08/13/14 15:13	1

Client Sample ID: SS-5 — Lab Sample ID: 550-29350-6

Date Collected: 08/05/14 00:00
Date Received: 08/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	08/13/14 13:46	08/13/14 15:14	1

Client Sample ID: SS-4 — Lab Sample ID: 550-29350-7

Date Collected: 08/05/14 00:00
Date Received: 08/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	08/13/14 13:46	08/13/14 15:16	1

Client Sample ID: SS-1 — Lab Sample ID: 550-29350-8

Date Collected: 08/05/14 00:00
Date Received: 08/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	08/13/14 13:46	08/13/14 15:21	1

Client Sample ID: SS-2 — Lab Sample ID: 550-29350-9

Date Collected: 08/05/14 00:00
Date Received: 08/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	08/13/14 13:46	08/13/14 15:22	1

Client Sample ID: SS-3 — Lab Sample ID: 550-29350-10

Date Collected: 08/05/14 00:00
Date Received: 08/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	08/13/14 13:46	08/13/14 15:24	1

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Client Sample ID: Field Blank
Date Collected: 08/05/14 00:00
Date Received: 08/07/14 09:30
Sample Air Volume: 0 L

Lab Sample ID: 550-29350-11
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260				0.0260	08/13/14 13:46	08/13/14 15:26	1

Method: 6009 - Mercury (CVAA)

Lab Sample ID: MB 550-41902/12-A
Matrix: Air
Analysis Batch: 41939

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 41902

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.0260		0.0260		ug/Sample		08/13/14 13:45	08/13/14 14:50	1

Lab Sample ID: LCS 550-41902/13-A
Matrix: Air
Analysis Batch: 41939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41902

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.500	0.5675		ug/Sample		114	74 - 127		

Lab Sample ID: LCSD 550-41902/14-A
Matrix: Air
Analysis Batch: 41939

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 41902

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.500	0.5476		ug/Sample		110	74 - 127	4	20

IH - Metals

Prep Batch: 41902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-29350-1	AA-1	Total/NA	Air	Tube Prep	
550-29350-2	AA-2	Total/NA	Air	Tube Prep	
550-29350-3	AA-3	Total/NA	Air	Tube Prep	
550-29350-4	AA-4	Total/NA	Air	Tube Prep	
550-29350-5	AA-5	Total/NA	Air	Tube Prep	
550-29350-6	SS-5	Total/NA	Air	Tube Prep	
550-29350-7	SS-4	Total/NA	Air	Tube Prep	
550-29350-8	SS-1	Total/NA	Air	Tube Prep	
550-29350-9	SS-2	Total/NA	Air	Tube Prep	
550-29350-10	SS-3	Total/NA	Air	Tube Prep	
550-29350-11	Field Blank	Total/NA	Air	Tube Prep	
LCS 550-41902/13-A	Lab Control Sample	Total/NA	Air	Tube Prep	
LCSD 550-41902/14-A	Lab Control Sample Dup	Total/NA	Air	Tube Prep	
MB 550-41902/12-A	Method Blank	Total/NA	Air	Tube Prep	

Analysis Batch: 41939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-29350-1	AA-1	Total/NA	Air	6009	41902
550-29350-2	AA-2	Total/NA	Air	6009	41902
550-29350-3	AA-3	Total/NA	Air	6009	41902
LCS 550-41902/13-A	Lab Control Sample	Total/NA	Air	6009	41902
LCSD 550-41902/14-A	Lab Control Sample Dup	Total/NA	Air	6009	41902
MB 550-41902/12-A	Method Blank	Total/NA	Air	6009	41902

Analysis Batch: 41944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-29350-4	AA-4	Total/NA	Air	6009	41902
550-29350-5	AA-5	Total/NA	Air	6009	41902
550-29350-6	SS-5	Total/NA	Air	6009	41902
550-29350-7	SS-4	Total/NA	Air	6009	41902
550-29350-8	SS-1	Total/NA	Air	6009	41902
550-29350-9	SS-2	Total/NA	Air	6009	41902
550-29350-10	SS-3	Total/NA	Air	6009	41902
550-29350-11	Field Blank	Total/NA	Air	6009	41902

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Client Sample ID: AA-1
Lab Sample ID: 550-29350-1
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41939	08/13/14 15:02	JRC	TAL PHX

Client Sample ID: AA-2
Lab Sample ID: 550-29350-2
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41939	08/13/14 15:04	JRC	TAL PHX

Client Sample ID: AA-3
Lab Sample ID: 550-29350-3
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41939	08/13/14 15:05	JRC	TAL PHX

Client Sample ID: AA-4
Lab Sample ID: 550-29350-4
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:11	JRC	TAL PHX

Client Sample ID: AA-5
Lab Sample ID: 550-29350-5
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:13	JRC	TAL PHX

Client Sample ID: SS-5
Lab Sample ID: 550-29350-6
Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:14	JRC	TAL PHX

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Client Sample ID: SS-4

Lab Sample ID: 550-29350-7

Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:16	JRC	TAL PHX

Client Sample ID: SS-1

Lab Sample ID: 550-29350-8

Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:21	JRC	TAL PHX

Client Sample ID: SS-2

Lab Sample ID: 550-29350-9

Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:22	JRC	TAL PHX

Client Sample ID: SS-3

Lab Sample ID: 550-29350-10

Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:24	JRC	TAL PHX

Client Sample ID: Field Blank

Lab Sample ID: 550-29350-11

Date Collected: 08/05/14 00:00
Matrix: Air
Date Received: 08/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			41902	08/13/14 13:46	JRC	TAL PHX
Total/NA	Analysis	6009		1	41944	08/13/14 15:26	JRC	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Laboratory: TestAmerica Phoenix

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA-LAP, LLC	IHLAP		154268	07-01-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Method	Method Description	Protocol	Laboratory
6009	Mercury (CVAA)	NIOSH	TAL PHX

Protocol References:

NIOSH = NIOSH Manual Of Analytical Methods, National Institute For Occupational Safety And Health, 4th Edition, August 1994.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

8/18/2014

Lab Number: 550-29350

Company: Bennett & Williams		Page 1 of 1	
Contact Name: LINDA ALLER		Sampler Name and Phone Number: LINDA ALLER (614)361-0153	
E-Mail Address: lallen@bennettandwilliams.com	Phone: (614)361-0153	Project Name: Fairfield County - Phase II	
Address: 78 County Line Road West - Suite C		Project Number: 14-04	
City, State, Zip: WESTERVILLE, OHIO 43082		P.O. Number:	Data Pack
Send Report To: LINDA ALLER	Phone:	Hardcopy Results: Y N	Standard
E-Mail Address: lallen@bennettandwilliams.com		E-Mail Results: (Y) N	Level III:
Send Invoice To: Karen Ballou	Phone (614)882-9122	EDD: Y N	Level IV:
E-Mail Address: kballou@bennettandwilliams.com			

550-29350 Chain of Custody

Sample Receipt:
Temperature 20 °C / Amb
Sample Seals Intact: Yes ____ No ____
Sample Seals Intact: Yes ____ No ____
Total # of Samples 11

Turn Around Request:
____ Same Day ____ 3 Business Days
____ 1 Business Day ____ 4 Business Days
____ 2 Business Days ____ 5 Business Days (Standard)
Rushes are subject to availability (Surcharges apply)

Analysis Method(s)/Analyte(s): N105H 6009 / 14g

Sample Information

Lab # (Internal Use Only)	Media Type: Filter, Passive Badge, Tube or Wipe	Pump ID Number	Flow Rate (Liters/minute)	Sample Identification Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled (Badge Only)	Total Volume (Liters)	Area Wiped in cm2	Sampling Temperature (°C)	Sampling Pressure (mmHg)	N105H
-01	Tube	B20580B	0.100	AA-1	8/5/14	7:43	3:13		48liter				X
-02	Tube	B20063B	0.100	AA-2	8/5/14	7:55	3:55		48liter				X
-03	Tube	B19880B	0.100	AA-3	8/5/14	8:06	4:06		48liter				X
-04	Tube	B20071B	0.100	AA-4	8/5/14	8:25	4:25		48liter				X
-05	Tube	B20015B	0.100	AA-5	8/5/14	8:47	4:47		48liter				X
-06	Tube	B20257B	0.200	SS-5	8/5/14	8:52	9:37		9liter				X
-07	Tube	B20257B	0.200	SS-4	8/5/14	9:48	10:33		9liter				X
-08	Tube	B20257B	0.200	SS-1	8/5/14	10:37	11:27		9liter				X
-09	Tube	B20257B	0.200	SS-2	8/5/14	11:38	12:23		9liter				X
-10	Tube	B20257B	0.200	SS-3	8/5/14	12:32	1:17		9liter				X
-11	Tube	—	—	Field Blank	8/5/14	1:25	—		—				

Instructions / Special Requirements

Date:	Time:	Samples Relinquished By:	Received By:
8/6/14	9:03	Linda R Aller	Gina Rivera TestAmerica 8-6-14 0900
8-6-14	1950	Gina Rivera TestAmerica	
8-7-14	0900		

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 550-29350-1
SDG Number: 14-04

Login Number: 29350
List Number: 1
Creator: Gravlin, Andrea

List Source: TestAmerica Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Measurement Uncertainty Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield County-Phase II

TestAmerica Job ID: 550-29350-1
SDG: 14-04

Analysis Method	Prep Method	Analyte	Percent Uncertainty (+/-)
6009	Tube Prep	Mercury	7.1

The uncertainty values represent an expanded uncertainty using a coverage factor of K = 2 to approximate a 95% confidence interval.

Appendix N

Analytical Results of Sub-Slab Vapor Samples And Indoor Air for Naphthalene (August 4, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-8746-1
Client Project/Site: Fairfield Co - Phase 2

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Beth Riley

Authorized for release by:
8/19/2014 7:06:44 AM

Beth Riley, Project Manager II
(714)258-8610
beth.riley@testamericainc.com

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-8746-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-8746-1

Receipt
The samples were received on 8/6/2014 9:20 AM; the temperature of the cooler at receipt was 12.9º C.
After reviewing the condition of the samples as recieved, including the packaging, our Technical Expert has determined that there is minimal impact to the samples as a result of the temperature exceedance. Between the snug fit of the end caps, and the secondary containment in the baggie, no loss of naphthalene is anticipated.

GC/MS Semi VOA
Method(s) 8270C SIM: All QC and field samples were diluted 10X prior to analysis. If no additional dilutions were required, all reported results were used from this dilution data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Client Sample ID: SS-1 — **Lab Sample ID: 320-8746-1**

No Detections.

Client Sample ID: AA-1 — **Lab Sample ID: 320-8746-2**

No Detections.

Client Sample ID: SS-5 — **Lab Sample ID: 320-8746-3**

No Detections.

Client Sample ID: AA-5 — **Lab Sample ID: 320-8746-4**

No Detections.

Client Sample ID: AA-4 — **Lab Sample ID: 320-8746-5**

No Detections.

Client Sample ID: AA-3 — **Lab Sample ID: 320-8746-6**

No Detections.

Client Sample ID: AA-2 — **Lab Sample ID: 320-8746-7**

No Detections.

Client Sample ID: FIELD BLANK — **Lab Sample ID: 320-8746-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SS-1

Lab Sample ID: 320-8746-1

Date Collected: 08/04/14 18:40
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 18:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*77*		*25 - 150*	*08/08/14 14:01*	*08/11/14 18:30*	*1*

Client Sample ID: AA-1

Lab Sample ID: 320-8746-2

Date Collected: 08/04/14 18:07
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 19:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*83*		*25 - 150*	*08/08/14 14:01*	*08/11/14 19:06*	*1*

Client Sample ID: SS-5

Lab Sample ID: 320-8746-3

Date Collected: 08/04/14 19:54
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 19:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*78*		*25 - 150*	*08/08/14 14:01*	*08/11/14 19:43*	*1*

Client Sample ID: AA-5

Lab Sample ID: 320-8746-4

Date Collected: 08/04/14 18:34
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 20:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*83*		*25 - 150*	*08/08/14 14:01*	*08/11/14 20:20*	*1*

Client Sample ID: AA-4

Lab Sample ID: 320-8746-5

Date Collected: 08/04/14 18:45
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 20:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*80*		*25 - 150*	*08/08/14 14:01*	*08/11/14 20:56*	*1*

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Client Sample ID: AA-3

Lab Sample ID: 320-8746-6

Date Collected: 08/04/14 19:00
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 21:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*77*		*25 - 150*	*08/08/14 14:01*	*08/11/14 21:33*	*1*

Client Sample ID: AA-2

Lab Sample ID: 320-8746-7

Date Collected: 08/04/14 19:20
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		08/08/14 14:01	08/11/14 22:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*81*		*25 - 150*	*08/08/14 14:01*	*08/11/14 22:10*	*1*

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-8746-8

Date Collected: 08/04/14 16:10
Matrix: Air
Date Received: 08/06/14 09:20
Sample Container: Glass Fiber Filter

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		08/08/14 14:01	08/11/14 22:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*80*		*25 - 150*	*08/08/14 14:01*	*08/11/14 22:46*	*1*

Isotope Dilution Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		NPT							
Lab Sample ID	Client Sample ID	(25-150)							
320-8746-1	SS-1	77							
320-8746-2	AA-1	83							
320-8746-3	SS-5	78							
320-8746-4	AA-5	83							
320-8746-5	AA-4	80							
320-8746-6	AA-3	77							
320-8746-7	AA-2	81							
320-8746-8	FIELD BLANK	80							
LCS 320-49396/2-B	Lab Control Sample	81							
MB 320-49396/1-B	Method Blank	76							

Surrogate Legend

NPT = Naphthalene-d8

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 320-49396/1-B
Matrix: Air
Analysis Batch: 49525

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49397

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		08/08/14 14:01	08/11/14 17:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*76*		*25 - 150*	*08/08/14 14:01*	*08/11/14 17:16*	*1*

Lab Sample ID: LCS 320-49396/2-B
Matrix: Air
Analysis Batch: 49525

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			0.00200	0.00207		ug/L		104	60 - 120		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Naphthalene-d8	*81*		*25 - 150*

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

GC/MS Semi VOA

Pre Prep Batch: 49396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-8746-1	SS-1	Total/NA	Air	PUF to Air	
320-8746-2	AA-1	Total/NA	Air	PUF to Air	
320-8746-3	SS-5	Total/NA	Air	PUF to Air	
320-8746-4	AA-5	Total/NA	Air	PUF to Air	
320-8746-5	AA-4	Total/NA	Air	PUF to Air	
320-8746-6	AA-3	Total/NA	Air	PUF to Air	
320-8746-7	AA-2	Total/NA	Air	PUF to Air	
320-8746-8	FIELD BLANK	Total/NA	Air	PUF to Air	
LCS 320-49396/2-B	Lab Control Sample	Total/NA	Air	PUF to Air	
MB 320-49396/1-B	Method Blank	Total/NA	Air	PUF to Air	

Prep Batch: 49397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-8746-1	SS-1	Total/NA	Air	TO-13A	49396
320-8746-2	AA-1	Total/NA	Air	TO-13A	49396
320-8746-3	SS-5	Total/NA	Air	TO-13A	49396
320-8746-4	AA-5	Total/NA	Air	TO-13A	49396
320-8746-5	AA-4	Total/NA	Air	TO-13A	49396
320-8746-6	AA-3	Total/NA	Air	TO-13A	49396
320-8746-7	AA-2	Total/NA	Air	TO-13A	49396
320-8746-8	FIELD BLANK	Total/NA	Air	TO-13A	49396
LCS 320-49396/2-B	Lab Control Sample	Total/NA	Air	TO-13A	49396
MB 320-49396/1-B	Method Blank	Total/NA	Air	TO-13A	49396

Analysis Batch: 49525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-8746-1	SS-1	Total/NA	Air	8270C SIM	49397
320-8746-2	AA-1	Total/NA	Air	8270C SIM	49397
320-8746-3	SS-5	Total/NA	Air	8270C SIM	49397
320-8746-4	AA-5	Total/NA	Air	8270C SIM	49397
320-8746-5	AA-4	Total/NA	Air	8270C SIM	49397
320-8746-6	AA-3	Total/NA	Air	8270C SIM	49397
320-8746-7	AA-2	Total/NA	Air	8270C SIM	49397
320-8746-8	FIELD BLANK	Total/NA	Air	8270C SIM	49397
LCS 320-49396/2-B	Lab Control Sample	Total/NA	Air	8270C SIM	49397
MB 320-49396/1-B	Method Blank	Total/NA	Air	8270C SIM	49397

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Client Sample ID: SS-1

Lab Sample ID: 320-8746-1

Date Collected: 08/04/14 18:40

Matrix: Air

Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 18:30	YPH	TAL SAC

Client Sample ID: AA-1

Lab Sample ID: 320-8746-2

Date Collected: 08/04/14 18:07

Matrix: Air

Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 19:06	YPH	TAL SAC

Client Sample ID: SS-5

Lab Sample ID: 320-8746-3

Date Collected: 08/04/14 19:54

Matrix: Air

Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 19:43	YPH	TAL SAC

Client Sample ID: AA-5

Lab Sample ID: 320-8746-4

Date Collected: 08/04/14 18:34

Matrix: Air

Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 20:20	YPH	TAL SAC

Client Sample ID: AA-4

Lab Sample ID: 320-8746-5

Date Collected: 08/04/14 18:45

Matrix: Air

Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 20:56	YPH	TAL SAC

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Client Sample ID: AA-3

Lab Sample ID: 320-8746-6

Date Collected: 08/04/14 19:00
Matrix: Air
Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 21:33	YPH	TAL SAC

Client Sample ID: AA-2

Lab Sample ID: 320-8746-7

Date Collected: 08/04/14 19:20
Matrix: Air
Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	49525	08/11/14 22:10	YPH	TAL SAC

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-8746-8

Date Collected: 08/04/14 16:10
Matrix: Air
Date Received: 08/06/14 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					49396	08/08/14 13:56	SKV	TAL SAC
Total/NA	Prep	TO-13A			1 meter3	0.5 mL	49397	08/08/14 14:01	SKV	TAL SAC
Total/NA	Analysis	8270C SIM		1	1 meter3	0.5 mL	49525	08/11/14 22:46	YPH	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	CA200005	01-29-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Method	Method Description	Protocol	Laboratory
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL SAC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co - Phase 2

TestAmerica Job ID: 320-8746-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-8746-1	SS-1	Air	08/04/14 18:40	08/06/14 09:20
320-8746-2	AA-1	Air	08/04/14 18:07	08/06/14 09:20
320-8746-3	SS-5	Air	08/04/14 19:54	08/06/14 09:20
320-8746-4	AA-5	Air	08/04/14 18:34	08/06/14 09:20
320-8746-5	AA-4	Air	08/04/14 18:45	08/06/14 09:20
320-8746-6	AA-3	Air	08/04/14 19:00	08/06/14 09:20
320-8746-7	AA-2	Air	08/04/14 19:20	08/06/14 09:20
320-8746-8	FIELD BLANK	Air	08/04/14 16:10	08/06/14 09:20

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

Lab Number:

Company: Bennett & Williams
Page 1 of 1
Contact Name: Linda Aller
Sampler Name and Phone Number: Linda Aller 614 361 0153
E-Mail Address:
Phone: 614 361 0153
Project Name: Fairfield Co - Phase 2
Address: 98 County Line Rd West Suite C
Project Number: 14-04
City, State, Zip: Westerville OH 43082
P.O. Number:
Data Package:
Send Report To: Linda Aller
Phone:
Hardcopy Results: Y N
Standard Level II:
E-Mail Address: laller@bennettandwilliams.com
E-Mail Results: (Y) N
Level III:
Send Invoice To: Karen Ballou
Phone: 614 882 9122
EDD: Y N
Level IV:
E-Mail Address: kballou@bennettandwilliams.com

Sample Receipt

Temperature 12.9 °C
Sample Seals Intact: Yes___ No___
Sample Seals Intact: Yes___ No___
Total # of Samples ___

Turn Around Request

___ Same Day ___ 3 Business Days
___ 1 Business Day ___ 4 Business Days
___ 2 Business Days ___ 5 Business Days (Standard)

Rushes are subject to availability (Surcharges apply)

Sample Information

Lab ID (Internal Use Only)	Filter/Cassette/Badge/Tube/Wipe	Pump ID Number	Flow Rate (Liters/minute)	Sample Identification Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled (Badge Only)	Total Volume (Liters)	Area Wiped in cm2	Sampling Temperature (°C)	Sampling Pressure (mmHg)	TO-13 SIM
BWEC072114-6	Tube	B198626	0.2	SS-1	8.4.14	0710	18:40		138L				X
BWEC072114-4	Tube	B198808	0.23	AA-1	8.4.14	0807	18:07		138L				X
BWEC072114-10	Tube	B200035	0.2	SS-5	8.4.14	0824	19:54		138L				X
BWEC072114-5	Tube	B205808	0.23	AA-5	8.4.14	0834	18:34		138L				X
BWEC072114-7	Tube	B200758	0.23	AA-4	8.4.14	0845	18:45		138L				X
BWEC072114-8	Tube	B202518	0.23	AA-3	8.4.14	0900	19:00		138L				X
BWEC072114-9	Tube	B20071B	0.23	AA-2	8.4.14	0920	19:20		138L				X
BWEC072114-11	Tube	—	—	Field Blank	8.4.14		1610		—				X

320-8746 Chain of Custody

Instructions / Special Requirements

Date	Time	Sample Submitted By	Received By
8/5/14	10:03A	[signature]	Gina Rivera TestAmerica 8-5-14 1003
8-5-14	1323	Gina Rivera TestAmerica	Stephanie Edwards TA-WS 8/6/14 9:20

All services are performed subject to the Terms & Conditions on the reverse side

TAL-8225 (0414)

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 320-8746-1

Login Number: 8746

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	247623
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	12.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	