

PROPOSED NORTHERN MARKET BID SPECIFICATIONS

**CITY OF GRAYLING
CRAWFORD COUNTY, MICHIGAN**

February 2020

**Owner:
City of Grayling
Doug Baum, City Manager
1020 City Boulevard/P.O. Box 549
Grayling, Michigan 49738**

**Prepared by Owner's Representative:
ATC Group Services LLC
403 E. Michigan Avenue
Grayling, Michigan 49738**

SCOPE OF WORK

For this project, the Owner will award a single contract for the demolition and site restoration of the subject property. Award shall be made on the basis of the Best Value Qualified Bid Price according to the Bid Summary. Pre-demolition reports are included as separate attachments for the structures. All figures set forth in the Project Specification Documents referencing sizes, amounts, or materials are estimates only and are provided for the convenience of the Bidder. The Bidder is solely and completely responsible for their own measurements, verifying the quantities and location of all work to be performed as outlined in the bid documents, and for their own determination regarding the scope of the project(s). Failure to do so shall not relieve the Contractor of the obligation to furnish all materials and labor necessary to carry out the provisions of the Contract.

Each bid item should be priced separately according to the labor, materials, expenses and equipment that are actually estimated to complete the tasks according to the Scope of Work and Bidding Specifications. Bidders can and will be disqualified as non-responsive and non-responsible if it is determined by the Owner and/or the Owner's Representative that averaged costs are presented in the Bid Schedule. The Owner and/or the Owner's Representative reserves the right to interview and negotiate with potential low bidders to determine their cost basis and other procedural and contractual items that contribute to the overall bid package.

Base Bid Schedule - The Bidder will complete the Work and accept as full payment, for the Work items listed, the three (3) line items for the subject property as listed below.

- 1. Bid Item 1 – Administrative Requirements: Permits, Plans, Notifications, Inspections/Utilities Coordination, Meetings, Temporary Services Coordination, and Project Closeout.**
- 2. Bid Item 2 –Demolition, Transport, Disposal of Former Mill, and Utilities Management:** Includes all labor, equipment, materials, fees, permits and incidentals needed to demolish the subject building, building foundations, subsurface levels, light poles, fencing, parking blocks, retaining walls, trees, flatwork (parking lots, driveways including apron to street, paved sidewalks on the property but not in the city right-of-way unless damaged by Contractor). Transportation and disposal of all demolition debris (including existing trash/debris on site); and utility disconnects, removal, abandonment, or protection of buried underground utilities as specified.
- 3. Bid Item 3 – Backfill, Compaction and Site Restoration (Backfill, Compaction and Incidental Grading):** Includes Labor, equipment materials, fees, permits and incidentals needed to complete Backfilling in areas excavated as a result of demolition, , perform general site filling and backfilling, consolidation and compaction as scheduled of acceptable fill materials in accordance with applicable Local, State and Federal requirements and bid documents. Includes Labor, equipment and materials to complete incidental grading. Prepare subsoil to eliminate uneven areas and low spots. Apply level lifts and compact all areas affected by demolition to meet adjacent site grades and contours. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas and perform site work in accordance with applicable Local, State and Federal requirements and bid documents.

CONTRACTOR'S PRICE SHEET/BID PROPOSAL FORM

**GRAYLING NORTHERN MARKET
UNIVERSAL WASTE DISPOSAL, ASBESTOS ABATEMENT,
BUILDING AND SITE DEMOLITION / DEBRIS DISPOSAL AND SITE RESTORATION**

Project: Building and Site Demolition / Debris Removal and Site Restoration
Grayling Northern Market

Deadline for Receipt of Proposals: Tuesday, February 25, 2020, 2:00 p.m.

Submission and Receipt of Proposal: In order to receive consideration, the proposal must be received prior to the deadline above. No proposals will be accepted after the time specified as the deadline for receipt of proposals. The Owner and/ the Owner Representative reserves the right to postpone the proposal deadline for its own convenience. Proposals shall be mailed in a sealed envelope, or emailed in electronic pdf format with all bidding documents to:

Bid Submittal to:

Doug Baum, City Manager
P.O. Box 549
City of Grayling
1020 City Boulevard
Grayling, MI 49738

Bid for Proposed Northern Market Demolition and Disposal

From Bidder/Contractor:

Firm Name: _____

Address: _____

City, State, ZIP: _____

Phone: _____ Fax: _____

Cell: _____ Email: _____

Copy of Insurance Certificates Attached Yes _____ No _____

The undersigned bidder, , having familiarized itself with all location conditions to be encountered affecting the cost of the Work and having read and examined the bidding documents, and any and all other documents included during the time of bidding for the above-designated Contract does hereby propose to perform all services required to be performed and to furnish all of the labor, materials, tools, equipment, and services necessary to complete the contract work required in connection with this project and include all money allowance as called for in the specifications for the unit and lump sum cost prices stated herein. In affixing signatures and the company seal herein, the bidder acknowledges that they have carefully examined the bidding Documents and all factors affecting the Work.

The undersigned bidder has visited the site, has familiarized itself with the local conditions under which the work is to be performed, and has correlated its observations with the requirements of the proposed contract documents.

The undersigned Bidder hereby proposes to provide all labor, equipment, materials, and related work, including all applicable sales and other taxes, specific work in accordance with the Project Work Scope. The total cost is based upon the List of Estimated Quantities provided in the Specifications. Final invoice amounts will reflect actual quantities.

Project Start and Completion: If awarded the contract, the undersigned agrees that the contract period will begin upon authorization of by the Owner, anticipated February 27, 2020, with execution of the project activities commencing no earlier than

March 5, 2020 and completion of the onsite no later than April 3, 2020. The contract period may be adjusted, but the Contractor will be obligated to meet the timeframe for Contractor performance provided in the Specifications.

Special Terms and Conditions/Exceptions: The undersigned Bidder hereby has attached any and all special terms and conditions and/or variations from and exceptions to the requirements of the bidding documents and that it is the intent of this bid that the work will be performed in strict accordance with such requirements except as fully delineated below. The Bidder further understands that only items that cannot physically be completed due to a conflict, error, or omission may be an exception from the stated Work.

Acknowledgements:

The undersigned acknowledges that: The Bidder/Contractor has received the Bid Form, the Bid Request, and Specifications, and further acknowledges that the Bidder/Contractor has received the following addenda issued thereto and has incorporated their provisions in the bid:

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

The undersigned bidder hereby declares, represents and warrants that: 1) Bidder is the only person or firm represented by this bid, 2) That no other person or firm other than those expressed herein have any interest in the bid or in the contract to be entered into, 3) That this bid is made without collaboration with any other person, company, or parties likewise submitting a bid, and 4) That this bid is in all respects for and in good faith, without collusion or fraud. If this Bid is accepted within sixty (60) days from the date of the opening of bids, the undersigned hereby agrees to execute a contract within five (5) calendar days from receipt of Notice of Intent to Award the undersigned for execution. The acceptance of this offer shall become effective upon issuance by the Owner of a purchase order to the undersigned in the Pricing in accordance with the Specifications.

By:

Name of Authorized Representative: _____

Signature: _____ Date: _____

Title of Authorized Representative: _____ Binding the Company to the Project if Awarded

ESTIMATE OF QUANTITIES FORM

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1 – MOBILIZATION/DEMobilIZATION AND PROJECT ADMINISTRATION CONSTRUCTION SUBMITTALS/PERMITS					
1a	Construction Submittals/Permits	1	LS		
1b	Mobilization, Site Services	1	LS		
1c	Demobilization, Site Cleanup/Restoration	1	LS		
1d	Site Surveys / As-Builts	1	LS		
1e	Contract Closeout	1	LS		
2 - DEMOLITION/TRANSPORT/DISPOSAL OF STRUCTURES AND UTILITIES MANAGMENT					
2a	Demolition/Transport/Disposal of Structure and Site Features	1	LS		
2b	Utilities Management	1	LS		
TOTAL BID					
A	Provisionary Allowance	1	LS	\$20,000	\$20,000

(cost in words)

\$ _____

(cost in figures)

END OF SECTION BID SCHEDULE, BID FORM, AND ESTIMATE OF QUANTITIES FORM

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DIVISION 00 00 00

PROCUREMENT AND CONTRACTING REQUIREMENTS

SECTION 00 11 16 INVITATION TO BID**1. GENERAL**

Your firm has been invited to submit proposals in duplicate for the following project:

Project:	Northern Market Brownfield Redevelopment Demolition and Soil Removal/Transport/Disposal Grayling, Michigan
Owner:	City of Grayling P.O. Box 549 1020 City Boulevard Grayling, MI 49738 Doug Baum, City Manager Deb Mead, Project Coordinator
Owner's Representative:	ATC Group Services LLC 5690 W M-72 Grayling, MI 49738 Phone: 989.745.6595 April K. Hehir, Project Manager
Third Party Oversight	Otwell Mawby, P.C. 309 E. Front Street Traverse City, Michigan 49684 231.9465200 David Cooper, Project Manager

Address all contract and technical questions/correspondence to the ATC Group Services. Any questions regarding the bidding process should be directed to Otwell Mawby, P.C.

Bids will be received by Doug Baum, City Manager, City of Grayling, P.O. Box 549, 1020 City Boulevard, Grayling, Michigan 49738. Your proposal must be received on or before the deadline stated below. Timely receipt of the bid is the sole responsibility of the bidder.

Before sealing the envelope check to be sure that:

1. The bid form is signed.
2. The base bid, alternate proposal (if elected) and prices are filled in/provided.

On the outside of the envelope identify:

1. The project by name and location.
2. Bidder's name and complete address.

A mandatory pre-bid meeting or site walk will be held on Thursday, February 13, 2020 at 11 A.M. (1100 hrs.). Questions will be due by Tuesday, February 18, 2020 at 5 P.M. (1700 hrs.). Complete Bids and Alternate Bids will be due **Tuesday, February 25, 2020, 2:00 P.M.** (1400 hrs.).

Questions concerning the Contract Documents and insurance requirements shall be directed by email to David Cooper, Otwell Mawby dcooper@otwellmawby.com.

END OF SECTION 00 11 16

SECTION 00 21 13 INSTRUCTIONS TO BIDDERS**1. GENERAL****1.1. BIDDER REQUIREMENTS**

- A. **Time of Completion:** Upon Notice to Proceed issued by the Owner's Representative, the Contractor and selected subcontractors agree to complete all site work required within 30 calendar days. Should any Bidder determine, during the bidding period, that the specified Time of Completion would be impossible to meet by reason of material delivery dates or other logical reason, they should so advise the Owner's Representative at least three days prior to due date for the receipt of bids. If any change in the Time of Completion is determined to be necessary, an addendum will be issued to all bidders which received the original bid package. The Contractor agrees that the completion time specified is an essential condition of the Work. Should the Contractor fail to complete all of the Work inclusive of the Specification by the contract dates, it is agreed that the sum of \$500.00 will be deducted from the Base Proposal Sum for each and every calendar day the Work is substantially incomplete, \$750.00 per day representative oversight is required. It is understood and agreed that this deduction is not a penalty, but represents liquidated damages suffered by the Owner, and is so fixed on a per diem basis because of the extreme difficulty of ascertaining the time and full amount of damage the Owner will sustain if the Work is not completed by the above date. Any modification to the requirement of this section must be obtained in writing by the Owner or Owner's Representative and no verbal agreement or understanding shall be considered.
- B. **Bid Security:** No Bid Security is being required for this project.
- C. **Performance and Labor and Material Bonds:** No Performance or Labor Bonds are being required for this project.
- D. **Post-Bid Submittal:** For projects over \$100,000, the Owner's Representative will request a Post-Bid Submittal from the Apparent Low, Qualified and Responsive Bidder. The Apparent Low Bidder must submit to the Owner's Representative, within two Business Days after receipt of the request:
 - a. Experience Modification Rating (EMR), or a letter stating why the Bidder does not have one.
 - b. Identification of the proposed project superintendent with a resume or list of similar projects managed by that individual.
 - c. A list of at least three (3) projects completed by the Bidder, within the last three (3) years of similar size and complexity, with contact information for references for each.
- E. **Required Insurance:**
 - a. Commercial General Liability Insurance with a limit of not less than \$1,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it must apply separately to this project. The Contractor must list the Crawford County Brownfield Redevelopment Authority (CCBRA), the City of Grayling, the State of Michigan Department of Environment, Great Lakes and Energy (EGLE), its departments, divisions, agencies, offices, commissions, officers, employees and representatives/agents as ADDITIONAL INSUREDS on the Commercial General Liability policy.
 - b. Vehicle Liability Insurance for bodily injury and property damage as required by law on any auto including owned, hired and non-owned vehicles used in the Contractor's business. The Contractor must list the ADDITIONAL INSUREDS on the vehicle liability policy.
 - c. Worker's Disability Compensation, disability benefit or other similar employee benefit act with minimum statutory limits.
 - i. If coverage is provided by a State fund or if Contractor has qualified as a self-insurer, separate certification must be furnished that coverage is in the state fund or that Contractor has approval to be a self-insurer;
 - ii. Any citing of a policy of insurance must include a listing of the States where that policy's coverage is applicable;
 - iii. This provision must not be applicable where prohibited or limited by Michigan law.
 - d. Employer's Liability Insurance with the following minimum limits:
 - i. \$1,000,000 each accident
 - ii. \$1,000,000 each employee by disease
 - iii. \$1,000,000 aggregate disease
 - e. Liability Insurance: Liability insurance must be endorsed to list as additional insureds the Owner's Representatives and agents. Worker's Compensation, Employer's Liability Insurance and all other liability insurance policies must be endorsed to include a waiver of rights to recover from the Owner, Owner's

Representatives and the other additional insureds. The Contractor's liability insurance must remain in effect through the Correction Period and through any special correction periods. For any employee of the Contractor who is resident of and hired in Michigan, the Contractor must have insurance for benefits payable under Michigan's Worker's Compensation Law. For any other employee protected by Worker's Compensation Laws of any other state, the Contractor must have insurance or participate in a mandatory state fund, where applicable, to cover the benefits payable to any such employee. These requirements must not be construed to limit the liability of the Contractor or its insurers. The Owner does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

F. Warranty:

- a. The Contractor must furnish the City with a written guarantee to remedy any defects due to faulty materials or labor which appear in the Work within one year from the date of final acceptance by the State. This warranty excludes defect or damage caused by (a) abuse, modification by others, insufficient or improper operation or maintenance, or (b) normal wear and tear under normal usage. The warranties period starts from the date of the substantial completion and must be in full force and effect for the entire duration of the Correction Period.

1.2. TERMINATION

A. Termination for Breach: The Owner may elect to terminate all or any part of the Work if:

- a. the Contractor fails to complete the Work, or a specified part of the Work, within the corresponding Contract Time; fails or refuses to supply sufficient management, supervision, workers, materials or equipment; or otherwise fails to prosecute the Work, or any specified part of the Work, with the diligence required to comply with the Contract Time(s);
- b. the Contractor persistently disregards the authority of the Professional or violates or disregards a provision of the Contract Documents or the Laws of any Political Subdivision with jurisdiction;
- c. the Contractor admits in writing, or the Owner otherwise establishes, the Contractor's inability or refusal to pay the Contractor's debts generally as they become due;
- d. in response to the Owner's demand, the Contractor fails to provide adequate, written assurance that the Contractor has the financial resources necessary to complete the Work within the Contract Time;
- e. the Contractor fails to comply with the Michigan Residency requirements (1984 PA 431, as amended, MCL 18.1241a); or is found to be in violation of Section 4 of 1980 PA 278 concerning unfair labor practices, or any nondiscrimination requirements imposed by Law;
- f. at any time, the Contractor, Subcontractor or Supplier is in violation of unfair labor practices prohibited by Section 8 of Chapter 327 of the National Labor Relations Act, 29 U.S.C. 158; or
- g. the Contractor violates or breaches any material provision of the Contract Documents, which provides contractually for cause termination or rescission of the Contract or of the Contractor's right to complete the Work. Within seven Calendar Days after the Contractor receives a notice requiring assurance of due performance for any of the above occurring non-conformances, the Contractor must meet with the Owner and present the Contractor's plan to correct the problems. If the Owner determines that the Contractor's plan provides adequate assurance of correction, that determination does not waive the Owner's right to subsequently default the Contractor or affect any rights or remedies of the Owner against the Contractor and/or surety then existing or that may accrue in the future. The Owner, after giving the Contractor and surety seven Calendar Days' written notice of intent to default, may declare the Contractor in default and terminate the services of the Contractor for cause. Unless otherwise agreed between the Owner and Contractor, at the expiration of the Seven Calendar Day (intent to default) period, the Contractor must immediately stop all Work and proceed in accordance with the Owner's instructions. Following the expiration of the Seven-Calendar Day (intent to default) notice, the Contractor will be sent a default letter – notice of termination for cause. The Owner will issue a Contract Change Order to revise the name of the contract party to the name of the surety company. The surety company must undertake to perform and complete the Work, in accordance with the Contract Documents, in place of the Contractor, either through the surety's agents or by executing agreements with qualified contractors (excluding the Contractor and any of the Contractor's affiliates), or both. The Owner may issue a fifteen-Calendar Day notice of intent to default the surety company if they fail to execute in a timely manner the completion of the Contract Work. Without an adequate plan of correction, the Owner may issue a notice of termination for cause letter to the surety. If a termination of the contract with the surety occurs, the Owner reserves the right to complete the Work.

- B. **Termination for Convenience of the Owner:** Upon fifteen Calendar Days' written notice to the Contractor and surety, or sooner if reasonable under the circumstances, the Owner may, without cause and without prejudice to any other right or remedy it may have, elect to terminate any part of the Work, or the Contract in whole or in part, as the Owner may deem appropriate for its convenience. Upon receipt of any such termination notice, the Contractor must immediately proceed in accordance with any specific instructions, protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination. In such termination, the Contractor must be paid in accordance with the terms of this Contract for only services rendered before the effective date of termination. Upon termination for convenience, the Contractor must be released from any obligation to provide further services and the Owner must have full power and authority to take possession of the Work, assume any agreements with Subcontractors and Suppliers that the Owner selects, and prosecute the Work to completion by Contract or as the Owner may deem expedient.
- C. **Termination for Lack of Funding:** If expected or actual funding is withdrawn, reduced or limited in any way before the completion date set forth in this Contract or in any amendment, the State may, upon written notice to the Contractor, terminate this Contract in whole or in part in accordance with Paragraph 1.4.
- D. **Termination:** If the Owner has terminated the Contractor, any such termination will not affect any rights or remedies of the Owner against the Contractor or surety, or both, then existing or that may accrue after termination. All provisions of the Contract Documents that, by their nature, survive final acceptance of the Work must remain in full force and effect after a termination for cause of the Contractor or default of the surety, or both. The Owner may, in its sole discretion, permit the Contractor to continue to perform Work when the Contractor is in default or has been defaulted. Such decision by the Owner in no way operates as a waiver of any of the Owner's rights under the Contract Documents or Performance Bond, nor in the event of a subsequent default, entitle the Contractor or surety to continue to perform or prosecute the Work to completion.

1.3. HOLD HARMLESS:

- A. The Contractor must hold the City of Grayling and Authorized Representatives (Owner's Representative and ADDITIONAL INSUREDS) harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the Work under the Contract.

END OF SECTION 00 21 13

DIVISION 01 00 00
GENERAL REQUIREMENTS

SECTION 01 11 00 SUMMARY OF WORK

1. GENERAL DESCRIPTION OF WORK

1.1. SUMMARY

The Work covered by this section summarizes the Work for demolition of the main building and subsurface appurtenances at the Northern Market Brownfield Redevelopment (Site) in the City of Grayling, Crawford County, Michigan.

The City of Grayling's (Owner) purpose is to demolish, remove, and dispose of the former planing/lumber building, to include existing concrete and block footings, piles, existing infrastructure, and debris. Following demolition, the site is to be backfilled and restored to the existing grade (generally level with the surrounding grade and properties).

Damage caused by Contractor (including subcontractors) to paved areas and site improvements, outside the work area, public streets, sidewalks, right-of-way, or other protected features shall to be repaired by Contractor at no cost to Owner.

Subsurface features/improvements including but not limited to the main building footings/foundations and all utilities are to be removed in their entirety. Depth of the proposed ground disturbing activity is not otherwise defined and will be Contractors responsibility regardless of depth. Locations of utilities are not defined and will be Contractors responsibility to locate and "cut and cap" utilities in accordance with municipal and utility companies requirements, obtain open-hole inspections and prepare and submit an "As-Built" drawing showing the types, sizes, locations, and elevations of encountered utilities, associated "cut and caps", excavations, and structures removed.

The property is proposed to be left as a level, vacant property, suitable for future and continued redevelopment at end of this work.

The scope of work for the project involves furnishing all labor, equipment, materials, services, fees, applicable taxes, and incidentals (necessary items not specifically mentioned) to demolish, remove and dispose of all specified building structures and foundations, pavement, site features, other building contents, and miscellaneous debris; terminating all utilities; and conducting site restoration. The proposed work/demolition area is shown on the attached figure and further described below.

1.2. SPECIFIC DESCRIPTIONS OF WORK

The following includes a general summary of the items listed in the bid form. Contractor is responsible to coordinate their work with Owner and/or Owner's Representative, utility companies, municipality, regulatory agencies, and other affected parties. Specifically, Contractor is responsible to provide all preparation work, ancillary supplies, appurtenances, and incidental work including all labor, materials and equipment to complete the following tasks according to these Bid Specifications and Contract Documents, and in accordance with applicable regulations, codes, ordinances, and industry standards:

A. Bid Item 1 – Mobilization/Demobilization and Project Administration

Mobilization/Demobilization, Permits, Plans, Notifications, Inspections, Meetings, Temporary Services, and Project Closeout - Provide all labor, materials, and equipment, services, fees, applicable taxes, and incidentals (necessary items not specifically mentioned) to prepare and submit all plans/notifications, obtain all permits, pay all fees and provide all documentation and incidentals (services and items not specifically mentioned) necessary to complete the Work. Specifically, the Mobilization/Demobilization item includes, but is not limited to the following:

- a. Deliver to the site all necessary personnel, equipment and supplies to complete the work of this contract. Remove all materials and equipment, conduct final site cleanup and submit all documentation immediately upon completion of contract.
- b. Preparation of a Site-Specific Health and Safety Plan and provide copy to Owner and/or Owner's Representative.
- c. Provide all temporary power, utilities, water, lighting, and other services necessary to complete the Work.
- d. Provide all storage, staging, temporary office facilities, and restroom and sanitation facilities, as needed.
- e. Item includes site security, installation of a minimum 6-foot security fence with lockable gates, safety personnel, and protection of public, existing utilities, public infrastructure, right-of-way, and adjacent properties. Repair of any existing utilities, public infrastructure, right-of-way, and adjacent properties are considered incidental to the Work.
- f. Item includes all shipping/transportation costs including loading, hauling and delivering/removing equipment and materials to/from the job site (excluding specific pay items referenced elsewhere in this Bid Specification).

- g. Prepare soil erosion and sedimentation control (SESC) plan, obtain SESC permit, provide certified operator, perform weekly SESC inspections and inspections within 24 hours of precipitation event, complete inspection logs, and preventing runoff of construction debris, dust and sediment to municipal storm water system. Provide sediment removal services for eroding sediment leaving subject property or entering storm water system.
 - h. Provide dust control measures during the Work.
 - i. Coordination of Work with Owner and/or Owner's Representative, City, County, and State, including compliance with ordinances, codes, and regulations and coordination of work with other contractors, as needed.
 - j. Attendance at all Project Meetings (assume at least one formal on-site meeting per week).
 - k. Providing all required documentation to Owner and/or Owner's Representative including but not limited to: plans; utility cut and cap as-built drawing; notifications; disposal records (manifests, bill of lading, shippers, etc.) and associated itemized disposal log (Excel format); demolition permit and other required permits; open-hole inspections and written approvals; backfill certifications; inspections and testing results; notice of violations; and other Work related documents to Owner and/or Owner's Representative as necessary during performance of the Work and upon conclusion of the Work.
 - l. Obtain all permits, clearances, variances etc., provide all notifications, and pay all associated fees including, but not limited to:
 - i. Wrecking/Utility Clearances
 - ii. Demolition permit (Crawford County)
 - iii. Soil Erosion and Sedimentation Control Permit
 - m. Obtain all access agreements (special consideration should be given to adjacent property owners). Work hours and street closures must be coordinated with City of Grayling (Multi-Use Permit), Owner, and adjacent property owners. Work hours will be from 7:00 a.m. to 6:00 p.m., unless otherwise notified.
 - n. Contractor is responsible for the evaluation, design, and installation of all shoring, bracing, or lateral supporting to prevent collapse, failure, settlement, or cracking of adjoining structures, sidewalks, roads, parking areas, and other site features to remain. The use of shoring, bracing, or lateral supporting is considered part of Contractors means and methods. Contractor shall submit a Shoring/Bracing Plan to maintain stability to Owner and/or Owner's Representative for review prior to start of Work.
 - o. Contractor must conduct and provide a pre- and post- demolition video and photographic survey of the site, and adjacent structures/improvements, property entrances and surrounding right of ways. Pre-demolition photographs and video should show existing conditions of structures, facilities, and site improvements, including finish surfaces, which might be misconstrued as damage caused by demolition or construction operations.
 - p. Provide all other incidentals (services and items not specifically mentioned) items necessary to provide a satisfactory work product in compliance with all governing laws and approved by the Owner and/or Owner's Representative.
 - q. Contractor must obtain all permits and pay all fees to replace ROW structures, sidewalks and curbs in accordance with City of Grayling and/or MDOT requirements, as needed.
- B. Bid Item 2 – Demolition, Transport, Disposal of Structures and Utilities Management (Including Structures, Site Improvements, and Site Features)**
- Demolition - Provide all labor, equipment, materials, supplies and incidentals to remove the subject building, site improvements, site features, and associated debris in their entirety in accordance with the Contract Documents and other sections of the scope of work. Structure demolition Work includes, but is not limited to:
- a. Identification of special conditions at the site that could impact demolition operations.
 - b. Removal of salvageable contents, equipment, and site features. Unless otherwise specified, all contents, equipment, interior finishes, and recyclable material become property of Contractor. Owner reserves the right to remove select items from building prior to issuance of Notice to Proceed. Owner encourages modern deconstruction methods and recycling of all salvageable site features. Certain items may be removed prior to start of work by utility providers.
 - c. Characterization and disposal of any precipitation/surface water accumulated within building and Site features, including but not limited to, heat, fire protection, and domestic water systems. No disposal to surface of property or within the storm water system is permitted. Contractor shall apply for, and obtain discharge permit(s), coordinate and document compliance with permit/local municipality prior to discharge of

- liquids to sanitary sewer. Contractor shall be responsible for sample collection, analysis, discharge permit application, fees, pumping, and coordination with local municipality for testing requirements, if applicable.
- d. Cut and cap all on-site utilities in accordance with municipality and utility companies. Coordinate with utility companies, to cut and cap utilities including sanitary sewer, water, natural gas, electricity, cable television, telephone, and select storm sewer. Contractor shall pay all disconnect fees and coordinate and acquire all feed disconnects, and shutoffs with local municipality and utility companies. Do not disconnect any active utilities potentially connected to off-site structures without coordinating with adjacent property owner, utility provider. Acquire and supply necessary utility clearances (e.g. cable, telephone, water, storm, sanitary sewer, etc.). Ensure all utility meters and other equipment are removed by municipality and/or utility companies prior to demolition.
 - e. Water and sewer disconnect fee will be paid directly by Contractor. Consumers Energy gas and DTE electric disconnect fees will be paid by Contractor. Pay any other associated fees. City of Grayling will assist with coordination of natural gas and electric, and water and sewer disconnect work. Contractor must coordinate and verify stated and any other disconnect work to be done, and it may be necessary for Contractor to coordinate with Owner for water, sewer, gas, and electric disconnect activities. Contractor must protect and coordinate removal of equipment and site features owned by utilities.
 - f. Demolish and remove main structure for proper disposition.
 - g. Removal of entire structures, including building slabs, grade beams, foundations and subsurface features and all site improvements as identified. All foundations/footings must be removed completely within Proposed Building Footprint and specified utility routes/corridors. Depth of foundation components are unknown.
 - h. All Work near adjoining structures, public right-of-way, and municipal sidewalk shall proceed with caution. Contractor responsible to repair any damage at no cost to Owner, not anticipated.
 - i. Removal of site features including private paving, sidewalks, curbing, private utility poles, fencing, yard sprinkler systems, associated foundations, other features, and debris. Remove below grade features including foundations, conduit and wiring, in demolition areas only.
 - j. Disconnect and remove exterior site features and foundations including but not limited to: lights; private light/utility poles; parking blocks; electrical features; buried and aboveground wiring; poles; fences and water features.
 - k. Conduct Site cleanup including removal of existing and accumulated Site debris.
 - l. Contractor shall use best methods to perform work. However, Owner and/or Owner's Representative reserves right to review, inspect, and reject method proposed by Contractor. Owner and/or Owner's Representative also reserve right to stop Work by Contractor at any time for any reason.

C. Bid Item 3 – Demolition and Excavation Void Backfill

Backfill, Compaction, and Site Restoration - Provide all labor, materials, equipment, and incidentals necessary to backfill and compact voids left by foundation and utility removal and soil excavations, grade excavated areas to exposed adjacent areas in accordance with the Contract Documents and other sections of the scope of work. Backfill Site restoration Work includes:

- a. Concrete (slab and surface/subsurface): Concrete that is removed from main building structure and footings shall be recycled.
- b. Grade, backfill, restore, and compact existing subsoil. Existing subsurface soil not originating from known impacted areas that are capable of being compacted to form a stable, homogenous material may be graded, compacted and utilized as fill.
- c. Backfill site, including all voids caused by demolition and soil excavation, as necessary to meet proposed grade with MDOT Class II Sand (or pre-approved equivalent by Owner's Representative), crushed concrete, or specified subbase aggregate (aggregate – as directed) as Specified or approved by the Owner's Representative. Backfill must be a certified clean MDOT Class II sand (or pre-approved equivalent) from a commercial sand/aggregate supplier and must be approved by Owner/Owner's Representative prior to placing at Site, unless otherwise approved. Backfill and earthwork is included in Unit Pricing Item. Site must be left in condition suitable for future development.
- d. Backfill shall be compacted in minimum 12-inch lifts to not less than 95% M.U.W. Contractor shall provide third party compaction testing services during placement of backfill at Contractor's expense and included in the Unit Pricing Item.
- e. Backfill site to level consistent with surrounding grades. Slope backfill to prevent ponding of water onsite and allow for topographic runoff of storm water towards appropriate storm water conveyance (e.g. green belt or nearby storm water catch basins). Provide smooth topographic slope to storm water conveyances.

- f. Provide backfill documentation for Class II Sand including clean certification and load tickets (volume in tons by Owner's Representative pre-approval only).
- g. Repair any damages to ROW specified sidewalks and curbing in accordance with City of Grayling requirements at no cost to Owner. Installed/repared sidewalks and/or curbs that do not meet City of Grayling requirements shall be removed and replaced by Contractor at no cost to Owner.

1.3. UNIT PRICING AND LUMP SUM FEES PROPOSAL

- A. Contractor shall provide unit pricing and lump sum fees proposal to complete Bid Items 1 through 5 (listed above), at the Northern Market Brownfield Redevelopment located at 2059 I-75 Business Loop, Grayling, Michigan, Crawford County. The Work will be awarded to a single Contractor. The Contractor shall complete the following Work including, but not limited to: Obtaining all clearances, waivers, permits, pay all fees, prepare and submit all plans, logs, and specified documentation; cut and cap all encountered utilities, and request and obtain open holes inspections; ,demolition, transportation and disposal/ recycling of all building components (including foundations/footings), flat work, retaining walls, poles, signs, fences, debris, and all other site improvements/ features; excavated contaminated soils in the areas identified in the attached figure; recycling (not usable as aggregate; clean), and disposal (not usable as aggregate; contaminated) and manipulations; backfill, compact, and verify compaction/density of excavations and fill with Owner-approved backfill.

END OF SECTION 01 11 00

SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES

1. GENERAL

1.1. SCHEDULE OF VALUES

- A. Five (5) calendar days after receiving “Notice to Proceed” or before Demolition start date, whichever comes first, the Contractor must submit a Schedule of Values to the Owner/Owner’s Representative for review and approval, of the various tasks that must be performed to complete all the Work. The schedule must show each task and the corresponding value of the task, including separate monies allocated for General Condition items and Project closeout. The aggregate total value for all tasks must be equal to the total Contract Sum.

1.2. BASIS OF PAYMENT

- A. The basis of payment will be for the Bid Items 1 through Bid Item 5, on the Bid Schedule based on the Estimate of Quantities Form preceding the Table of Contents in this Bid Specification. They constitute all of the pay items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, mobilization, equipment costs, plant services, layout surveys, job signs, sanitary requirements, testing, safety devices, water supplies, power, maintaining traffic, removal of wastes, watchmen, bonds, insurance, and all other requirements or conditions. Compensation for any such services and materials shall be included in the prices stipulated for the lump sum and/or unit price pay items listed herein.
- B. Each lump sum and/or unit price will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor’s overhead and profit for each separately identified item. All other work-related items shall be incidental to the appropriate work item.
- C. For lump sum items, the Contractor will be paid on the basis of actual work completed and accepted. One hundred percent of the Contract price (per the Estimate of Quantities Form) for the work completed and accepted may be paid, subject to the limitations of the Bid Specification and Contract Documents.
- D. For unit price items, the Contractor will be paid for the actual amount of work accepted by the Owner’s Representative.
- E. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Owner and the Owner’s Representative.

1.3. ESTIMATE OF QUANTITIES

- A. The estimated quantities for the unit price pay items, as listed on the Estimate of Quantities Form, are approximations only and are included solely for the purpose of comparison of bids. The Owner and Owner’s Representative do not expressly or by implication agree that the actual quantities of material encountered or required, will correspond therewith, and reserves the right to increase or decrease any quantity as they may deem necessary. The Contractor will not be entitled to any adjustments in the unit bid price as a result of any change in an Estimate Quantity unless the Estimated Quantity of a measurable pay item is greater or less than 50% of the Estimate, and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions caused by changes or alterations in the Work. If the Estimate is greater or less than 50% of the Estimate for a pay line item, the Contractor will provide a time and materials basis for the bid in accordance with the Schedule of Values submitted to equal the original pay item and a Change Order may be executed upon approval of the Owner. A Change Order must be submitted and approved by the Owner or Owner’s Representative prior to incurring additional cost or commencing additional work.
- B. Owner and Owner’s Representative reserve the right to increase or decrease the quantity of Work.
- C. Additional costs caused by ill-timed or defective work, or work not conforming to Contract Documents, shall be incurred solely by the Contractor and not representative of additional quantities.

1.4. PAYMENT

- A. Work completed shall be invoiced on a monthly basis. Only work completed as of the invoice date shall be invoiced. Completion of work will be verified by Owner’s Representative subject to Payment Request eligible for Brownfield Eligible Activity and/or Owner approval prior to payment of invoice.

- B. Application for Final Payment is discussed in Project Closeout.

1.5. INCIDENTAL WORK

- A. Incidental work items for which separate payment is not measured include, but are not limited to, the following items:
 - a. Permits/Notifications (not disclosed in Schedule of Values or otherwise paid for).
 - b. General Site cleanup.
 - c. Project signage.
 - d. Health and Safety requirements.
 - e. Field supervision and layout.
 - f. Job-Site administration.
 - g. Site security (the Owner and Owner's Representative are not responsible for any items damaged or stolen from the Site).
 - h. Collection and disposal of any water, including dewatering fluids, unless otherwise paid for.
 - i. Decontamination and disposal of materials used to perform decontamination.
 - j. Restoration of disrupted areas not designated or described in these Contract Documents.
 - k. Restoration of areas used for material and equipment storage, and Contractor access.
 - l. Cooperation with local code enforcement officers, fire marshal, other Contractors, Owner, Owner's Representative, property owners, and others.
 - m. Utility crossings, relocations, or replacements unless otherwise paid for.
 - n. Project Record documents.
 - o. Environmental Protection.
 - p. Work area and perimeter air monitoring, unless otherwise paid for.
 - q. Odor control.
 - r. Quality Control.
 - s. Assisting Owner's Representative in the collection of any elected sampling or environmental activities, within the excavations generated by the demolition and/or contaminated soil removal activities including, but not limited to any oversight required activities or requests indicated as part of the Specification.
 - t. Quantification, including certified weights, manifesting, tracking, and documentation of waste disposal, import, or export activities.

2. PAYMENT ITEMS

2.1. DESCRIPTION

- A. The pay items summarized in *SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES, Part 3*, describe the measurement and payment for the work to be done in *SECTION 01 11 00 SUMMARY OF WORK*.
- B. Each unit or lump sum price stated in the *List of Estimated Quantities* shall constitute full compensation, for each item of the Work completed.
- C. The quantities provided are estimates and represent approximate maximum expected quantities. The actual amounts will likely vary from the listed amounts. If more or less work than the estimated quantity is performed, payment will be at the unit price bid for the actual quantity performed.

3. BASE BID PAY ITEMS

3.1. ITEM 1 – MOBILIZATION/DEMOBILIZATION AND PROJECT ADMINISTRATION CONSTRUCTION SUBMITTALS/PERMITS

- A. Item 1a – Construction Submittals/Permits
 - a. Method of Payment: Lump sum payment for Item 1a will be full compensation for all labor, equipment, materials and incidentals necessary for the completion of the activities described below. Partial payment for this item shall be determined by the percentage of submittals (each submittal assigned equal weight) received and approved, and the approved Schedule of Values.
 - b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for preparation of submittals (and revisions) as required by Owner and Owner's Representatives reviews, and final approval of

submittals required prior to beginning work and as referenced in the Specifications. This item includes all other work and expenses incidental thereto for which payment is not provided under other items.

B. Item 1b – Mobilization, Site Services

- a. Method of Payment: Lump sum payment for Item 1b will be full compensation for all labor, equipment, materials and incidentals necessary for the completion of the activities described below. Partial payment for this item shall be determined by the percentage of Work completed and approved, and the approved Schedule of Values.
- b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for furnishing all labor, equipment, tools, materials, and supplies to provide temporary facilities, temporary fencing, temporary signage, temporary facility utility connections, safety equipment, refuse containers, etc. identified in *SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS* and as referenced in the Specifications. This item also includes surface water controls, decontamination and any associated analytical testing, dust control and air monitoring, soil erosion controls, material storage area, and all other work and expenses incidental thereto for which payment is not provided under other items.

C. Item 1c – Demobilization, Site Cleanup/Restoration

- a. Method of Payment: Lump sum payment for Item 1c will be full compensation for all labor, equipment, materials and incidentals necessary for the completion of the activities described below. Partial payment for this item shall be determined by the percentage of Work completed and approved, and the approved Schedule of Values.
- b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for furnishing all labor, equipment, tools, materials, and supplies for final site cleanup/restoration, demobilization etc. as referenced in the Specifications. This item also includes surface water control removal, decontamination, removal of temporary facilities, temporary fencing, disconnection of temporary utility connections, final site cleanup/restoration, etc. associated with demobilization and all other work and expenses incidental thereto for which payment is not provided under other items.

D. Item 1d - Site Surveys / As-Builts

- a. Method of Payment: Lump sum payment for Item 1d will be full compensation for all labor, equipment, materials and incidentals necessary for the completion of the activities described below. Partial payment for this item shall be determined by the percentage of Work completed and approved, and the approved Schedule of Values.
- b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for furnishing all labor, equipment, tools, materials, and supplies to complete the pre-construction, post-excavation and post-Site restoration surveys and As-Builts Diagrams as referenced in the Specifications. This item also includes all other work and expenses incidental thereto for which payment is not provided under other items. The surveys shall be conducted by a Registered/Licensed Land Surveyor.

E. Item 1e - Contract Closeout

- a. Method of Payment: Lump sum payment for Item 1e will be full compensation for all labor, equipment, materials and incidentals necessary for completion of the activities described below.
- b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for furnishing all labor, equipment, tools, materials, and supplies to complete the *SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS*. This item includes submission of Contract Documents and additional items as referenced in the Specifications, including but not limited to documents identifying backfill volume (i.e., load tickets), surface cover disposal documentation, demolition material manifests, liquid/sludge disposal manifests, Quality Control documentation, and daily work logs and all other work and expenses incidental thereto for which payment is not provided under other items.

3.2. ITEM 2 – DEMOLITION/TRANSPORT/DISPOSAL OF FORMER MILL, OUTBUILDINGS, AND UTILITIES MANAGMENT**A. Item 3a – Demolition/Transport/Disposal of Former Mill**

- a. Method of Payment: Lump sum payment for Item 3a will be full compensation for all labor, equipment, materials and incidentals necessary for the completion of the activities described below. Partial payment for this item shall be determined by the percentage of Work completed and approved.
- b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for furnishing all labor, equipment, tools, materials, and supplies to complete the demolition transport and disposal/recycling of the building, structures, concrete/asphalt slabs and foundations requiring recycling, on-site crushing, or disposal as a solid waste, and site debris required to complete total removal and disposal of the Former Mill. This item includes demolition and removal of all concrete and asphalt pavement, structural concrete, metals, masonry, sumps, septic systems, buried utilities, power and control systems, as described in *SECTION 02 41 00 DEMOLITION* including any costs derived during the demolition, excavation, concrete crushing, and material and waste handling, as described and referenced in the Specifications. This item also includes transport and disposal of all of the above items, as encountered. This item also includes all other work and expenses incidental thereto for which payment is not provided under other items. Copies of disposal/recycle documentation will be required for payment.

B. Item 3b – Utilities Management

- a. Method of Payment: Lump sum payment for Item 3b will be full compensation for all labor, equipment, materials and incidentals necessary for the completion of the activities described below. Partial payment for this item shall be determined by the percentage of Work completed and approved, and the approved Schedule of Values.
- b. Payment: Payment shall be made at the Contract Lump Sum Price which shall be full compensation for furnishing all labor, equipment, tools, materials, and supplies to complete the coordination and support of utility company disconnection, proper abandonment, and bypass, and removal of the natural gas, cable, phone, electric and street light utilities, water, sanitary sewer, storm sewer within the limits of the excavation/demolition area. This item also includes the bypass, removal and replacement of all other utilities impacted by the Work, excluding the utilities addressed in and as referenced in the Specifications. This item also includes all other work and expenses incidental thereto for which payment is not provided under other items.

END OF SECTION 01 20 00

SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION**1. GENERAL****1.1. PROJECT COORDINATION:**

- A. Before beginning Work at the Site, the Contractor must coordinate with the Owner/Owner's Representative to implement the schedule for the Project. Once the Project is started, it must be carried to completion without delay.

END OF SECTION 01 31 00

SECTION 01 31 19 PROJECT MEETINGS**1. GENERAL****1.1. PRE-CONSTRUCTION CONFERENCES**

- A. The Owner's Representative will schedule a pre-construction conference to be attended by the Owner and Contractor. Once the Project has been started, the Contractor must carry it to completion without delay.

1.2. PROGRESS MEETINGS

- A. The Owner's Representative will schedule progress meetings to be held on the job site whenever needed to supply information necessary to prevent job interruptions, to observe the Work or to inspect completed Work. The Contractor must be represented at each progress meeting by persons with full authority to act for the Contractor in regard to all aspects of the Work.

END OF SECTION 01 31 19

SECTION 01 32 19 SUBMITTALS SCHEDULE**1. GENERAL****1.1. PRE-WORK SUBMITTALS**

- A. The Contractor must submit three (3) copies of the following submittals to Owner and Owner's Representative, within seven (7) working days after receiving Notice to Proceed and prior to commencing Site activities. Work Plans must be approved by Owner's Representative prior to beginning on-Site Work. Work Plan approvals do not relieve the Contractor of any Specification requirements. Deviations from/contradictory to the Specification require itemized the Owner's Representative.
 - a. Schedule: The Contractor must submit three (3) copies of a Progress Schedule within five (5) working days after assignment of project, showing start and finish dates for each Bid Item including the following milestones: Barricades, Permits, Verification of Disconnection of Services, Knockdown, Haul-Out, Excavation of Foundations/Footings, Open Hole Inspection, Concrete Crushing, Soil Excavation and Transport, Backfill and Compaction, Final Site Inspection/Completion for the Owner and Owner's Representatives review. The Contractor must update the Progress Schedule weekly and submit to Owner and Owner's Representative by email, each week.
 - b. Permits: The Contractor will coordinate with the local unit of government and utilities for all necessary permits, including Right of Way and/or Multi-Use permits (if necessary), hydrant permits, sidewalk permits, sewer permit, etc. Executed copies of the permits are required to be submitted to the Owner prior to commencing associated Site activities;
 - c. Health and Safety Plan (submittal for record only – not reviewed);
 - d. Schedule of Values;
 - e. List of Subcontractors;
 - f. Pre-Work Photos/Video of Site;
 - g. Utility Disconnects applications and verifications;
 - h. Proposed Disposal Facilities and Proposed Disposal Facility Licenses;
 - i. Spill Contingency Plan;
 - j. Dust Control and Air Monitoring Plan;
 - k. Soil Erosion and Sedimentation Control Plan and permit;

- l. Proposed backfill and aggregate source(s) with required certifications/ documentation, grade classification/verification of crushed concrete; and
- m. Proposed waste disposal and recycling facilities.
- n. Project Work Plan(s) Minimum Elements and Methods:
 - i. Responsible Officials and Project Contacts (Contact Information, 24-Hr/Emergency, Site Supervisor Contact, Safety Officer, OSHA Responsible Person, Site Personnel)
 - ii. Certifications
 - iii. Site Use (Layout, Work Zones and Controls, Truck Routes, Storage, Loading/Unloading, etc.)
 - iv. Management Procedures for Work Tasks, Visitors, Sign-In, Deliveries, Document Control, etc.
 - v. Demolition
 - vi. Excavation
 - vii. Decontamination
 - viii. Backfill/Compaction
 - ix. Equipment and List of Rental Equipment, Subcontractors, Disposal Facilities
 - x. Site Restoration;

1.2. DURING WORK SUBMITTALS

- A. The Contractor must submit electronically of the following submittals weekly to Owner and Owner's Representative while Site Work is occurring (due during each weekly progress meeting):
 - a. Daily Site Activity Reports;
 - b. Update Progress Schedule.

1.3. POST-DEMOLITION CLOSE-OUT DOCUMENTS AND FINAL PAYMENT SUBMITTALS

- A. The Contractor must submit the following required documents with final payment request:
 - a. Utility clearances, disconnects, cut and caps with photograph and open hole inspections/ approvals and drawing showing type, size and location of utilities/utility cut and caps;
 - b. Right of Way Permit(s);
 - c. Demolition permit and other required permits;
 - d. Waste Log (Excel Spreadsheet) with associated legible load tickets/dump slips (for all loads) and manifests;
 - e. Final Grade Acceptance/Demo/Right of Way Permit Closeout permits and other documents;
 - f. Front, sides and rear photographs of structure and ROW sidewalks and curbs before demolition, include landmarks to the left and right of structure, sidewalks and curb cuts (if needed);
 - g. Backfill Log (Excel Spreadsheet) Import/Export with associated legible load tickets;
 - h. Front, sides and rear photographs after grade restoration. Include landmarks to the left and right of structure(s), sidewalk(s) and curb(s), etc.
 - i. All Waste Profiles, Manifests and disposal tickets;
 - j. All analytical results and chain of custodies, (if obtained);
 - k. Waste characterization analytical data, (if obtained);
 - l. Any other documentation requested by Owner; and
 - m. Final Invoice, itemized with complete costs.

1.4. RESPONSIBILITY AND AUTHORITY

- A. Neither the Owner's/Owner's Representative authority to review any of the Submittals by the Contractor, nor the Owner's/Owner's Representative's decision to raise or not to raise any objections about the Submittals, creates or imposes any duty or responsibility on the Owner/Owner's Representative to exercise any such authority or decision for the benefit of the Contractor/Subcontractor/Supplier, any surety to any of them or any other third party. The Contractor is not relieved of responsibility to comply with Contract Documents and/or Federal, State or Local rules and regulations because the Owner or Owner's Representative have approved. It is Contractor's sole responsibility to ensure all Work is completed in strict adherence with Contract Documents and Federal, State and Local rules and regulations.

END OF SECTION 01 32 19

SECTION 01 35 00 SPECIAL PROCEDURES**1. GENERAL****1.1. SIGNAGE AND SAFETY**

- A. The Contractor must post appropriate construction signs to demark the limits of demolition work areas, hardhat areas, excavations, construction parking and staging areas, etc. Advertising signage by contractors, subcontractors, or suppliers is not allowed. The Contractor must maintain safe and adequate pedestrian and vehicular access to residences, fire hydrants, commercial and industrial establishments, churches, schools, parking lots, hospitals, fire and police stations and like establishments. The Contractor must obtain written approval from the Owner ten (10) Calendar Days before connecting to/utilizing existing facilities.

1.2. BARRIER AND ENCLOSURES

- A. The Contractor must furnish, install and maintain as long as necessary and remove when no longer required fencing, barriers, warning signs and signs throughout the Work, for protection of property, workers and the public. The Contractor must hold the City of Grayling and Authorized Representatives (Owner's Representative) harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the Work under the Contract. The Contractor must protect any existing and neighboring structures, trees, or fencing not scheduled to be removed. The Contractor must inspect fences and barricades daily and repair or replacement them when necessary.

1.3. TEMPORARY FENCE

- A. The Contractor must provide six (6) foot tall temporary construction fencing around the Work area with lockable gates for ingress and egress of the following: Contractor's employees (including subcontractors); City of Grayling personnel and their authorized representatives; equipment; and materials during working hours. The gates shall be manned during business hours; all authorized entrants are to be logged in and logged out daily. Gates shall be closed and locked during non-working hours and keys shall be provided to City of Grayling project personnel and/or their authorized representatives, as well as the City of Grayling Public Safety. Additionally, Contractor shall install woven wire or snow fence having minimum height of four feet around all open excavations, open basements, pits, vaults, or other hazardous areas. Open excavations must include a sloping earthen ramp allowing egress without need of ladder or stairs. The fence(s) and gates must be removed and grounds restored per Contract Documents requirements upon the completion of the Work.

1.4. STREET BARRICADES

- A. In accordance with State and Local requirements, rules, regulations and ordinances, the Contractor must submit plan(s), obtain permit(s) pay fee(s), provide personnel, and maintain all street barricades, signal lights and/or lane change markers during the periods that a traffic lane is closed for their operations. There must be full compliance with rules and ordinances. Street barricading and devices must be removed when hazard is no longer present.

1.5. BARRICADES

- A. Demolition work shall be executed in an orderly and careful manner and shall not involve undue hazards to the general public or unnecessary risks to the workers. The erection of barricades, warning signs, etc. for protection during the wrecking operations and the execution of wrecking operations shall be done in strict accordance with all applicable Local, State and Federal Regulations.
 - a. The barricades shall extend no further than four feet from the inside of the street curb.
 - b. Three feet of the sidewalk shall be maintained at all times for pedestrians.
 - c. A minimum of 12 feet of alley width shall be maintained at all times for traffic.
 - d. There shall be no storage of debris, backfill material, or equipment on the street at any time.

1.6. WASTE STORAGE

- A. Pending disposal, Contractor shall stage/store hazardous/regulated materials in a lockable container (ACMs/undisclosed) or place 6-mil liner below and cover pending characterization and/or disposal of any hazardous or contaminated soil. Liquid hazardous/regulated wastes/materials shall be stored in lockable container with secondary containment.
- B. If, for any reason, the above requirements cannot be fully met, the Contractor is to immediately notify the Owner and Owner's Representative and obtain direction as to the handling of such special cases.

- C. Special care shall be exercised to avoid any damage to adjacent properties. Should such damage occur, immediately notify the Owner and Owner's Representative. The Contractor is responsible for repair or replacement of any adjacent property damage. The Contractor shall document (photographs/videos) the condition of all adjacent properties prior to commencing the Work activities. Non-documented (photographs/videos), damaged items/areas will be assumed to be caused by Contractor and shall be repaired or replaced by the Contractor to the satisfaction of property owner, local municipality and Owner/Owner's representative, at no additional cost to said parties.

1.7. CONSTRUCTION AIDS

- A. The Contractor must furnish, install, and maintain as long as necessary and remove when no longer required, safe and adequate scaffolding, ladders, staging, platforms, bracing, shoring, chutes, railings, hoisting equipment, etc., as required for proper execution of the Work. All construction aids must conform to Federal, State, and local codes or Laws for protection of workers and the public.
 - a. Debris Chute: The Contractor must use a debris chute or other means to control the lowering of debris resulting from their Work. The chute must be the enclosed type with its discharge directly into the truck or approved container.

END OF SECTION 01 35 00

SECTION 01 41 00 REGULATORY REQUIREMENTS

1. GENERAL

1.1. LAWS

- A. The Contractor and its Subcontractors/Suppliers must comply with all Federal, State, and local Laws applicable to the Work and Site.

1.2. CODES

- A. All Works must be provided in accordance with the State Construction Code Act, 1972 PA 230, as amended, MCL 125.1501 et seq, International Building and Residential Codes and all applicable Michigan construction codes and fire safety including but not limited to: Michigan Building Code, Michigan Residential Code, Michigan Uniform Energy Code, Michigan Electrical Code, Michigan Rehabilitation Code for Existing Buildings, Michigan Mechanical Code, Michigan Elevator Code, Michigan Plumbing Code, and any applicable local codes. If the Contractor observes that any Contract Document conflicts with any Laws or the State Construction Code or any permits in any respect, the Contractor must promptly notify the Owner's Representative in writing. If the Contractor provides any Work knowing or having to reason to know of such conflict, the Contractor must be responsible for that performance.

1.3. PERMITS

- A. All required construction/demolition permits must be secured and their fees including inspection costs must be paid by the Contractor. The time incurred by the Contractor in obtaining construction permits must constitute time required to complete the Work and does not justify any increases to the Contract Time or Price, except when revisions to the Drawings and/or Specifications required by the permitting authority cause the Delays. The Contractor must pay all charges of Public Utilities for connections to the Work.

1.4. TAXES

- A. The Contractor must pay all Michigan sales and use taxes and any other similar taxes covering the Work that are currently imposed by legislative enactment and as administered by the Michigan Department of Treasury, Revenue Division. If the Contractor is not required to pay or bear the burden or obtains a refund of any taxes deemed to have been included in the Bid and Contract Price, the Contract Price must be reduced by a like amount and that amount, whether as a refund or otherwise, must ensure solely to the benefit of the Owner.

1.5. SAFETY AND PROTECTION

- A. The Contractor and its Subcontractors/Suppliers must comply with all applicable Federal, State and local Laws governing the safety and protection of persons or property, including, but not limited to the Michigan Occupational Safety and Health Act (MIOSHA), 1974 PA 154, as amended, MCL 408.1001 et seq., and all rules promulgated under the Act. The Contractor is responsible for all damages, injury or loss to the Work, materials, equipment, fines, and penalties as a result of any violation of such Laws. The Contractor is solely responsible for initiating, maintaining and supervising all safety precautions and programs and such responsibility must continue until such time as the Owner's Representative is satisfied

that the Work, or Work inspected, is completed and ready for final payment. Contractor shall hold Owner and Owner's Representative(s), CCBRA and ADDITIONAL INSURED harmless. In doing the Work the Contractor must take all necessary precautions for the safety of, and must erect and maintain all necessary safeguards and provide the necessary protection to prevent damage, injury or loss to: (a) all employees on the Work and other persons who may be affected by the Work, (b) all the Work and materials and equipment to be incorporated into the Work, whether stored on or off the site, and (c) other property at or adjacent to the site, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Utilities not designated for removal, relocation or replacement. In the event of severe weather, the Contractor must inspect the Work and the Site and take all reasonably necessary actions and precautions to protect the Work and ensure that public access and safety are maintained.

1.6. MICHIGAN RIGHT-TO-KNOW LAW

- A. The Contractor and its Subcontractors/Suppliers must comply with MIOSHA, Michigan Right-to-Know Law (Public Act 80 of 1986) and the rules promulgated under it. The Act places certain requirements on employers to develop a communication program designed to safeguard the handling of hazardous chemicals through labeling of chemical containers and development and availability of Safety Data Sheets (SDS), and to provide training for employees who work with these chemicals and develop a written hazard communications program. The Act also provides for specific employee rights, including the right to be notified of the location of SDS and to be notified at the site of new or revised SDS within five Business Days after receipt and to request SDS copies from their employers. The Contractor, employer or Subcontractor must post and update these notices at the site.

1.7. ENVIRONMENTAL REQUIREMENTS

- A. The Contractor and its Subcontractors/Suppliers must comply with all applicable Federal, State and local environmental Laws, standards, orders or requirements including but not limited to the National Environmental Policy Act of 1969, as amended, Michigan Natural Resources and Environmental Protection Act, P.A. 451 of 1994, as amended, the Clean Air Act, as amended, the Clean Water Act, as amended, the Safe Drinking Water Act, as amended, Pollution Prevention Act, as amended, Resource Conservation and Recovery Act, as amended, National Historic Preservation Act, as amended and Energy Policy and Conservation Act and Energy Standards for Buildings Except Low-Rise Residential Buildings, ANSI/ASHRAE/IESNA Standard 90.1-1999.

1.8. NONDISCRIMINATION: CONTRACTOR AND ITS SUBCONTRACTORS AND SUPPLIERS MUST COMPLY WITH THE FOLLOWING REQUIREMENTS:

- A. Not to discriminate against any employee or applicant for employment because of race, color, religion, national origin, age, sex, height, weight or marital status and take affirmative action to ensure that applicants are employed and the employees are not subject to such discrimination. Such action must include, but is not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training.
- B. To state in all solicitations or advertisements for employees that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, age, sex, height, weight or marital status.

1.9. ANTI-LOBBYING:

- A. The CONTRACTOR shall not use any of the funds awarded in this contract for the purpose of lobbying as defined in the State of Michigan's lobbying statute, MCL 4.415(2). "Lobbying" means communicating directly with an official of the executive branch of state government or an official in the legislative branch of state government for the purpose of influencing legislative or administrative action." The Borrower shall not use any of the funds awarded in this contract for the purpose of litigation against.

1.10. IRAN SANCTIONS ACT:

- A. By signing the contract, the CONTRACTOR is certifying that it is not an Iran-linked business, as defined in MCL 129.312.

END OF SECTION 01 41 00

SECTION 01 42 00 REFERENCES**1. GENERAL****1.1. REFERENCES:**

- A. References will be made in an abbreviated alpha numeric form to specific standard specifications, reference publications and building codes of federal or state agencies, manufacturers, associations or trade organizations. Such references will be identified by the alphabetic abbreviation which identifies the government agency, the association or organization followed by the rule, section or detail number that are to form a part of these specifications, the same as if fully set forth herein, and must be of latest issued date in effect three months before the Bid opening date shown on the Proposal and Contract. The abbreviations used are referred to as follows:

Abbreviation	Agency, Association or Organization
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction, Inc.
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society of Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BOCA	Building Officials and Code
CDA	Copper Development Assn., Inc.
CLFMI	Chain Link Fence Manufacturer's Institute
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
EGLE	Michigan Department of Environment Great Lakes and Energy
EPA	Environmental Protection Agency
F/M	Factory Mutual Research Corporation
FS	Federal Specifications
HEW	United States Department of Health Education and Welfare
MDEQ	Michigan Department of Environmental Quality
MDOT	Michigan Department of Transportation
MIOSHA	Michigan Occupational Safety and Health Administration
NESHAP	National Emission Standard of Hazardous Air Pollutants
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation Testing Laboratory, Inc.
NSWMA	National Solid Waste Management Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PDI	Plumbing and Drainage Institute
SMACNA	Sheet Metal & Air Conditioning Contractors
UL	Underwriters Laboratories, Inc.
USBM	United States Bureau of Mines
USDC	United States Department of Commerce
29 CFR	Title 29 of the Code of Federal Regulations (OSHA)
40 CFR	Title 40 of Code of Federal Regulations (Protection of Environment)

END OF SECTION 01 42 00

SECTION 01 45 00 QUALITY CONTROL**1. GENERAL****1.1. TESTING/CERTIFICATIONS**

- A. All tests required to complete the Work must be conducted in accordance with ASTM, ANSI, OSHA, EPA and other Standards for testing by a qualified firm/individual certified to perform such testing. Contractor must submit a minimum of three copies of each test/inspection report to the Owner/Owner's Representative for evaluation and subsequent distribution. The following general classifications of Work require submission of test reports and/or certificates of inspection. Additional submissions may be requested by the Owner/Owner's Representative at any time.
- a. Utility disconnect certificates/clearances;
 - b. Open hole inspection certificates;
 - c. Backfill(s) to include aggregate from crushed concrete;
 - d. Gradation reports on borrow material (ASTM C117, C136 and D2487).
 - e. One moisture density curve for each type of borrow used (ASTM D1557) per source, and as needed.
 - f. Field density test reports (ASTM D2922 and D3017)
 - i. One per compacted 12-inch lift of 4,000 square feet (vibratory roller).
 - ii. One per compacted 6-inch lift of 200 lineal feet of up to four-foot wide trench (hand operated plate compactor).
 - iii. A minimum compaction of 95% maximum dry density shall be achieved for Class II granular borrow.
 - iv. A minimum compaction of 98% maximum dry density shall be achieved for gravel or crushed concrete aggregate.
 - g. Borrow analytical reports for VOC, SVOC and 10 Michigan Metals. A letter from the off-Site source may be substituted for the analytical data, provided it states the material is free of all reportable concentrations of parameters listed herein and is a virgin material; and,
 - h. Concrete (for sidewalks and curbs, if necessary, per MDOT or City of Grayling Specifications, as applicable).
- B. The Owner may conduct quality assurance testing. The Contractor will be responsible for coordinating and assisting the Owner's/Owner's Representative with testing, when requested and any cost for re-testing for failed tests.
- C. The Owner may perform periodic soil testing at the subject property. In the event the backfill material does not meet specifications, the Contractor will be required to remove all backfill material and supply acceptable backfill with certified test results from an accredited laboratory sustaining that the backfill material is free from any prohibited material.
- D. All costs associated with the testing, removal of the unacceptable material and replacement with acceptable material shall be paid by the Contractor at no additional cost to Owner.
- E. Contractors' Requests for Inspections
- a. All Contractors' requests for inspections shall be made to the Owner's Representative and/or the appropriate agency and/or project personnel at least 72 hours prior to the date of the requested inspection. Delays resulting from inspections will be at no cost to Owner or Owner's Representative.

END OF SECTION 01 45 00

SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS**1. GENERAL****1.1. TEMPORARY FACILITIES AND CONTROLS**

- A. The Contractor must furnish and install all temporary facilities and controls required to complete the Work and must remove them from the property upon completion of the Work in accordance with Federal, State and local requirements.

1.2. MINIMUM REQUIREMENTS

- A. Power and Water
 - a. The Contractor is responsible for providing all power (electricity) and water necessary to complete the Work. Water or electricity will not be available in the area where Work will be performed. The Contractor will be responsible for providing all reasonable services for its operations. The Contractor is responsible for obtaining approval and permits, and paying any fees, for use of hydrants or other services from the City of Grayling. Contractor must pay costs for installation and removal of any temporary connections including necessary safety devices and controls.
- B. Temporary Sanitary Facilities
 - a. Portable Toilets: The Contractor must provide and maintain a sufficient number of portable temporary toilets in locations approved by the Owner. They must comply with all Federal, State, and local code requirements. The Contractor must maintain the temporary toilets in a sanitary condition at all times and must remove them when the Work under this Contract is complete. The Contractor's employees are not allowed to use any existing toilet facility. The Contractor's employees are not allowed to soil the ground on the project site or adjoining parcels.

END OF SECTION 01 50 00**SECTION 01 60 00 PRODUCT REQUIREMENTS****1. GENERAL****1.1. PROVISION AND RESPONSIBILITY**

- A. The Contractor must furnish and be responsible for all materials, equipment, facilities, tools, supplies, and utilities necessary for completing the Work. All materials and equipment must be provided as described in the Contract Documents and of good quality, free of defect and new and must be applied, installed, connected, erected, used, cleaned and conditioned following the manufacturer's and suppliers' instructions.

1.2. DELIVERY, STORAGE, AND HANDLING

- A. All materials and equipment delivered to and used in the Work must be suitably stored and protected from the elements. The areas used for storage must only be those approved by the Owner. The Owner assumes no responsibility for stored material. The ownership and title to materials will not be vested in the Owner before materials are incorporated in the Work, unless payment is made by the Owner for stored materials and equipment. After delivery, before and after installation, the Contractor must protect materials and equipment against theft, injury or damage from all causes. For all materials and equipment, the Contractor must provide complete information on installation, operation and preventive maintenance.
- B. The Contractor must cover and protect bulk materials while in storage which are subject to deterioration because of dampness, the weather or contamination. The Contractor must keep materials in their original sealed containers, unopened, with labels plainly indicating manufacturer's name, brand, type and grade of material and must immediately remove from the Work site containers which are broken, opened, watermarked and/or contain caked, lumpy or otherwise damaged materials.
- C. The Contractor must certify that any materials stored off-site are:
 - a. Stored on property owned or leased by the Contractor.

- b. Insured against loss by fire, theft, flood or other hazards.
- c. Properly stored and protected against loss or damage.
- d. In compliance with the Plans, Bid Specifications and Regulatory Requirements.
- e. Specifically allotted, identified, and reserved for the project.
- f. Itemized for tracking and payment.
- g. Subject to these conditions until the items are delivered to the project site.

1.3. REGULAR CLEANING

- A. The Contractor must maintain an orderly jobsite and shall remove all scrap or removed material, debris or rubbish from the Project work site at the end of each working day and more frequently whenever the Owner's Representative deems such material to be a hazard. The Contractor cannot discard materials on the Project work site, adjacent properties, or on the streets. No salvage or surplus material may be sold at the Project work site. No burning of debris or rubbish is allowed. Any recycled materials must be recycled and the Contractor will be required to provide a recycling plan and receipt of delivery.

END OF SECTION 01 60 00

SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

1. GENERAL

1.1. SUBSTANTIAL COMPLETION

- A. The Contractor must notify the Owner and Owner's Representative when the Work will be substantially complete and a formal Request for Inspection shall be made by the Contractor. Testing results, Certificates and Project Record Documentation sufficient to reasonably ascertain Work was completed in accordance with the Specifications shall be due upon Substantial Completion Request to initiate an Inspection. If the Owner and Owner's Representative agree that the project is Substantially Complete, a Punch List will be prepared by Owner/Owner's Representative of items/tasks that need to be completed by the date set for final acceptance by the Owner.

1.2. FINAL REVIEW

- A. Contractor shall perform final restoration until complete and submit written notification that:
 - a. Work has been completed in accordance with the Contract Documents.
 - b. Work has been conducted in accordance with all authorities having jurisdiction.
 - c. Work is completed and ready for final review.

1.3. FINAL APPROVAL

- A. Upon approval, Owner's Representative shall request submittal of:
 - a. Contract Documents
 - b. Final Pay Request
 - c. Final Statement of Accounting
- B. The value of all items not completed shall be deducted from the final payment "until complete". Examples include:
 - a. Work determined to have not been completed in accordance with the Specifications; or,
 - b. The Contractor cannot provide items required for Item payment as indicated in *SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES*.
- C. Contractor shall take immediate steps to remedy stated deficiencies, and send second written request for Final Approval certifying that the Work is complete. The Owner's Representative shall determine if Work was completed and a Recommendation for Payment (recommended upon completion of the Work) and Contract Closeout shall be made to Owner upon one (1) year anniversary of completion.

END OF SECTION 01 70 00

SECTION 01 71 23 FIELD ENGINEERING**1. GENERAL****1.1. SUBSURFACE UTILITIES:**

- A. Contractor must identify type location and elevation of all utilities at the site. Including location, elevation of “Cut and Caps”. Utility type, size, location, and elevation must be clearly depicted in scaled “Utility Location Drawing” prepared by the Contractor. A Copy of drawing must be provided to Owner/Owner’s Representative with Project Close-Out submittals.

END OF SECTION 01 71 23

SECTION 01 80 00 PERFORMANCE REQUIREMENTS**1. GENERAL****1.1. PERFORMANCE**

- A. The Contractor is responsible for maintaining, repairing or replacing the following parts of the Work, and any resulting damage from failure, for one (1) year after completion of project:
 - a. Subsidence of backfill on site; and,
 - b. Utility Cut and Caps performed by Contractor.

END OF SECTION 01 80 00

DIVISION 02 00 00
EXISTING CONDITIONS

SECTION 02 41 00 DEMOLITION**1. GENERAL****1.1. SECTION INCLUDES**

- A. Demolition of designated structure(s), site improvements, vegetation, and site features; removal of materials from site, and proper disposal of materials.
- B. Removal of abandoned underground utility piping or conduit, identify, cut, and cap utility in accordance with local municipality requirements and or Utility company requirements.
- C. Submittals in *SECTION 01 32 19 SUBMITTALS SCHEDULE*

1.2. REGULATORY REQUIREMENTS

- A. The Contractor shall conform to applicable codes, laws, and regulations for demolition of structures, ensure safety of employees, subcontractors, Owner, Owner Representative and authorized visitors on-site and protection of adjacent structures and improvements, provide dust control measures to and ensure no visible emissions and/or fugitive dusts are generated during the Work, and the characterization, containerization, transportations and disposal of materials.
- B. Prepare all plans, submit all notifications, apply for and obtain all required permits and pay all associated fees. The Contractor must apply for and obtain all permits and pay fees necessary to complete the WORK including, but not limited to: Soil Erosion Sedimentation Control (SESC Permit); Demolition Permit, Row of Way Permit, Fire Hydrant use permit, and Sidewalk Permits.
- C. Contractor shall request, obtain, and verify all utility disconnects are made, and shall obtain all wrecking clearances from municipality and/or utility companies, and utilize private utility location services as needed. If utilities are found not to be disconnected despite having a wrecking clearance, the Contractor must cease operations and notify appropriate municipal agency and/or utility company and the Owner immediately. Additionally, it is the Contractor's responsibility to notify MISS DIG and meet Miss Dig representatives on-site to ensure all utilities are identified and marked.
- D. Contractor shall not close or obstruct roadways or sidewalks without obtaining the appropriate required permits prior to the activity beginning. Do not store or stage materials or equipment in Right of Way, on streets, sidewalks, or adjacent properties without express written permission/permit from municipality and/or property owner. Contractor responsible for all associated fees.
- E. Paints on the structures have been sampled to determine their potential lead content. A copy of the sampling report is available from the Consultant. Lead was identified in chip samples from the site. In light of these findings, the Contractor shall be subject to the following regulations with regard to demolition and removal work: OSHA Final Rule 29 CFR 1926.62 - Lead Exposure in Construction, OSHA Final Rule 29 CFR 1926.103 - Respiratory Protection.

It is not anticipated that lead and cadmium abatement will be required. However, the Contractor shall be responsible for: The protection of workers and the public who may be exposed to lead during demolition activities; Conducting the demolition of the painted materials such that potential exposure is minimized, to the satisfaction of the Consultant; and final determination of the proper disposal methods for the paint-covered surfaces.

2. PRODUCTS**2.1. FILL MATERIALS**

- A. Aggregate, MDOT CLASS II Sand (or pre-approved equivalent by Owner's Representative)
- B. Aggregate, Gravel
 - a. Subbase: Owner and Owner's Representative Pre-approval (MDOT Class 23A, dense-graded aggregate).
 - b. VMS Permeable Zone: ASTM #5, #6, #57, or #67 (Subject to Owner and Owner's Representative Pre-approval).

- C. Aggregate, On-Site Derived (Subject to Owner and Owner's Representative Pre-approval)
 - a. Matching MDOT Class II Sand (Suitable Fill)
 - b. Crushed Concrete Subbase: Matching MDOT Class 23A, dense-graded aggregate.
 - c. Crushed Concrete VMS Permeable Zone: Matching ASTM #5, #6, #57, or #67.

3. EXECUTION

3.1. PREPARATION

- A. Within three (3) business days after the property is assigned for demolition and soil removal, the Contractor shall submit a schedule to the Owner and the Owner's Representative. The schedule shall name any and all subcontractors and provide contact information for the subcontractor. The schedule shall provide contact information for the Contractor's proposed project manager and site superintendent for the demolitions.
- B. Provide, install, and maintain temporary barriers and secure the site prior to the start of work. Temporary barriers shall remain in place until all work is complete.
- C. Protect all adjacent and existing structures, which are not to be demolished. Photograph the condition of adjacent and existing structures, fences, etc.
- D. Photograph the front and rear of the structure(s) to be demolished, including enough of the adjacent structures or landmarks to remain to allow a viewer to identify the location, and determine condition of the adjacent structure before demolition. Photograph/Video the condition of sidewalks and curbs.
- E. Maintain a copy of the Pre-Demolition Asbestos Survey Report, Phase II ESA, Work Plan and Health and Safety Plan and all Labor/OSHA required documents onsite while the Work is underway.
- F. Prepare and proceed with the contract work in a manner that will prevent the movement or settlement of adjacent structures. Provide temporary bracing and shoring, as necessary to protect adjacent structures.

3.2. DEMOLITION REQUIREMENTS

- A. Conduct demolition activities in a manner to minimize interference with adjacent structures. Maintain clear access to adjacent structures
- B. Cease demolition operations immediately if adjacent structures appear to be in danger. Notify the Owner immediately and do not resume demolition operations until given direction.
- C. Conduct contract operations with a minimum interference to public or private access to the public areas outside or adjacent to the contract work areas at all time.
- D. Provide and use water from a tanker truck or a hydrant as necessary to control dust. If the demolition is delayed or rescheduled due to weather, the Contractor must revise or reapply for permits and notifications. Adequate wetting is defined in 40 CFR Part 61.
- E. The Contractor must promptly remove debris or sediment in the road or road right-of-way.

3.3. DEMOLITION

- A. Contractor responsible for utility disconnects and obtaining Wrecking clearances. If utilities are found not to be disconnected despite having a wrecking clearance, the Contractor must cease operations and notify municipality/utility and Owner/Owner's Representative immediately. Protect utilities to remain by using hand methods.
- B. Remove all structures and site improvements on the property completely, including but not limited to all foundations (walls and footings) and basement floors, steps, railings, retaining walls, lamp or signposts, flat work, fences or other structures.
- C. Remove curb cuts, driveway aprons, driveways, patios, walkways, and other site slabs. The Contractor must make every effort to protect existing City sidewalks from damage The Contractor must replace City sidewalks, curbs, roads,

signs or other improvements damaged during performance of the Work and heaved sidewalks greater than 1" at no cost to the Owner.

- D. Remove all trees, shrubs, or other plantings. Remove and dispose of all debris. Currently all trees are to be cleared unless otherwise identified. Clearing and Grubbing is incidental and inclusive of payment within the Demolition pay item.
- E. Remove all new and existing debris piles from the entire project site, including the area adjacent to sidewalks and curbs.
- F. Properly remove and dispose of all demolished materials from the project site. Do not burn or bury any materials on site. Leave the project site in clean condition. Protect/barricade the open hole or debris pile. Recycle materials as feasible.
- G. Place bulkheads per municipal requirements in all existing sewers encountered on the property, unless waived by the Owner or Owner's Representative. Place rebar rods to aid in future locating of the sewers and show type and location all utility disconnects on "As-Built" drawing, Include legend and notes describing type and size of utility, type of cap utilized as well as name of agencies, utility company, name of inspector conducting open-hole inspections and dates of inspections.
- H. Request Open Hole Inspection from applicable municipality, agency or utility and obtain and provide written verification(s) that open-hole inspection passed to Owner prior to backfilling. Failure to provide requested information will result in Contractor re-excavating backfill material at no cost to Owner.
- I. Backfill all areas excavated as a result of demolition, in accordance with *SECTION 02 41 00 DEMOLITION*. Backfill shall be completed after obtaining Open Hole Inspection approval.
- J. Rough grade and compact all areas affected by demolition to meet adjacent site grades and contours.
- K. Remove temporary facilities, signage, barricades, warning tape, etc., after the work is completed.
- L. Replace curbs and damaged sidewalks per the City of Grayling or MDOT requirements.

END OF SECTION 02 41 00

DIVISION 31 00 00

EARTHWORK

SECTION 31 23 23 FILL**1. GENERAL****1.1. SECTION INCLUDES**

- A. Backfilling in areas excavated as a result of demolition.
- B. General Site filling and backfilling.
- C. Consolidation and compaction as scheduled of fill materials.

1.2. REFERENCES

- A. State of Michigan Department of Transportation (MDOT) [2012 Standard Specifications for Construction](#). Available on the MDOT website: State of Michigan Department of Transportation (MDOT) 2003 (Revised December 2014) [Density Testing and Inspection Manual](#).

1.3. DEFINITIONS

- A. Relative Compaction – Ratio of field dry density as determined by ASTM D 2922 and ASTM D 3017 or 2216, and laboratory maximum dry density as determined by ASTM D 1557.

2. PRODUCTS**2.1. FILL MATERIALS**

- A. Backfill
 - a. Place and compact MDOT Class II Natural Sand to four inches (4") below existing grade, or existing grade, as specified per location.
- B. All fill material obtained off-site shall be uncontaminated.
 - a. The Contractor must provide certification from the fill source documenting that the materials are uncontaminated (EGLE Residential Criteria) before bringing the materials on the site. Materials shall be from a commercial source or approved by the Owner.
 - b. If source certification is not available, all fill shall be sampled and tested that the materials are below EGLE Residential Criteria. The Contractor shall provide laboratory results from soil samples for the materials, provided prior to bringing fill on the site. Owner/Owner's Representative must approve source. Owner/Owner's Representative reserves right to reject any fill.

3. EXECUTION**3.1. PREPARATION**

- A. Compact all subgrade fill materials to the density requirements for subsequent backfill materials of this specification.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill all excavated areas with MDOT Natural Class II sand (or pre-approved equivalent), or crushed concrete where specified, and compact to density equal to or greater than requirements for subsequent fill material.

3.2. BACKFILLING

- A. Backfill and compact all resulting holes, basements, foundations or voids to a level condition that allows for proper drainage without ponding or runoff onto adjacent properties. Where the grade is sloping, the backfill level shall be sloping accordingly. All depressed areas and voids found in the area shall be filled.
- B. Do not use frozen fill material
- C. Do not place backfill on muddy, frozen, or frosted surfaces.
- D. Backfill shall be completed after obtaining open-hole inspection approval, or 24 hours if approval is not required, unless otherwise approved.

- E. The Contractor shall place and compact materials in equal continuous layers not exceeding 12 inches in compacted depth, and mechanically compact using approved heavy equipment (e.g., vibratory roller), or 6 inches in compacted depth with hand operated mechanical equipment (e.g., plate compactor), to 95 percent of the maximum density as established by ASTM D 1557 requirements or approved alternative method.
- F. Employ a placement method that does not disturb or damage other surrounding or adjacent work and / or property. Control dust.
- G. Maintain optimum moisture content of the backfill materials to attain required compaction density requirements of this specification. Scarify and air-dry, or remove and replace, backfill that contains too much moisture to compact to 95 percent of maximum density.
- H. No stockpiling of fill materials on vacant lots or in the streets will be permitted.

3.3. TOLERANCES

- A. Top Surface elevation of Backfilling shall be plus or minus 1 inch from required elevations.

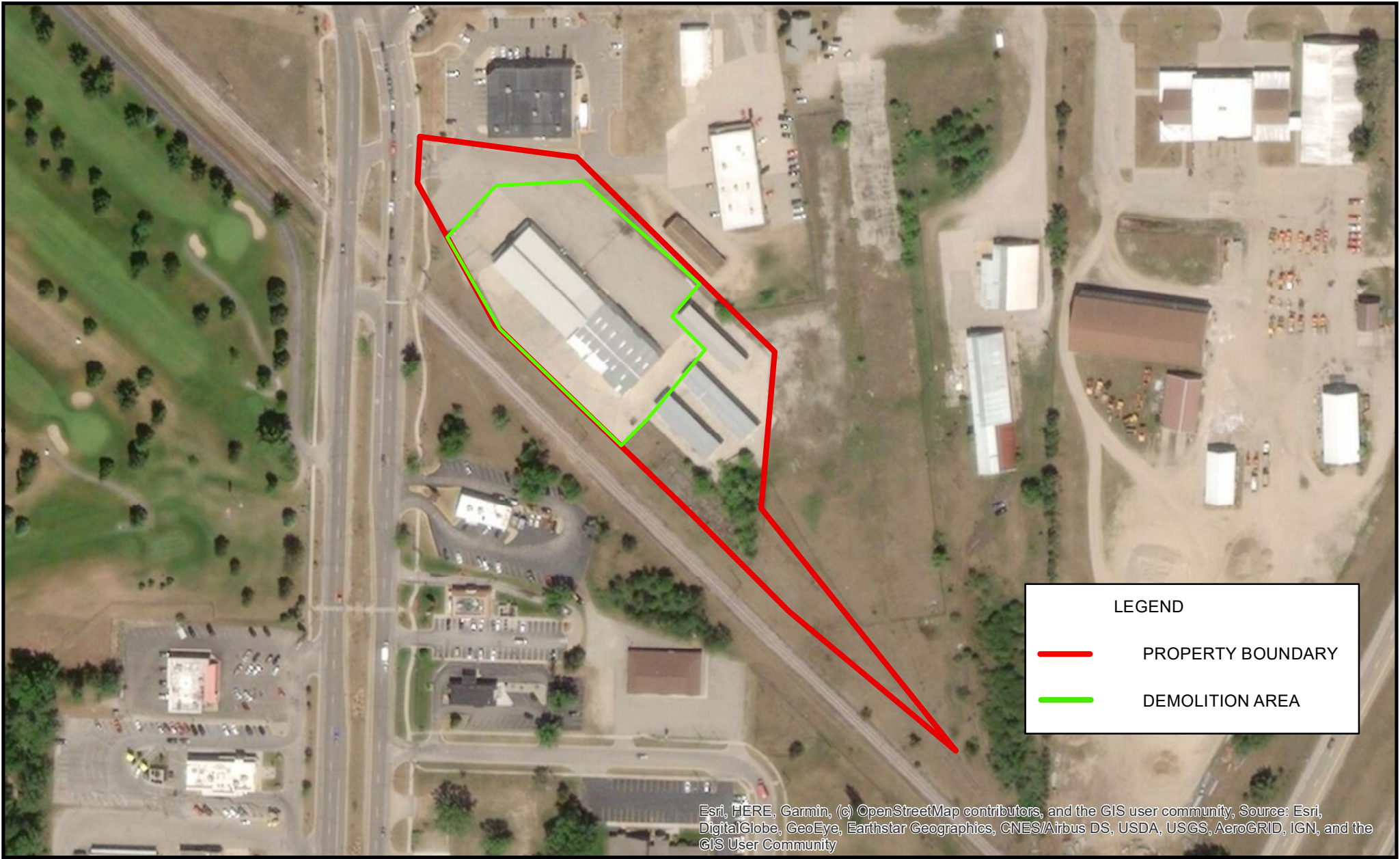
3.4. FIELD QUALITY CONTROL

- A. *SECTION 01 45 00 QUALITY CONTROL*
- B. Compaction testing will be performed in accordance with ASTM D2922 and other ASTM referenced standards.
- C. Concrete crushing will be performed to produce Subbase aggregate or VMS Permeable Zone in accordance with the specified ASTM standards and will be subject to approval by the Owner or Owner's Representative.
- D. If Compaction tests indicate the Contractor's Work does not meet specified requirements, the Contractor shall remove the non-compliant Work and replace unsuitable backfill. Backfill will not be acceptable until retesting confirms Contract requirements have been satisfied as determined by the Owner or Owner's Representative.
- E. If visual inspection and/or laboratory testing indicate that the backfill materials do not meet the quality required under this Section, the Contractor shall remove the non-compliant Work and replace the unsuitable backfill. Backfill will not be acceptable until retesting confirms Contract requirements have been satisfied as determined by the Owner or Owner's Representative.

END OF SECTION 31 23 23

APPENDIX I

FIGURES



LEGEND

— PROPERTY BOUNDARY

— DEMOLITION AREA

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0240480

Feet

N



FIGURE 2

SITE DEMOLITION

NORTHERN MARKET

2059 I-75 BL

GRAYLING, MICHIGAN

APPENDIX II

GLOSSARY

GLOSSARY

Activity – An element in the Progress Schedule establishing a requisite step, or the time and resources required, for completing the part of the Work associated with that Activity.

Addenda – Written instruments that are used by the Owner and/or Owner's Representative to incorporate interpretations or clarifications, modifications and other information into the Bidding Documents. An Addendum issued after Bid opening to those Bidders who actually submitted a Bid, for the purpose of re-bidding the Work without re-advertising, is referred to as a **post-Bid** Addendum.

Alternate – Refers to work specified in the Bidding Documents for which the Bidder must bid a Bid Price.

Archaeological Feature – Any prehistoric or historic deposit of archaeological value, as determined by a representative of a State agency that is duly authorized to evaluate such findings and render such judgments. An Archaeological Feature deposit may include, but is not limited to Indian habitations, ceremonial sites, abandoned settlements, treasure trove, artifacts or other objects with intrinsic archaeological value and that relate to the history and culture of the State of Michigan.

Authorized Technical Data – Information and data contained in a report of exploration and tests of subsurface conditions. Also, any physical data (dimension, location, conditions, etc.) contained in those Drawings of physical conditions of existing surface and subsurface facilities.

Best Value – The bids will be evaluated for best value based on price and qualitative components that may include but are not limited to technical design, technical approach, quality of proposed personnel, and management plans, per PA 430 of 2012.

Bid – Written offer by a Bidder for the Work, as specified, which designates the Bidder's Base Bid and Bid Prices for all Alternates. The term *Bid* includes a *re-bid*.

Bidder – The Person acting directly, or through an authorized representative, who submits a Bid directly to the **Owner**.

Bidding Documents – The proposed Contract Documents as advertised, and all Addenda issued before execution of the Contract.

Bid Price – The Bidder's price for a lump sum or unit rate item of work.

Bid Security – Security serving as a guarantee that the Bidder will conform to all conditions.

Bidding Requirements – The Advertisement, Instructions to Bidders, Supplementary Instructions, Information for Bidders, Bid Form, Bid Form Attachments and qualification submittals, as advertised and as modified by Addenda, and any other Sections included in the Bidding Documents for the purpose of governing bidding and award of the Contract.

Bond – Security furnished by the **Contractor**, as required by the Contract Documents.

Business Day – Any Day except Saturdays, Sundays and holidays observed by the **Owner**.

Bulletin – A request used by the **Owner** to describe a change in the Work under consideration by the **Owner** and to request the **Contractor** to submit a proposal for the corresponding adjustment in Contract Price and/or Contract Time, if any.

Calendar Day – Every day shown on the calendar, Saturdays, Sundays and holidays included.

Change Order – A written order issued and signed by the **Owner**, which amends the Contract Documents for changes in the Work or an adjustment in Contract Price and/or Contract Time, or both.

Contract Award – The official action of the **Owner** awarding the Contract to the **Contractor**.

Contract Documents – Written and graphic documents that form the legal agreement between the **Owner** and the **Contractor**, consisting of this document, completed Bid and Contract forms, terms and conditions of the contract, specifications, drawings, addenda, Notice of Award, Notice-to-Proceed and contract change orders.

Contract Price – The total compensation, including authorized adjustments, payable by the **Owner** to the **Contractor**.

Contract Times – The Contract Times for the entire Work are the periods allowed, including authorized adjustments, for Substantial Completion and final completion of the Work. The Contract Times for a designated portion of the Work are the periods allowed for Substantial Completion and final completion of any such portion of the Work, as specified in the Contract Documents.

Contractor – Business enterprise with which the **Owner** has entered into the Contract.

Correction Period – Period during which the **Contractor** must, in accordance with the Contract Documents, (a) correct or, if rejected, remove and replace Defective Work, and (b) maintain warranties for materials and equipment in full force and effect.

Cost of the Work Involved – The sum of all costs that would be, or actually were, necessarily incurred by the **Contractor** in providing any Work Involved with the related change, less the costs that would be, or would have been, incurred by the **Contractor** to provide such Work without the related change.

Defective – As determined by the Owner's Representative, an adjective which when referring to or when applied to the term "Work" refers to (a) Work not conforming to the Contract Documents or not meeting the requirements of an inspection, test or approval, or (b) Work itemized in a Punch List which the **Contractor** fails to complete or correct within a reasonable time after issuance of the Punch List by the **Owner's Representative**.

Delay – Any act or omission or other event that in any manner adversely affects or alters the schedule, progress or completion of all or any part of the Work. Delay is a generic term intended to include deferral, stoppage, slow down, interruption and extended performance, and all related hindrance, rescheduling, disruption, interference, inefficiency and productivity and production losses.

Division – Each of the numbered, distinct parts (starting with Division 0) into which the Specifications are divided.

Drawings – Part of the Contract Documents showing the Work. Drawings must neither serve nor be used as Shop Drawings.

Environmental Engineer – see Owner's Representative Services Contractor

Emergency – A condition affecting the safety or protection of persons, or the Work, or property at or adjacent to the site.

Fee for the Work Involved (Fee) – An established, percentage mark-up on the Cost of the Work Involved which is allowed to the **Contractor** for (a) reasonable administrative costs, and (b) negotiated, reasonable profit on the Cost of the Work Involved.

Hazardous/Regulated Material – Asbestos containing materials (ACMs), Polychlorinated biphenyls (PCBs), petroleum products, such construction materials as paint thinners, solvents, gasoline, oil, etc., and any other like material the manufacture, use, treatment, storage, transportation or disposal of which is regulated by federal, State or local Laws governing the protection of public health, natural resources or the environment.

Invitation To Bid (ITB) -The solicitation document presenting the terms and conditions that will become part of the Contract when the Bid is accepted.

Law(s) – Means federal, State and local statutes, ordinances, orders, rules and/or regulations.

MCL – The Michigan Compiled Laws of the State of Michigan.

Means and Methods – Includes means, methods, techniques, sequences, and/or procedures applicable to the Work.

Notice of Award – Written notice accepting the Bid to the lowest responsive, responsible Bidder and designating the Contract Price (and establishing the Alternates accepted by the **Owner**).

Notice-to-Proceed – Written notice issued by the Owner directing the Contractor to commence the construction activities and establishing the start date of the Contract Time.

On-Site Inspection – The **Owner's Representative's** on-site examination of the **Contractor's** completed or in progress Work to determine and verify to the Owner that the quantity and quality of all Work complies with the requirements of the Contract Documents.

Owner – The entity with whom the **Contractor** has entered into the Contract and for whom the Work is to be provided.

Owner's Representative/Field Representative – A consultant, acting under the direction of the Owner, providing on-site, periodic observation and documentation of the Work for compliance with the Contract Documents.

Owner's Representative – The individual or business entity who has the authority to practice the design disciplines required by the Contract Documents and/or providing on-site, periodic observation and documentation of the Work for compliance with the Contract Documents.. An Agency with appropriate licensing may replace the Owner's Representative in their role if a consultant is not used.

Partial Use – Use by the **Owner** of a designated portion of the Work before accomplishing Substantial Completion of the entire Work. Partial Use does not mean Substantial Completion of the portion of the Work placed in use by the **Owner**.

Person – Individuals, partnerships, corporations, receivers, trustees, joint ventures or any other legal entity and any combinations of any of them.

Political Subdivision – Any county, city, village or other local unit of the State, including any agency, department or instrumentality of any such county, city, village or other local unit.

Project – The total construction, which includes the Work and possibly other work completed by others, as indicated in the Contract Documents.

Project Schedule – Work Schedule that shows the **Contractor's** approach to planning, scheduling and execution of the Work and that accurately portrays completed Work as to sequencing and timing, as provided in the Contract Documents.

Project Specifications – The Contract Documents organized into Divisions. "Technical Specifications" means Divisions of the Specifications consisting of technical descriptions of materials, equipment, construction systems, standards and workmanship.

Provisionary Allowance – An amount included within the Contract Price to reimburse the **Contractor** for the cost to furnish and perform Work that is uncertain because, for example, it is indeterminate in scope and may not be shown or detailed in the Contract Documents.

Punch List – A list of minor items to be completed or corrected by the **Contractor**, any one of which do not materially impair the use of the Work for its intended purpose.

Record Documents – Drawings, Specifications, Addenda, Change Orders, Change Authorizations, Bulletins, inspection, test and approval reports, photographs, written clarifications and interpretations and all other documents recording, or annotated to show, all revisions and deviations between the as-built installation and the Contract Documents, all approved Submittals and all clarifications and interpretations.

Records – Books, reports, documents, electronic data, and other evidence relating to the bidding, award and furnishing and performance of the Work.

Recycled Material – Recycled paper products, structural materials made from recycled plastics, re-refined lubricating oils, reclaimed solvents, recycled asphalt and concrete, recycled glass products, re-treaded tires, ferrous metals containing recycled scrap metals and all other materials that contain (a) waste materials generated by a business or consumer, (b) materials that

have served their intended purpose, and/or (c) materials that have been separated from solid waste for collection, recycling and disposition in the percentage determined by the State as provided by Law.

Request for Payment—The form provided by the **Owner** to be used by the **Contractor** in requesting payment for Work completed, which must enclose all supporting information required by the Contract Documents.

Schedule of Values—A schedule of pay items, which subdivides the Work into its various parts and which details, for each itemized part, cost and pricing information required for making payments for Work performed. The sum of all pay item costs in the Schedule of Values must equal the Contract Price for the Work.

Shop Drawings—Includes drawings, diagrams, illustrations, standard schedules, performance charts, instructions and other data prepared by or for the **Contractor** to illustrate some part of the Work, or by a Supplier and submitted by the **Contractor** to illustrate items of material or equipment.

Soil Erosion and Sedimentation Control—The planning, design and installation of appropriate Best Management Practices designed and engineered specifically to reduce or eliminate the off-site migration of soils via water runoff, wind, vehicle tracking, etc. Soil erosion and sedimentation control in the State of Michigan is regulated under The Natural Resources Environmental Protection Act; Soil Erosion and Sedimentation Control, 1994 PA 451, Part 91, as amended, MCL 324.9101 et seq.

State Construction Code—The Michigan State Construction Code Act, 1972 PA 230, as amended, MCL 125.1501 et seq.

Subcontractor—A Person/Company having an agreement with the Contractor to provide labor at the site and furnishing materials and/or equipment for incorporation into the Work.

Submittals—Includes technical Submittals, Progress Schedules and those other documents required for submission by the Contract Documents.

Substantial Completion—The Work, or a portion of the Work designated in the Contract Documents as eligible for separate Substantial Completion, has been completed in accordance with the Contract Documents as determined by the Owner's Representative, to the extent that the **Owner** can use or occupy the entire Work, or the designated portion of the Work, for the use intended without any outstanding, concurrent Work at the site, except as may be required to complete or correct Punch List items.

Supplier—A manufacturer or fabricator, or a distributor, material man or vendor representing a manufacturer or fabricator, who has an agreement with the Contractor to furnish materials and/or equipment.

Underground Utilities—Pipelines, piping, conduit, duct, cables, wells, tanks, tunnels and appurtenances, or other similar facilities, installed underground to convey or support conveyance of potable water, sprinkler or irrigation water, fire protection systems, electricity, gases, steam, petroleum products, sewerage and drainage removal, telephone, communications, cable TV, traffic or control systems.

Work (as in "the Work," "the entire Work")—The entire *completed Construction* required by the Contract Documents. The Work results from furnishing and performing all services, obligations, responsibilities, management, supervision, labor, materials, equipment, construction equipment, general conditions, permits, taxes, patent fees and royalties, testing, inspection and approval responsibilities, warranties, temporary facilities, small tools, field supplies, Bonds, insurance, mobilization, close-out, overhead and all connections, devices and incidental items of any kind or nature required and/or made necessary by the Contract Documents.

Work Involved, any Work Involved—Existing or prospective Work (a) reflected in any notice, proposal or claim, or (b) reflected in changes ordered or in process, or (c) affected by Delay.

APPENDIX III

**DEMOLITION/RENOVATION OF
A BUILDING/STRUCTURE**

DEMOLITION/RENOVATION OF A BUILDING/STRUCTURE

DEMOLITION/RENOVATION OF A BUILDING/STRUCTURE				
Pre-1981 Buildings - Asbestos Building Survey by Michigan Accredited Asbestos Building Inspector or CIH				
Note, the inspection must identify, locate and quantify all PACM and also other materials that may contain asbestos based upon the Inspector's/CIH's past knowledge and due diligence				
Notify contractors/employees of inspection results				
Asbestos-Containing Material Present				
No Asbestos Present	Requirements for Class I TSI & Surfacing Materials	Requirements for Class II All Other ACM	Requirements for Class III Disturbance or removal of Class I or II materials not to exceed contents of 1 glovebag (60" x 60")	Requirements for Class IV Custodial and Maintenance work activities that contact but do not disturb ACM/PACM
• No MIOSHA Asbestos Requirements • MIOSHA Part 20 Demolition, Construction Safety Standard Requirements • National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Requirements • Notification for demolition of a facility - of environmental Quality's (DEQ's) Air Quality Division. • No NESHAP Asbestos Requirements on renovations.	• Licensed asbestos abatement contractor or exempt licensed trade group performing asbestos abatement work incidental to primary licensed trade and <260' or 160' of friable and work contracted out • Project notification on project > 10' or 15' ft² and work contracted out • 40-hour initially trained and accredited (if friable) and work contracted out • 40-hour initially trained and accredited competent person and 8-hour annual refresher training and accreditation - accreditation excludes <10 residential units or exterior ACM • 32-hour initially trained and accredited worker(s) and 8-hour annual refresher training and accreditation - accreditation excludes <10 residential units or exterior ACM • Regulated area (restrict access to work site) • Personal air monitoring or NEA • Wet methods (unless not feasible (e.g., electrical hazard, equipment malfunction, or creates roofing safety hazard)) • Decontamination area (equipment room, shower and clean room if project > 25' or 10 ft²; drop cloth & HEPA vacuum < 25' or 10 ft²) • Respirators (establish and implement a written respirator program) • Protective clothing*** • Waste disposal (labeled sealed impermeable bags/containers) • Waste transport requirements, if friable (USDOT Hazardous Materials for Asbestos, 49 CFR Parts 100-180) - contact State Police Motor Carrier Division for information • Engineering and work practice controls for renovations and pre-building demolition interior removals (see Part 602, 29 CFR 1926.1101 (g)(1)-(iv) and (g)(5)) • Engineering controls for demolition of building where ACM remains (see Part 602, 29 CFR 1926.1101 (g)(6)(vi)) • NESHAP Requirements (contact DEQ)	• Licensed asbestos abatement contractor or exempt licensed trade group performing asbestos abatement work incidental to primary licensed trade and <260' or 160' of friable and work contracted out • Project notification on project > 10' or 15' ft² and work contracted out • 40-hour initially trained and accredited (if friable) competent person and 8-hour annual refresher training and accreditation excludes <10 residential units or exterior ACM • 12-hour trained competent person if only supervising intact ACM flooring projects utilizing compliant work practices • 32-hour initially trained (if friable, if substantially non-friable interior project, or interior project w/o NEA) and accredited worker(s) and 8-hour annual refresher training and accreditation - accreditation excludes <10 residential units or exterior ACM • 8 or more hours initial worker training and annual refresher training for one Class II material (non-friable and intact roofing materials, flooring materials, siding materials, ceiling tiles, or transit materials) • > 8 hours worker initial training and annual refresher training for more than one Class II material (non-friable and intact roofing materials, flooring materials, siding materials, ceiling tiles, or transit materials) • For non-friable intact Class II materials other than transit materials, no specified time for initial or refresher training above, no specified time for initial or refresher training for one Class II material (non-friable and intact roofing materials, flooring materials, siding materials, ceiling tiles, or transit materials) • Regulated area (restrict access to work area) • Personal air monitoring or NEA • Wet methods (unless not feasible (e.g., electrical hazard, equipment malfunction, or creates roofing safety hazard)) • Decontamination area (drop cloth + HEPA vacuum) if no NEA • Respirators* (establish and implement a written respirator program) • Medical surveillance** • Protective clothing*** • Waste disposal (labeled sealed impermeable bags/containers) • Waste transport requirements, if friable (USDOT Hazardous Materials for Asbestos, 49 CFR Parts 100-180) - contact State Police Motor Carrier Division for information • Engineering and work practice controls for repair and maintenance operations (see Part 602, 29 CFR 1926.1101 (g)(1)-(iv) and (g)(5)) • Engineering controls for demolition of building where ACM remains (see Part 602, 29 CFR 1926.1101 (g)(6)(vi)) • NESHAP Requirements (contact DEQ)	• Licensed asbestos abatement contractor or exempt licensed trade group performing asbestos abatement work incidental to primary licensed trade and <260' or 160' of friable and work contracted out • Project notification on project > 10' or 15' ft² and work contracted out • 40-hour initially trained and accredited (if friable) competent person and 8-hour annual refresher training and accreditation excludes <10 residential units or exterior ACM • 12-hour trained competent person if only supervising intact ACM flooring projects utilizing compliant work practices • 32-hour initially trained (if friable, if substantially non-friable interior project, or interior project w/o NEA) and accredited worker(s) and 8-hour annual refresher training and accreditation - accreditation excludes <10 residential units or exterior ACM • 8 or more hours initial worker training and annual refresher training for one Class II material (non-friable and intact roofing materials, flooring materials, siding materials, ceiling tiles, or transit materials) • > 8 hours worker initial training and annual refresher training for more than one Class II material (non-friable and intact roofing materials, flooring materials, siding materials, ceiling tiles, or transit materials) • For non-friable intact Class II materials other than transit materials, no specified time for initial or refresher training above, no specified time for initial or refresher training for one Class II material (non-friable and intact roofing materials, flooring materials, siding materials, ceiling tiles, or transit materials) • Regulated area (restrict access to work area) • Personal air monitoring or NEA • Wet methods (unless not feasible (e.g., electrical hazard, equipment malfunction, or creates roofing safety hazard)) • Decontamination area (drop cloth + HEPA vacuum) if no NEA • Respirators* (establish and implement a written respirator program) • Medical surveillance** • Protective clothing*** • Waste disposal (labeled sealed impermeable bags/containers) • Waste transport requirements, if friable (USDOT Hazardous Materials for Asbestos, 49 CFR Parts 100-180) - contact State Police Motor Carrier Division for information • Engineering and work practice controls for repair and maintenance operations (see Part 602, 29 CFR 1926.1101 (g)(1)-(iv) and (g)(5)) • Engineering controls for demolition of building where ACM remains (see Part 602, 29 CFR 1926.1101 (g)(6)(vi)) • NESHAP Requirements (contact DEQ)	• At least 2 hour initial and annual refresher training • Respirators* (establish and implement a written respirator program) • 1926.1101(g)(11)(ii) • Workers trained (see 1926.1101(g)(11)(ii)) • Work practices (see 1926.1101(g)(11)(v)) if intact • Non-Intact Roofing and Pipeline Coating Materials - Refer back to Class II requirements
Definitions: Accredited: means individuals accredited under the Asbestos Workers Accreditation Act (Act 440, P.A. 1988, as amended) Asbestos: means asbestos in any form Asbestos-Containing Material: means any material containing more than one percent asbestos (Part 602) Class I Asbestos Work: means activities involving the removal of TSI and surfacing ACM or Class I Asbestos Work (Part 602) Class II Asbestos Work: means activities involving the removal of ACM which is not TSI or surfacing material (Part 602) Class III Asbestos Work: means repair and maintenance operations where "ACM", including Class I Asbestos Work, means may be disturbed (Part 602) Class IV Asbestos Work: means asbestos removal and custodial activities during which employees contact but do not disturb ACM or PACM (Part 602) Demolition: means wrecking or taking out of any load-supporting structural member and any member removing or shipping of friable asbestos material (Act 135) asbestos products (Part 602) Disturbance: means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM or generate visible debris from ACM or PACM (Part 602) Friable: means ACM that can be crumbled, pulverized, or reduced to powder when dry, by hand pressure (Act 135 and Act 440) GFI: means ground fault interrupter (Part 602) HEPA: means High Efficiency Particulate Air (Part 602) Impervious: means a material that does not allow liquids or gases to pass through it (Part 602) Intact: means ACM that has not crumbled, pulverized, or reduced to powder when dry, by hand pressure (Act 135 and Act 440) Negative Exposure Assessment: means a demonstration by the employer in accordance with Part 602.01(2)(e) that employee exposure to asbestos is consistently below PEL Non-friable: means ACM that is not friable (Part 602) Presumed Asbestos Containing Material: means thermal system insulation (TSI) and surfacing material that is presumed to contain asbestos based on the date it was found in pre-1981 buildings is also assumed to be an asbestos-containing material (Part 602) Renovation: means the modification of existing structure or portion thereof (Part 602) Surfacing Material: means material that is sprayed, troweled-on or otherwise applied to thermal system insulation (TSI); means ACM applied to pipe, fittings, boilers, breeching, tanks, ducts, and other structural components to prevent heat loss or gain (Part 602). Key: ACM: Asbestos-Containing Material CIH: Certified Industrial Hygienist EPA: Environmental Protection Agency HEPA: High Efficiency Particulate Air Filter NEA: Negative Exposure Assessment PEL: Permissible Exposure Limit >PEL: Greater than Permissible Exposure Limit <PEL: Less than Permissible Exposure Limit PPE: Personal Protective Equipment (i.e., protective clothing) TSI: Thermal System Insulation				

APPENDIX IV

PHASE II ESA

June 12, 2017

Grayling Agricultural & Educational Center, Inc.
P.O. Box 549
Grayling, Michigan 49738

**Re: Limited Subsurface Investigation Report
Commercial Property
2059 I-75 Business Loop
Grayling, Michigan 49738**

Dear Ms. Kaiser:

On behalf of Grayling Agricultural & Education Center, Inc., (the “client”), ATC Group Services LLC (ATC) conducted a limited Subsurface Investigation (LSI) for the above referenced property (the “site”). The site is located in the northwest ¼ of Section 17 (T.26.N.-R.3.W.) on the United States Geological Survey (USGS) 7.5 Minute Topographic Map, *Grayling, Michigan Quadrangle*, dated 1951, see Appendix A – Figure 1. The scope of work is based on the following recognized environmental conditions identified during ATC’s Phase I Environmental Site Assessment (ESA) conducted in March of 2017:

- The property has been developed and operated as a planing mill and utilized later for lumber sales since the late 1800s. The property historically contained an oil house, iron refuse burner and boiler room on the eastern portion of the property. In addition, multiple railroad spurs transected the property.
- Previous environmental assessments have identified contaminants in the groundwater and shallow soils on the eastern portion of the property at levels exceeding Michigan Department of Environmental Quality (MDEQ) drinking water criteria, groundwater surface water interface protection criteria, and soil volatilization to indoor air criteria.
- A 450-gallon underground storage tank (UST) was formerly present on the southwest corner of the building.
- The east adjacent property, 308 Huron Street, submitted a Baseline Environmental Assessment (BEA) to the MDEQ and is identified as a contaminated “facility”.
- Crown Chemical Company and DuPont Powder Company were formerly located adjacent to the south of the site.

Based on the above recognized environmental conditions, ATC conducted a LSI in an attempt to determine if the site meets the definition of an environmental “facility” per State of Michigan, Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended (P.A. 451), Part 201(Part 201).

PRE-FIELDWORK ACTIVITIES

Prior to conducting field activities, ATC prepared a site-specific health and safety plan (HASP) to

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address potential safety issues associated with the proposed scope of work. The HASP evaluated potential hazards associated with the field activities and personnel protective measures were selected based on the perceived potential hazards.

Before conducting the field activities, ATC contacted the State of Michigan utility locator service (MISS DIG) a minimum of 72 hours prior to conducting the sampling activities at the site. In addition, ATC contracted with Facility Management Consultants International (FMCI) to conduct a Ground Penetrating Radar (GPR) and Electromagnetic (EM) survey to identify any potential concerns in the areas of soil borings prior the work being completed.

LIMITED SUBSURFACE INVESTIGATION

ATC conducted a LSI at the site that included a GPR/EM survey, soil and groundwater sampling and analyses, and sub-slab soil gas sampling and analyses. The following is a summary of the work completed along with the field results.

Ground Penetrating Radar (GPR) Survey

On April 27, 2017, the GPR/EM survey was conducted by FMCI to determine if utilities or any other unknown objects were present in the proposed soil boring areas. The survey was also conducted to identify the potential/former presence of a 450-gallon UST and to provide any useful information relative to a void in the concrete inside the building.

The GPR/EM survey concluded that no underground utilities or other obstructions were discovered in proposed soil boring areas. The backfill area of the former UST cavity was confirmed using GPR on the southwest corner of the building; no evidence of an existing UST was identified. In addition, the results of the surveyed area inside the building indicated a change at approximately four-feet below grade in the underlying materials of the slab. Based on the results, no environmental issues was identified related to the void.

Soil and Groundwater Sampling and Laboratory Analysis

ATC conducted the field work on March 17, 2017, April 27, 2017, and May 16, 2017. A total of nine (9) borings (ATC-1 through ATC-9) and four (4) temporary monitoring wells (TMW-1 through TMW-4) were utilized. The table below provides a summary of the recognized environmental condition evaluated, sample type, sample designation, and selected laboratory analyses. The table is followed by a more detailed explanation of the sampling and analyses conducted.

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REC	Sample Type	Borings/Wells	Analyses
Former Oil House, Railroad Spurs, Former Iron Refuse Burner	Soil	ATC-6, ATC-7, ATC-8, ATC-9	VOCs, PNA, Metals,
	Soil	ATC-2, ATC-3	VOCs, PNA, Metals, PCBS
	Groundwater	ATC-2, ATC-6	VOCs, PNA, Metals
Previous Environmental Assessments	Soil	ATC-4	VOCs, PNA, Metals
	Groundwater	TMW-1, TMW-2, TMW-3, TWW-4	VOCs, PNA, Metals
Former UST	Soil	ATC-5	VOCs, PNA, Metals
Adjacent BEA	Soil	ATC-1	VOCs, PNA, Metals
	Groundwater	ATC-2	VOCs, PNA, Metals

REC: recognized environmental condition

VOCs: volatile organic compounds

PNA: polynuclear aromatic hydrocarbons

Metals: MI ten metals

PCBs: polychlorinated biphenyls

On March 17, 2017, ATC performed groundwater sampling utilizing existing 1-inch diameter temporary monitoring wells that had been installed by others during past environmental assessments. ATC selected four (4) previous temporary monitoring wells based on their location and condition. The temporary monitoring wells were designated as TMW-1 through TMW-4 for the purposes of this investigation. Following the completion of sampling activities, twenty-one (21) additional existing temporary monitoring wells that were present on-site from previous investigations were abandoned by ATC. The casings were removed from the ground and the holes were sealed with bentonite chips to 6" below surface grade. The surface was finished to existing ground cover (i.e. concrete or asphalt).

ATC conducted additional sampling utilizing a hand auger and a truck-mounted Geoprobe sampler on April 27, 2017, and May 16, 2017. During boring advancement, soil samples were continuously collected in duplicate (i.e., one sample for potential laboratory analysis and one sample for field screening purposes) with the first set of samples placed in pre-cleaned glass containers with Teflon lined lids and preservative (if applicable), and the second set of samples placed in sealed zip-lock bags for field screening purposes. While awaiting potential laboratory analysis, the containerized samples were placed on ice in a cooler immediately after collection. Disposable nitrile gloves were worn by ATC's field staff and changed between samples to reduce the likelihood of cross-contamination.

Soil samples were field screened using visual, olfactory and a photo-ionization detector (PID) which measures total organic volatiles (TOVs) in parts per million (ppm). The PID was calibrated in the field prior to use. Based on the field screening results, one soil sample from each boring was selected for laboratory analyses including the following: ATC-1 (6'-7' bgl), ATC-2 (3'-4' bgl), ATC-3 (4'-5' bgl), ATC-4 (4'-5' bgl), ATC-5 (5'-6' bgl), ATC-6 (6'-7' bgl), ATC-7 (4'-5' bgl), ATC-8 (1'-2' bgl), ATC-9 (1'-2' bgl). Groundwater samples were collected from ATC-2

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and ATC-6 for submittal for laboratory analysis.

Soil and groundwater samples were analyzed for the presence of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PNAs), and Michigan 10-Metals (metals). Soil samples collected from ATC-2 and ATC-3 were also submitted for laboratory analysis for the presence of polychlorinated biphenyls (PCBs). All samples were submitted to ESC Laboratory Services, Inc. located in Mt. Juliet, Tennessee (ESC) under chain-of-custody documentation for laboratory analysis utilizing United States Environmental Protection Agency (USEPA) Solid Waste 846 (SW846) Laboratory Methods 8260/5035 (VOCs), 8270 (PNAs), 6020 (MI- Ten Metals) and/or 8082 (PCBs). Please refer to Appendix A – Figure 2, for a map depicting the boring locations, Appendix C for laboratory analytical summary tables, and Appendix D for laboratory analytical reports.

Soil Gas Sampling for Laboratory Analysis

On March 17, 2017, ATC was onsite to install two (2) sub-slab soil vapor points to assess the potential vapor intrusion conditions beneath the sub-slab. ATC installed two (2) Cox-Colvin sub slab vapor pins, following the MDEQ guidance document for *Installation of Sub-Slab Soil Gas Probe/Vapor Monitoring Point*. Samples were then collected using ATC Standard Operating Procedure for collection of Soil Gas Samples, and submitted for laboratory analysis of volatile organic compounds (VOCs) using The United State Environmental Protection Agency (EPA) Method TO-15.

LITHOLOGY, FIELD SCREENING AND LABORATORY ANALYTICAL RESULTS

The following is a summary of the lithology encountered during the field investigation, as well as the results of the field screening and laboratory analyses.

Lithology

The surface cover consisted of concrete (ATC-1 and ATC-3 through ATC-9), asphalt (ATC-6) or topsoil (ATC-2). The soils beneath the surface cover generally consisted of sand with some sandy clay that extended to depths up to 10 feet bgl. Boring refusal was encountered at ATC-8 at 2' bgl, due to large rock. Additionally, concrete was encountered at approximately 3' bgl at ATC-5. Groundwater was encountered at approximately 7' – 8.5' feet bgl. For more detail, please refer to the boring logs included in Appendix B.

Field Screening Results

TOVs were detected in the soil encountered in ATC-1 through ATC-4 and ATC-7 through ATC-9. The TOV detections ranged from 0.5 ppm in ATC-7 at 1' bgl, to 34.6 ppm in ATC-4 at approximately 4'-5' bgl. The field screening results from ATC-5 and ATC-6 did not indicate the presence of TOVs,

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odors or staining.

Sub-slab Soil Gas Sample Laboratory Analytical Results

Acetone, ethanol, dichlorodifluoromethane, and n-Hexane were detected in the soil gas samples collected beneath the sub-slab from VP-1 and VP-2. Chloroform, 1,4-dioxane, and PCE were detected in the soil gas samples collected from VP-2. Soil gas samples collected from VP-1 also indicated a presence of tetrahydrofuran.

ATC compared the detected VOCs in the sub-slab soil gas to the Residential and Nonresidential VISL contained in Appendix D.1 and Appendix D.2, respectively, of the MDEQ Guidance Document for the Vapor Intrusion Pathway, dated May 2013. Soil gas samples results from VP-1 and VP-2 were less than ten times below the VISL. For details, please refer to Appendix C for summary tables of detected laboratory parameters and to Appendix D for a copy of the laboratory analytical report.

Soil Sample Laboratory Analytical Results

The laboratory analytical results for the soils were compared to Part 201 Generic Cleanup Criteria for Direct Contact (DC), Drinking Water Protection (DWP), Groundwater/Surface Water Interface Protection (GSIP) and to the Soil Volatilization to Indoor Air Inhalation (SVIAI) contained in Table 2, Soil: Residential - Part 201 Generic Cleanup Criteria and Screening Levels, dated December 30, 2013 (Table 2) as issued under Part 201. Additionally, detected concentrations were compared to VISL as indicated in Appendix D.1 and D.2, of the MDEQ Guidance Document for the Vapor Intrusion Pathway, dated May 2013. Please refer to Appendix A Figure 3 - Analytical Results – Exceed GRCC, Appendix C for summary tables of detected laboratory parameters (VOC, PNAs and Metals), and to Appendix D for a copy of the laboratory analytical report. The following is a summary of the detected compounds analyzed:

Volatile Organic Compounds

Soil analytical results indicated the presence of tetrachloroethene (PCE) and 2-methylnaphthalene found in ATC-4 (5) soil sample. Additionally, the presence of PCE was found in ATC-3 (5) soil sample. The PCE concentration at ATC-3 (5) was found to exceed MDEQ DWP criteria and VISL.

Polynuclear Aromatic Hydrocarbon

Soil analytical results indicated the presence of anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene in soil samples collected. All detected concentrations were below MDEQ Cleanup Criteria.

Michigan Ten Metals

Soil analytical results indicated the presence of arsenic, barium, chromium, copper, lead, mercury,

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silver and zinc at various concentrations. Cadmium and selenium were not detected above laboratory detection limits. The concentration of lead in the soil at ATC-3 (5) exceeds State Wide Default Background Level and DC. The concentration of silver in soil at ATC-3 (5) exceeds Statewide Default Background Level and GSIP.

PCBs

PCBs were not detected above laboratory limits in the soil from ATC-2 (4) and ATC-3 (5).

Groundwater Sample Laboratory Analytical Results

The laboratory analytical results were compared to the MDEQ Drinking Water (DW), Groundwater Surface Water Interface (GSI), and Groundwater Volatilization to Indoor Air Inhalation (GVIAI) Criteria as indicted in Table 1, Groundwater: Residential and Non-Residential, Part 201 Generic Cleanup Criteria and Screening Levels, dated December 30, 2013 (Table 1) as issued under P.A. 451, Part 201. Additionally, detected concentrations were compared to VISL as indicated in Appendix D.1 and D.2 of the MDEQ Guidance Document for the Vapor Intrusion Pathway, dated May 2013. Please refer to Appendix A – Figure 3 Analytical Results – Exceed GRCC, Appendix C for summary tables of detected laboratory parameters (VOC and Metals), and to Appendix D for a copy of the laboratory analytical report. The following is a summary of the detected compounds analyzed:

Volatile Organic Compounds

Groundwater analytical results indicated the presence of PCE in TMW-1, TMW-2, and TMW-3. All other VOCs were not identified above laboratory detection limits. The PCE concentration at TMW-2 was found to exceed MDEQ DW criteria and VISL. The concentration of PCE at TMW-3 was found to exceed MDEQ DW and GSI criteria, as well as VISL.

Polynuclear Aromatic Hydrocarbon

Groundwater analytical results for all water samples were reported below laboratory detection limits for the PNAs analyzed. Refer to Appendix D – Laboratory Reports for the results.

Michigan Ten Metals

Groundwater analytical results indicated a presence of barium, copper, selenium, and zinc at various concentrations. Selenium concentration at ATC-6 was found to exceed MDEQ GSI criteria. All other detections were below MDEQ criteria.

CONCLUSIONS

Based on the results of this investigation, LEI concludes the following:

Soil Results

June 12, 2017

ATC submitted nine (9) soil samples for laboratory analysis of VOCs, PNAs, and Metals. Additionally, two (2) of the soil samples were submitted for laboratory analysis of PCBs. One (1) soil sample, ATC-3 (5), exceeds DWP criteria and VISL for PCE concentrations, DC criteria for lead concentration and GSIP criteria for silver concentration.

Groundwater Results

ATC submitted six (6) groundwater samples for laboratory analysis of VOCs, PNAs, and Metals. PCE was detected in the groundwater at TMW-2 and TMW-3 at a level that exceed DW, GSI and/or VISL. Selenium was detected in the groundwater at ATC-6 at a concentration that exceeds GSI.

ATC notes the specific source(s) of the detected VOCs and Metals in the soil and/or groundwater have not been confirmed. However, the contamination is likely related to the historical use of the site, as well as the adjoining properties involving the use of chemicals (former DuPont and Crown Chemical plants).

RECOMMENDATIONS

Due to the detected presence PCE, lead, selenium and/or silver in soil and/or groundwater at concentrations that exceed MDEQ Part 201 Generic Cleanup Criteria, the site is defined as an environmental “facility” per P.A. 451, Part 201. To protect a new owner/operator against environmental clean-up liability concerns associated with the existing contamination on the site, a BEA must be conducted prior to or within 45 days of purchase, occupancy, or foreclosure, whichever is earlier, and must be provided to the MDEQ within six months of purchase, occupancy or foreclosure.

Owners and occupants of a facility, based on the known environmental conditions, are required by law to avoid exacerbation of contamination and to take certain affirmative steps, if necessary, to protect human health and safety and the environment. In this regard, a Documentation of Due Care Compliance (DDCC)/Due Care Plan (DCP) must be prepared in accordance with Part 201 and the applicable administrative rules. The Due Care Plan must be available to the MDEQ upon request within eight months of purchase, occupancy or foreclosure.

Based on the limited scope of this investigation, and in consideration of the planned redevelopment of the site, additional soil, groundwater and vapor sampling and analyses is recommended to further evaluate the nature and extent of the contamination, and to assist with Due Care planning.

June 12, 2017

LIMITATIONS AND QUALIFICATIONS

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration data presented in this report. It is noted that all environmental assessments are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation.

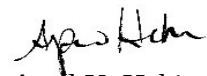
The results and conclusions presented herein are based solely on the aforementioned field screening techniques and field observations. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties.

The work performed in conjunction with this assessment and the data developed are intended as a description of available information at the dates and locations given. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

With respect to ATC's interpretation of government (federal, state or local) generated documents (MDEQ, etc.), ATC notes opinions of other parties may differ from our opinion and ATC recommends consultation with appropriate counsel for legal guidance.

If there are any questions pertaining to this report, please do not hesitate to contact the undersigned at (517) 227-4710

Respectfully Submitted,
ATC Group Services LLC



April K. Hehir
Project Scientist



Margie Lathrop
Sr. Project Manager

June 12, 2017

Attachments

Appendices:

- A - Figures
- B - Boring Logs
- C - Summary Tables of Detected Laboratory Parameters
- D - Laboratory Report

APPENDIX A
FIGURES

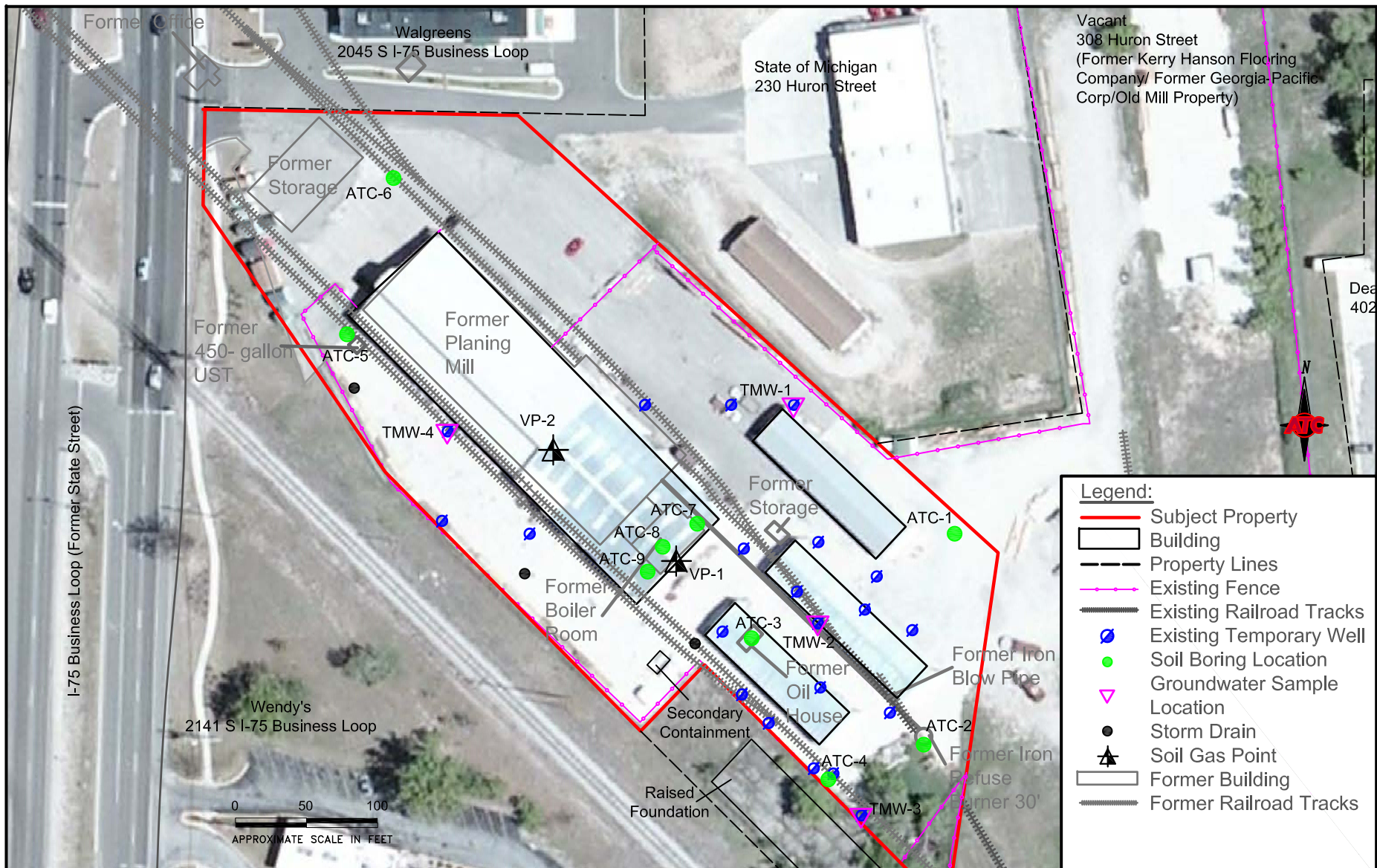
VICINITY MAP



SOURCE: USGS Topographic Map. 7.5 Minute Grayling Michigan Quadrangle dated 1950



Project Number N479631701



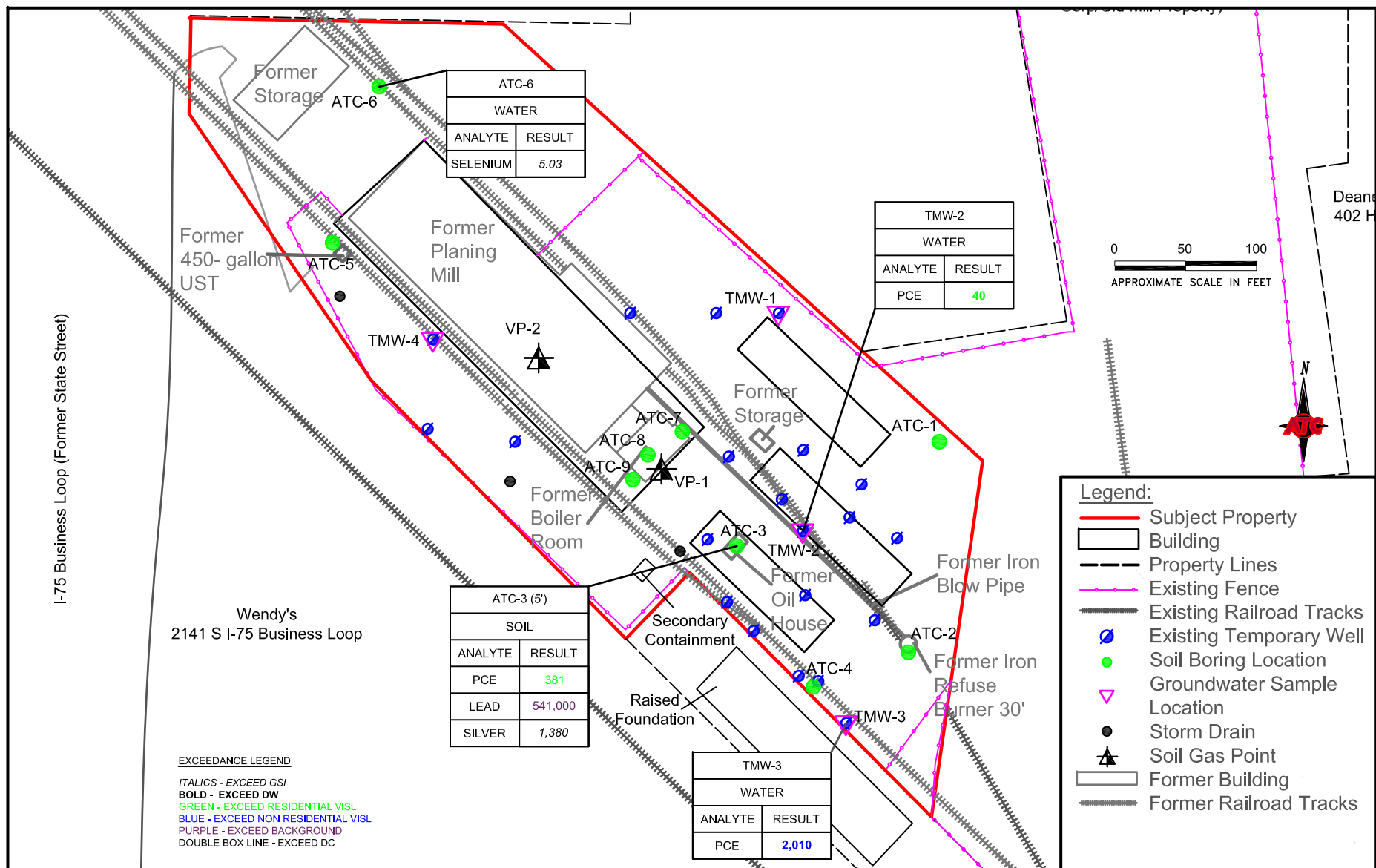
Subject Property Plan

Commerical Property
2059 I-75 Business Loop
Grayling, Michigan

Project Number: N479631701

Figure 2

Drawn By: AKH



Analytical Results - Exceed GRCC Commerical Property 2059 I-75 Business Loop Grayling, Michigan

Project Number: N479631701

Figure 3

Drawn By: AKH

APPENDIX B
BORING LOGS

Project Number: N479631701

Project Name: Grayling Ag & Ed Center

Site Location: Former Lumber Yard

City: Grayling, Michigan

Casing: NA

Screen-Slot Size: NA

Boring Number: **ATC-1**

Start Date: 04/27/17

Diameter: NA Length: NA

Diameter: NA Length: NA

108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

[illegible]

(HA) = HAND AUGER	(DS) = DISTURBED SAMPLE	Sample Information	(Rec.) = RECOVERY	(EOB) = END OF BORING
(AK) = AIR KNIFE	(GP) = GeoProbe	ID: ATC-1 (7)	(BGS) = Below Ground Surface	
(SS) = SPLIT SPOON	bpf = blows per foot	Time: 1030	(NR) = NO RECOVERY	
(qP) = Penetrometer Unconfined Compressive Strength		Backfill : Bentonite	(NA) = NOT APPLICABLE	
Logged by: <u>April Hehir</u>	Drilling Co.: <u>Job Site Services</u>	Driller: <u>Bob Miller</u>		
Drawn by: <u>April Hehir</u>	Drill Rig Type: <u>7720 DT</u>	Assistant: <u>NA</u>		
Checked by: <u>April Hehir</u>				



Project Name: Grayling Ag & Ed Center

Site Location: Former Lumber Yard

City: Grayling, Michigan

Casing: 1" - PVC

Screen-Slot Size: 0.010 slot

Boring Number: **ATC-2**

Start Date: 04/27/17

Diameter: 1" Length: 5'

Diameter: 1" Length: 5'

108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

FEET (BGS) - 0	SAMPLE TYPE	SAMPLE INTERVAL (BGS)	SAMPLE NUMBER	Rec.		LITHOLOGY DESCRIPTION	PID PPM	Temporary Well Construction		
1			1	90		Topsoil	0.0			
2						Light Brown, SAND, Loose, Fine Grain, Poorly Graded, Damp to Wet	1.8			
3							3.1			
4	SOIL	ATC-2 (4) 1110					3.0			
5							0.0			
6	Water	ATC-2 1135 DUP-1	2	90		Wet @ 7.0'	0.0			
7							0.0			
8							0.0			
9							0.0			
10							0.0			
						EOB @ 10.0'	0.0			

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE
(AK) = AIR KNIFE (GP) = GeoProbe
(SS) = SPLIT SPOON bpf = blows per foot
(qP) = Penetrometer Unconfined Compressive Strength

Sample Information			
ID:	ATC-2 (4)	ATC-2	
Time:	1110	1135	
Backfill :	Bentonite		

(Rec.) = RECOVERY (EOB) = END OF BORING
(BGS) = Below Ground Surface
(NR) = NO RECOVERY
(NA) = NOT APPLICABLE

Logged by:	April Hehir
Drawn by:	April Hehir
Checked by:	April Hehir

Drilling Co.: Job Site Services

Drill Rig Type: 7720 DT

Driller:	Bob Miller
Assistant:	NA

Project Number: N479631701

Project Name: Grayling Ag & Ed Center

Site Location: Former Lumber Yard

City: Grayling, Michigan

Casing: NA

Screen-Slot Size: NA

Boring Number: **ATC-3**

Start Date: 04/27/17

Diameter: NA Length: NA

Diameter: NA Length: NA

108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

[illegible]

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE
(AK) = AIR KNIFE (GP) = GeoProbe
(SS) = SPLIT SPOON bpf = blows per foot
(qP) = Penetrometer Unconfined Compressive Strength

Sample Information	
ID:	ATC-3 (5)
Time:	1205
Backfill :	Bentonite

(Rec.) = RECOVERY (EOB) = END OF BORING
(BGS) = Below Ground Surface
(NR) = NO RECOVERY
(NA) = NOT APPLICABLE

Logged by:	April Hehir
Drawn by:	April Hehir
Checked by:	April Hehir

Drilling Co.: Job Site Services
Drill Rig Type: 7720 DT

Driller: Bob Miller
Assistant: NA



Diameter: NA Length: NA

Screen-Slot Size: NA

(HA) = HAND AUGER	(DS) = DISTURBED SAMPLE	Sample Information	(Rec.) = RECOVERY	(EOB) = END OF BORING
(AK) = AIR KNIFE	(GP) = GeoProbe	ID: ATC-4 (5)	(BGS) = Below Ground Surface	
(SS) = SPLIT SPOON	bpf = blows per foot	Time: 1235	(NR) = NO RECOVERY	
(qP) = Penetrometer Unconfined Compressive Strength		Backfill : Bentonite	(NA) = NOT APPLICABLE	
Logged by: <u>April Hehir</u>	Drilling Co.: <u>Job Site Services</u>	Driller: <u>Bob Miller</u>		
Drawn by: <u>April Hehir</u>	Drill Rig Type: <u>7720 DT</u>	Assistant: <u>NA</u>		
Checked by: <u>April Hehir</u>				



Screen-Slot Size: NA

Diameter:	NA	Length:	NA
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108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

(HA) = HAND AUGER	(DS) = DISTURBED SAMPLE	Sample Information	(Rec.) = RECOVERY	(EOB) = END OF BORING
(AK) = AIR KNIFE	(GP) = GeoProbe	ID: ATC-5 (6)	(BGS) = Below Ground Surface	
(SS) = SPLIT SPOON	bpf = blows per foot	Time: 1400	(NR) = NO RECOVERY	
(qP) = Penetrometer Unconfined Compressive Strength		Backfill : Bentonite	(NA) = NOT APPLICABLE	
Logged by: <u>April Hehir</u>	Drilling Co.: <u>Job Site Services</u>	Driller: <u>Bob Miller</u>		
Drawn by: <u>April Hehir</u>	Drill Rig Type: <u>7720 DT</u>	Assistant: <u>NA</u>		
Checked by: <u>April Hehir</u>				



Well Log

108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

Project Number: N479631701
Project Name: Grayling Ag & Ed Center
Site Location: Former Lumber Yard
City: Grayling, Michigan
Casing: 1" - PVC
Screen-Slot Size: 0.010 slot

Boring Number: ATC-6
Start Date: 04/27/17
Diameter: 1" Length: 5'
Diameter: 1" Length: 5'

FEET (BGS) - 0	SAMPLE TYPE	SAMPLE INTERVAL (BGS)	SAMPLE NUMBER	Rec.		LITHOLOGY DESCRIPTION	PID PPM	Temporary Well Construction		
1 2 3 4 5 6 7 8 9 10				85		8" Asphalt Cover	0.0			
						Light Brown, SAND, Loose, Fine Grain, Poorly Graded, Damp to Wet				
	Soil	ATC-5 (7) 1430	1	90		Wet @ 7.5'	0.0			
	Water	ATC-5 1500	2				0.0			
							0.0			
							0.0			
							0.0			
					EOB @ 10.0'	0.0				

(HA) = HAND AUGER (AK) = AIR KNIFE (SS) = SPLIT SPOON (qP) = Penetrometer Unconfined Compressive Strength	(DS) = DISTURBED SAMPLE (GP) = GeoProbe bpf = blows per foot	Sample Information ID: ATC-6 (7) Time: 1430 Backfill : Bentonite	(Rec.) = RECOVERY (BGS) = Below Ground Surface (NR) = NO RECOVERY (NA) = NOT APPLICABLE	(EOB) = END OF BORING
Logged by: <u>April Hehir</u>	Drilling Co.: <u>Job Site Services</u>	Driller: <u>Bob Miller</u>		
Drawn by: <u>April Hehir</u>	Drill Rig Type: <u>7720 DT</u>	Assistant: <u>NA</u>		
Checked by: <u>April Hehir</u>				



Diameter: NA Length: NA

Casing:	NA
Screen-Slot Size:	NA

(HA) = HAND AUGER	(DS) = DISTURBED SAMPLE	Sample Information	(Rec.) = RECOVERY	(EOB) = END OF BORING
(AK) = AIR KNIFE	(GP) = GeoProbe	ID: ATC-7 (5)	(BGS) = Below Ground Surface	
(SS) = SPLIT SPOON	bpf = blows per foot	Time: 1130	(NR) = NO RECOVERY	
(qP) = Penetrometer Unconfined Compressive Strength		Backfill : Native Soil	(NA) = NOT APPLICABLE	
Logged by: <u>April Hehir</u>	Drilling Co.: <u>ATC</u>	Driller: <u>Tim Rombach</u>		
Drawn by: <u>April Hehir</u>	Drill Rig Type: <u>Hand Auger</u>	Assistant: <u>April Hehir</u>		
Checked by: <u>April Hehir</u>				



Screen-Slot Size: NA

Diameter: NA Length: NA

108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

(HA) = HAND AUGER	(DS) = DISTURBED SAMPLE	Sample Information	(Rec.) = RECOVERY	(EOB) = END OF BORING
(AK) = AIR KNIFE	(GP) = GeoProbe	ID: ATC-8 (2)	(BGS) = Below Ground Surface	
(SS) = SPLIT SPOON	bpf = blows per foot	Time: 1155	(NR) = NO RECOVERY	
(qP) = Penetrometer Unconfined Compressive Strength		Backfill : Native Soil	(NA) = NOT APPLICABLE	
Logged by: <u>April Hehir</u>	Drilling Co.: <u>ATC</u>	Driller: <u>Tim Rombach</u>		
Drawn by: <u>April Hehir</u>	Drill Rig Type: <u>Hand Auger</u>	Assistant: <u>April Hehir</u>		
Checked by: <u>April Hehir</u>				



Well Log

108 Ottawa St
Grayling, MI 49738
Phone: 989.745.6595

Project Number: N479631701
Project Name: Grayling Ag & Ed Center
Site Location: Former Lumber Yard
City: Grayling, Michigan
Casing: NA
Screen-Slot Size: NA

Boring Number: ATC-9
Start Date: 05/16/17
Diameter: NA Length: NA
Diameter: NA Length: NA

FEET (BGS) - 0	SAMPLE TYPE	SAMPLE INTERVAL (BGS)	SAMPLE NUMBER	Rec.	LITHOLOGY DESCRIPTION	PID PPM	Well Construction
1	SOIL	ATC-9 (2) 1225	1	100	8" Concrete Cover	2.1	
2					Light Brown, SAND, Loose, Fine Grain, Poorly Graded,	5.2	
3					Dark Brown, SANDY CLAY, Loose, Non-Plastic, Non-Cohesive,	1.5	
4					Light Brown, SAND, Loose, Fine Grain, Poorly Graded, Damp to Wet	2.0	.
5						0.8	.
6						2.6	.
7				100		0.9	.
8						0.8	.
9					Wet @ 8.5'	0.6	.

(HA) = HAND AUGER (AK) = AIR KNIFE (SS) = SPLIT SPOON (qP) = Penetrometer Unconfined Compressive Strength	(DS) = DISTURBED SAMPLE (GP) = GeoProbe bpf = blows per foot	Sample Information ID: ATC-9 (2) Time: 1225 Backfill : Native Soil	(Rec.) = RECOVERY (BGS) = Below Ground Surface (NR) = NO RECOVERY (NA) = NOT APPLICABLE	(EOB) = END OF BORING
Logged by: April Hehir	Drilling Co.: ATC	Driller: Tim Rombach		
Drawn by: April Hehir	Drill Rig Type: Hand Auger	Assistant: April Hehir		
Checked by: April Hehir				

APPENDIX C
SUMMARY TABLES OF DETECTED PARAMETERS

TABLE 1
Soil Analytical Results - Volatile Organic Compounds
Commerical Property, 2059 I-75 Business Loop, Grayling, Michigan

Michigan Department of Environmental Quality Risk Based Screening Levels (RBSLs)			Tetrachloroethene	2-Methyl naphthalene
Drinking Water Protection (Residential)			100	57,000
Drinking Water Protection (Non-Residential)			100	170,000
Groundwater Surface Water Interface Protection			1,200 (X)	4,200
Volatilization to Indoor Air (Residential)			11,000	2,700,000
Volatilization to Indoor Air (Non-Residential)			21,000	4,900,000
Volatilization to Ambient Air (Residential)			170,000	1,500,000
Volatilization to Ambient Air (Non-Residential)			210,000	1,800,000
Particulate Soil Inhalation (Residential)			2.7E+09	670,000,000
Particulate Soil Inhalation (Non-Residential)			1.2E+09	290,000,000
Direct Contact - (Residential)			200,000	8.1E+06
Direct Contact - (Non-Residential)			930,000	2.6E+07
Soil Vapor Intrusion - Residential			52	7,480
Soil Vapor Intrusion - Non-residential			1,030	126,000
Soil Saturation Concentration Screening Level (C _{sat})			88,000	NA
Sample ID	Sample Depth (feet bgs)	Sample Date	Results reported in micrograms per kilogram (µg/Kg)	
ATC-1	7	04/27/17	<25.5	<255
ATC-2	4	04/27/17	<26.6	<266
ATC-3	5	04/27/17	381	<340
ATC-4	5	04/27/17	48.5	290
ATC-5	6	04/27/17	<25.2	<252
ATC-6	7	04/27/17	<27.3	<273
ATC-7	5	05/16/17	<22.1	<221
ATC-8	2	05/16/17	<26.2	<262
ATC-9	2	05/16/27	<23.6	<236

TABLE 2
Soil Analytical Results - Polynuclear Aromatic Hydrocarbons
Commerical Property, 2059 I-75 Business Loop, Grayling, Michigan

MDEQ Risk Based Screening Levels (RBSLs)			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
Drinking Water Protection - Residential			300,000	5,900	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	730,000	390,000	NLL	35,000	56,000	480,000
Drinking Water Protection - Non-Residential			880,000	17,000	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	730,000	890,000	NLL	100,000	160,000	480,000
Groundwater Surface Water Interface Protection			8,700	ID	ID	NLL	NLL	NLL	NLL	NLL	NLL	NLL	5,500	5,300	NLL	730	2,100	ID
Volatilization to Indoor Air - Residential			1.9E+08	1.6E+06	1.0E+9 (D)	NLV	NLV	ID	NLV	NLV	ID	NLV	1.0E+9 (D)	5.8E+08	NLV	250,000	2.8E+06	1.0E+9 (D)
Volatilization to Indoor Air - Non-Residential			3.5E+08	3.0E+06	1.0E+9 (D)	NLV	NLV	ID	NLV	NLV	ID	NLV	1.0E+9 (D)	1.0E+9 (D)	NLV	470,000	5.1E+06	1.0E+9 (D)
Volatilization to Ambient Air - Residential			8.1E+07	2.2E+06	1.4E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	7.4E+08	1.3E+08	NLV	300,000	160,000	6.5E+08
Volatilization to Ambient Air - Non-Residential			9.7E+07	2.7E+06	1.6E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	8.8E+08	1.5E+08	NLV	350,000	190,000	7.8E+08
Particulate Soil Inhalation - Residential			1.4E+10	2.3E+09	6.7E+10	ID	1.5E+06	ID	8.0E+08	ID	ID	ID	9.3E+09	9.3E+09	ID	2.0E+08	6.7E+06	6.7E+09
Particulate Soil Inhalation - Non-Residential			6.2E+09	1.0E+09	2.9E+10	ID	1.9E+06	ID	3.5E+08	ID	ID	ID	4.1E+09	4.1E+09	ID	8.8E+07	2.9E+06	2.9E+09
Direct Contact - Residential			4.1E+07	1.6E+06	2.3E+08	20,000	2,000	20,000	2.5E+06	200,000	2.0E+06	2,000	4.6E+07	2.7E+07	20,000	1.6E+07	1.6E+06	2.9E+07
Direct Contact - Non-Residential			1.3E+08	5.2E+06	7.3E+08	80,000	8,000	80,000	7.0E+06	800,000	8.0E+06	8,000	1.3E+08	8.7E+07	80,000	5.2E+07	5.2E+06	8.4E+07
Soil Vapor Intrusion - Residential			432,000	168,000	3.56E+07	NA	NA	NA	NA	NA	NA	NA	NA	709,000	NA	443	5,140	6.47E+07
Soil Vapor Intrusion - Non-residential			7.26E+06	2.82E+06	5.98E+08	NA	NA	NA	NA	NA	NA	NA	NA	1.19E+07	NA	8,940	86,300	1.09E+09
Soil Saturation Concentration Screening Level			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample ID	Sample Depth (feet bgs)	Sample Date	Results in micrograms per kilogram (µg/Kg)															
ATC-1	7	04/27/17	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3	<37.3
ATC-2	4	04/27/17	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0	<34.0
ATC-3	5	04/27/17	<49.8	<49.8	<49.8	<49.8	58.8	87.6	70	<49.8	60.9	<49.8	95.8	<49.8	59.4	<49.8	57.5	68.5
ATC-4	5	04/27/17	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3	<34.3
ATC-5	6	04/27/17	<38.2	<38.2	<38.2	<38.2	<38.2	41.1	<38.2	<38.2	<38.2	<38.2	58.8	<38.2	<38.2	<38.2	<38.2	<38.2
ATC-6	7	04/27/17	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8	<35.8
ATC-7	5	05/16/17	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<6.32	<21.1	<6.32	<6.32
ATC-8	2	05/16/17	<6.24	<6.24	<6.24	10.2	10.3	16.9	9.72	<6.24	13.2	<6.24	23.8	<6.24	8.96	<20.8	14.3	17.9
ATC-9	2	05/16/27	<6.31	<6.31	7.07	36.3	38.4	57.9	33.5	14.1	37	8.08	83.2	<6.31	33.6	<21.0	54	60.5

Table 4
Groundwater Analytical Results - Volatile Organic Compounds (Detected)
Commerical Property, 2059 I-75 Business Loop, Grayling, Michigan

Michigan Department of Environmental Quality Risk Based Screening Levels			PCE
Drinking Water (Residential)			5 (A)
Drinking Water (Non-Residential)			5 (A)
Groundwater Surface Water Interface			60(X)
Volatilization to Indoor Air Inhalation (Residential)			25,000
Volatilization to Indoor Air Inhalation (Non-Residential)			1.70E+05
Vapor Intrusion Screening Levels (Residential)			5 (d)
Vapor Intrusion Screening Levels (Non-residential)			1,000
Water Solubility			200,000
Flammability and Explosivity Screening Level			ID
Sample Location (screen interval in feet bgs)	DTW (feet)	Sample Date	Results reported in micrograms per liter (µg/L)
TMW-1	8.63	03/17/17	3.28
TMW-2	11.20	03/17/17	40.4
TMW-3	8.80	03/17/17	2,010
TMW-4	11.64	03/17/17	<1.0
ATC-2	6.76	04/27/17	<1.0
ATC-6	7.80	04/27/17	<1.0

Notes:

1.PCE - Tetrachloroethene

2.The cleanup criteria are derived from Table 2 and Table 3, Soil Residential & Non Residential Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451 dated December 30, 2

3.ID= Insufficient data available to establish criteria.

Table 5
Groundwater Analytical Results - Michigan Metals (Detected)
Commerical Property, 2059 I-75 Business Loop, Michigan

Michigan Department of Environmental Quality Risk Based Screening Levels			Barium	Copper	Selenium	Zinc
Drinking Water (Residential)			2,000 (A)	1,000 (E)	50 (A)	2,400
Drinking Water (Non-Residential)			2,000 (A)	1,000 (E)	50 (A)	5,000 (E)
Groundwater Surface Water Interface			G	G	5	G
Sample Location (screen interval in feet bgs)	DTW (feet)	Sample Date	Results reported in micrograms per liter (µg/L)			
TMW-1	8.63	03/17/17	29.5	<5	<2	<25
TMW-2	11.20	03/17/17	24.4	<5	<2	<25
TMW-3	8.80	03/17/17	21	6	2	<25
TMW-4	11.64	03/17/17	20	>5	2.09	<25
ATC-2	6.76	04/27/17	23.5	22.4	2.31	56.1
ATC-6	7.80	04/27/17	37.9	<5	5.03	<25

Notes:

The cleanup criteria are derived from Table 2 and Table 3, Soil Residential & Non Residential Generic Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451 dated December 30, 2013.

TABLE 6
Soil Gas Analytical Results Compared to MDEQ Vapor Intrusion Screening Levels
Commercial Property, 2059 I-75 Business Loop
Grayling, Michigan

MDEQ Vapor Intrusion Screening Values					Acetone	Chloroform	1,4-dioxane	Ethanol	Dichlorodifluoromethane	n-Hexane	Tetrahydrofuran	PCE
Vapor Intrusion Shallow Soil Gas (sub-slab)(SG_{VI-SS-RES})					210,000	380	NSL	NSL	1,700,000	24,000	630	1,200
10x less Res Vapor Intrusion Shallow SG _{VI-SS-RES}					21,000	38	-	-	170,000	2,400	63	120
Vapor Intrusion Shallow Soil Gas (sub-slab)(SG_{VI-SS-NR})					3,400,000	7,600	NSL	NSL	29,000,000	410,000	11,000	23,000
10x less NR Vapor Intrusion Shallow SG _{VI-SS-NR}					340,000	760	-	-	2,900,000	41,000	1,100	2,300
Sample ID	Sample Depth (feet bgs)	Sample Date	O ₂ %	CH ₄ %	Results reported in micrograms parts per cubic meter (µg/m ³)							
VP-1*	Sub-Slab	03/17/2017	21.1	0	14.7	<1.95	<1.44	16.1	2.360	1.75	6.87	<2.72
VP-2*	Sub-Slab	03/17/2017	20.8	0	15.5	15.4	3.61	13.7	5.620	1.830	<1.18	4.19

NOTES:

BOLD values exceed MDEQ Screening Values for the Vapor Intrusion Pathway, May 23, 2013

Analytical Method: TO-15 Air

NA - Not Available

NSL - No Screening Level

b - The SGVI presented in this table are health-based values. The applicable SGVI are based on the higher of the health-based value and the appropriate analytical reporting limit.

c - Conversion from ug/m³ to parts per billion by volume (ppbv) uses this eq([ug/m³] x (283.15°K)) / (12.187 x Molecular Weight(g/mol)).

* Samples collected less than or equal to 1.5 meters or 4.92 feet bgs or building foundation)

** Some groundwater entered the Summa Canister during sampple collection. The vapor results for this sample may have been adversely effected.

APPENDIX D
LABORATORY REPORTS

ATC Group Service sLLC

Sample Delivery Group: L905931
Samples Received: 04/29/2017
Project Number: N479631701
Description: Grayling AG & ED

Report To: April Hehir
108 Ottawa Street
Grayling, MI 49738

Entire Report Reviewed By:



John Hawkins
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



¹ Cp: Cover Page	1
² Tc: Table of Contents	2
³ Ss: Sample Summary	3
⁴ Cn: Case Narrative	5
⁵ Sr: Sample Results	6
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ATC-2 4 L905931-02	9
ATC-3 5 L905931-03	12
ATC-4 5 L905931-04	15
ATC-5 6 L905931-05	18
ATC-6 7 L905931-06	21
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⁶ Qc: Quality Control Summary	29
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Mercury by Method 7471A	30
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⁷ Gl: Glossary of Terms	42
⁸ Al: Accreditations & Locations	43
⁹ Sc: Chain of Custody	44



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



ATC-1 7 L905931-01 Solid

Collected by
April Hehir

Collected date/time
04/27/17 10:30

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:01	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 01:50	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 19:52	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	22.5	04/27/17 10:30	05/06/17 19:58	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	22.5	04/27/17 10:30	05/06/17 19:58	BMB
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 02:00	CLG

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

ATC-2 4 L905931-02 Solid

Collected by
April Hehir

Collected date/time
04/27/17 11:10

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:12	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 01:54	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 19:56	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	25.75	04/27/17 11:10	05/06/17 18:18	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	25.75	04/27/17 11:10	05/06/17 18:18	BMB
Polychlorinated Biphenyls (GC) by Method 8082	WG976270	1	05/05/17 07:09	05/05/17 14:29	JNS
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 02:25	CLG

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ATC-3 5 L905931-03 Solid

Collected by
April Hehir

Collected date/time
04/27/17 12:05

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:14	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 01:57	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 19:59	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	22.5	04/27/17 12:05	05/06/17 18:38	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	22.5	04/27/17 12:05	05/06/17 18:38	BMB
Polychlorinated Biphenyls (GC) by Method 8082	WG976270	1	05/05/17 07:09	05/05/17 15:10	JNS
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 02:49	CLG

ATC-4 5 L905931-04 Solid

Collected by
April Hehir

Collected date/time
04/27/17 12:35

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:17	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 02:01	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 20:02	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	23.25	04/27/17 12:35	05/06/17 19:38	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	23.25	04/27/17 12:35	05/06/17 19:38	BMB
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 03:13	CLG



ATC-5 6 L905931-05 Solid

			Collected by April Hehir	Collected date/time 04/27/17 14:00	Received date/time 04/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:19	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 01:11	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 19:21	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	21.75	04/27/17 14:00	05/06/17 22:38	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	21.75	04/27/17 14:00	05/06/17 22:38	BMB
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 03:38	CLG

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

ATC-6 7 L905931-06 Solid

			Collected by April Hehir	Collected date/time 04/27/17 14:30	Received date/time 04/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:22	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 02:04	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 20:06	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	25.25	04/27/17 14:30	05/06/17 22:58	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	25.25	04/27/17 14:30	05/06/17 22:58	BMB
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 08:45	CLG

DUP-2 L905931-07 Solid

			Collected by April Hehir	Collected date/time 04/27/17 00:00	Received date/time 04/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG975765	1	05/02/17 12:40	05/02/17 12:49	MLW
Mercury by Method 7471A	WG975451	1	05/01/17 11:14	05/03/17 11:24	TRB
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 02:08	LAT
Metals (ICPMS) by Method 6020	WG975333	5	05/01/17 16:57	05/02/17 20:10	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	24	04/27/17 00:00	05/06/17 23:18	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	24	04/27/17 00:00	05/06/17 23:18	BMB
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG975549	1	05/03/17 10:56	05/04/17 09:09	CLG

TRIP BLANK L905931-08 Solid

			Collected by April Hehir	Collected date/time 04/27/17 00:00	Received date/time 04/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	25	04/27/17 00:00	05/06/17 23:38	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG977045	25	04/27/17 00:00	05/06/17 23:38	BMB



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.4		1	05/02/2017 12:49	WG975765

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		22.6	1	05/03/2017 11:01	WG975451

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	589		566	5	05/02/2017 01:50	WG975333
Barium	6990		1130	5	05/02/2017 01:50	WG975333
Cadmium	ND		566	5	05/02/2017 19:52	WG975333
Chromium	2140		566	5	05/02/2017 19:52	WG975333
Copper	2350		566	5	05/02/2017 01:50	WG975333
Lead	1080		566	5	05/02/2017 01:50	WG975333
Selenium	ND		566	5	05/02/2017 01:50	WG975333
Silver	ND		566	5	05/02/2017 01:50	WG975333
Zinc	6060		5660	5	05/02/2017 01:50	WG975333

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1270	22.5	05/06/2017 19:58	WG977045
Acrylonitrile	ND		255	22.5	05/06/2017 19:58	WG977045
Benzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Bromobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Bromodichloromethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
Bromoform	ND		25.5	22.5	05/06/2017 19:58	WG977045
Bromomethane	ND		127	22.5	05/06/2017 19:58	WG977045
n-Butylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
sec-Butylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
tert-Butylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Carbon tetrachloride	ND		25.5	22.5	05/06/2017 19:58	WG977045
Chlorobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Chlorodibromomethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
Chloroethane	ND	J3	127	22.5	05/06/2017 19:58	WG977045
2-Chloroethyl vinyl ether	ND	J3	1270	22.5	05/06/2017 19:58	WG977045
Chloroform	ND		127	22.5	05/06/2017 19:58	WG977045
Chloromethane	ND		63.6	22.5	05/06/2017 19:58	WG977045
2-Chlorotoluene	ND		25.5	22.5	05/06/2017 19:58	WG977045
4-Chlorotoluene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,2-Dibromo-3-Chloropropane	ND		127	22.5	05/06/2017 19:58	WG977045
1,2-Dibromoethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
Dibromomethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,2-Dichlorobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,3-Dichlorobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,4-Dichlorobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Dichlorodifluoromethane	ND		127	22.5	05/06/2017 19:58	WG977045
1,1-Dichloroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,2-Dichloroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1-Dichloroethene	ND		25.5	22.5	05/06/2017 19:58	WG977045
cis-1,2-Dichloroethene	ND		25.5	22.5	05/06/2017 19:58	WG977045
trans-1,2-Dichloroethene	ND		25.5	22.5	05/06/2017 19:58	WG977045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

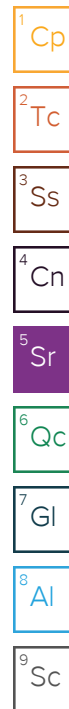
8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1-Dichloropropene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,3-Dichloropropane	ND		25.5	22.5	05/06/2017 19:58	WG977045
cis-1,3-Dichloropropene	ND		25.5	22.5	05/06/2017 19:58	WG977045
trans-1,3-Dichloropropene	ND		25.5	22.5	05/06/2017 19:58	WG977045
2,2-Dichloropropane	ND		25.5	22.5	05/06/2017 19:58	WG977045
Di-isopropyl ether	ND		25.5	22.5	05/06/2017 19:58	WG977045
Ethylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Hexachloro-1,3-butadiene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Isopropylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
p-Isopropyltoluene	ND		25.5	22.5	05/06/2017 19:58	WG977045
2-Butanone (MEK)	ND		255	22.5	05/06/2017 19:58	WG977045
Methylene Chloride	ND		127	22.5	05/06/2017 19:58	WG977045
1-Methylnaphthalene	ND		255	22.5	05/06/2017 19:58	WG977045
2-Methylnaphthalene	ND	J4	255	22.5	05/06/2017 19:58	WG977045
4-Methyl-2-pentanone (MIBK)	ND		255	22.5	05/06/2017 19:58	WG977045
Methyl tert-butyl ether	ND		25.5	22.5	05/06/2017 19:58	WG977045
Naphthalene	ND		127	22.5	05/06/2017 19:58	WG977045
n-Propylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Styrene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1,1,2-Tetrachloroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1,2,2-Tetrachloroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1,2-Trichlorotrifluoroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
Tetrachloroethene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Toluene	ND		127	22.5	05/06/2017 19:58	WG977045
1,2,3-Trichlorobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,2,4-Trichlorobenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1,1-Trichloroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,1,2-Trichloroethane	ND		25.5	22.5	05/06/2017 19:58	WG977045
Trichloroethene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Trichlorofluoromethane	ND		127	22.5	05/06/2017 19:58	WG977045
1,2,3-Trichloropropane	ND		63.6	22.5	05/06/2017 19:58	WG977045
1,2,4-Trimethylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,2,3-Trimethylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
1,3,5-Trimethylbenzene	ND		25.5	22.5	05/06/2017 19:58	WG977045
Vinyl chloride	ND		25.5	22.5	05/06/2017 19:58	WG977045
Xylenes, Total	ND		76.4	22.5	05/06/2017 19:58	WG977045
(S) Toluene-d8	110		80.0-120		05/06/2017 19:58	WG977045
(S) Dibromofluoromethane	97.1		74.0-131		05/06/2017 19:58	WG977045
(S) a,a,a-Trifluorotoluene	99.4		80.0-120		05/06/2017 19:58	WG977045
(S) 4-Bromofluorobenzene	101		64.0-132		05/06/2017 19:58	WG977045



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		37.3	1	05/04/2017 02:00	WG975549
Acenaphthene	ND		37.3	1	05/04/2017 02:00	WG975549
Acenaphthylene	ND		37.3	1	05/04/2017 02:00	WG975549
Benzo(a)anthracene	ND		37.3	1	05/04/2017 02:00	WG975549
Benzo(a)pyrene	ND		37.3	1	05/04/2017 02:00	WG975549
Benzo(b)fluoranthene	ND		37.3	1	05/04/2017 02:00	WG975549
Benzo(g,h,i)perylene	ND		37.3	1	05/04/2017 02:00	WG975549
Benzo(k)fluoranthene	ND		37.3	1	05/04/2017 02:00	WG975549
Chrysene	ND		37.3	1	05/04/2017 02:00	WG975549
Dibenz(a,h)anthracene	ND		37.3	1	05/04/2017 02:00	WG975549
Fluoranthene	ND		37.3	1	05/04/2017 02:00	WG975549



Collected date/time: 04/27/17 10:30

L905931

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		37.3	1	05/04/2017 02:00	WG975549
Indeno(1,2,3-cd)pyrene	ND		37.3	1	05/04/2017 02:00	WG975549
Naphthalene	ND		37.3	1	05/04/2017 02:00	WG975549
Phenanthrene	ND		37.3	1	05/04/2017 02:00	WG975549
Pyrene	ND		37.3	1	05/04/2017 02:00	WG975549
(S) Nitrobenzene-d5	76.9		31.0-146		05/04/2017 02:00	WG975549
(S) 2-Fluorobiphenyl	81.5		31.0-130		05/04/2017 02:00	WG975549
(S) p-Terphenyl-d14	76.8		20.0-127		05/04/2017 02:00	WG975549

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	97.0		1	05/02/2017 12:49	WG975765

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		20.6	1	05/03/2017 11:12	WG975451

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	588		515	5	05/02/2017 01:54	WG975333
Barium	4550		1030	5	05/02/2017 01:54	WG975333
Cadmium	ND		515	5	05/02/2017 19:56	WG975333
Chromium	1790		515	5	05/02/2017 19:56	WG975333
Copper	1030		515	5	05/02/2017 01:54	WG975333
Lead	927		515	5	05/02/2017 01:54	WG975333
Selenium	ND		515	5	05/02/2017 01:54	WG975333
Silver	ND		515	5	05/02/2017 01:54	WG975333
Zinc	ND		5150	5	05/02/2017 01:54	WG975333

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1330	25.75	05/06/2017 18:18	WG977045
Acrylonitrile	ND		266	25.75	05/06/2017 18:18	WG977045
Benzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Bromobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Bromodichloromethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
Bromoform	ND		26.6	25.75	05/06/2017 18:18	WG977045
Bromomethane	ND		133	25.75	05/06/2017 18:18	WG977045
n-Butylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
sec-Butylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
tert-Butylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Carbon tetrachloride	ND		26.6	25.75	05/06/2017 18:18	WG977045
Chlorobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Chlorodibromomethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
Chloroethane	ND		133	25.75	05/06/2017 18:18	WG977045
2-Chloroethyl vinyl ether	ND	J3	1330	25.75	05/06/2017 18:18	WG977045
Chloroform	ND		133	25.75	05/06/2017 18:18	WG977045
Chloromethane	ND		66.4	25.75	05/06/2017 18:18	WG977045
2-Chlorotoluene	ND		26.6	25.75	05/06/2017 18:18	WG977045
4-Chlorotoluene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,2-Dibromo-3-Chloropropane	ND		133	25.75	05/06/2017 18:18	WG977045
1,2-Dibromoethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
Dibromomethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,2-Dichlorobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,3-Dichlorobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,4-Dichlorobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Dichlorodifluoromethane	ND		133	25.75	05/06/2017 18:18	WG977045
1,1-Dichloroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,2-Dichloroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1-Dichloroethene	ND		26.6	25.75	05/06/2017 18:18	WG977045
cis-1,2-Dichloroethene	ND		26.6	25.75	05/06/2017 18:18	WG977045
trans-1,2-Dichloroethene	ND		26.6	25.75	05/06/2017 18:18	WG977045



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1-Dichloropropene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,3-Dichloropropane	ND		26.6	25.75	05/06/2017 18:18	WG977045
cis-1,3-Dichloropropene	ND		26.6	25.75	05/06/2017 18:18	WG977045
trans-1,3-Dichloropropene	ND		26.6	25.75	05/06/2017 18:18	WG977045
2,2-Dichloropropane	ND		26.6	25.75	05/06/2017 18:18	WG977045
Di-isopropyl ether	ND		26.6	25.75	05/06/2017 18:18	WG977045
Ethylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Hexachloro-1,3-butadiene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Isopropylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
p-Isopropyltoluene	ND		26.6	25.75	05/06/2017 18:18	WG977045
2-Butanone (MEK)	ND		266	25.75	05/06/2017 18:18	WG977045
Methylene Chloride	ND		133	25.75	05/06/2017 18:18	WG977045
1-Methylnaphthalene	ND		266	25.75	05/06/2017 18:18	WG977045
2-Methylnaphthalene	ND	J4	266	25.75	05/06/2017 18:18	WG977045
4-Methyl-2-pentanone (MIBK)	ND		266	25.75	05/06/2017 18:18	WG977045
Methyl tert-butyl ether	ND		26.6	25.75	05/06/2017 18:18	WG977045
Naphthalene	ND		133	25.75	05/06/2017 18:18	WG977045
n-Propylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Styrene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1,1,2-Tetrachloroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1,2,2-Tetrachloroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1,2-Trichlorotrifluoroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
Tetrachloroethene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Toluene	ND		133	25.75	05/06/2017 18:18	WG977045
1,2,3-Trichlorobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,2,4-Trichlorobenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1,1-Trichloroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,1,2-Trichloroethane	ND		26.6	25.75	05/06/2017 18:18	WG977045
Trichloroethene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Trichlorofluoromethane	ND		133	25.75	05/06/2017 18:18	WG977045
1,2,3-Trichloropropane	ND		66.4	25.75	05/06/2017 18:18	WG977045
1,2,4-Trimethylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,2,3-Trimethylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
1,3,5-Trimethylbenzene	ND		26.6	25.75	05/06/2017 18:18	WG977045
Vinyl chloride	ND		26.6	25.75	05/06/2017 18:18	WG977045
Xylenes, Total	ND		79.6	25.75	05/06/2017 18:18	WG977045
(S) Toluene-d8	109		80.0-120		05/06/2017 18:18	WG977045
(S) Dibromofluoromethane	98.0		74.0-131		05/06/2017 18:18	WG977045
(S) a,a,a-Trifluorotoluene	99.6		80.0-120		05/06/2017 18:18	WG977045
(S) 4-Bromofluorobenzene	103		64.0-132		05/06/2017 18:18	WG977045

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		17.5	1	05/05/2017 14:29	WG976270
PCB 1221	ND		17.5	1	05/05/2017 14:29	WG976270
PCB 1232	ND		17.5	1	05/05/2017 14:29	WG976270
PCB 1242	ND		17.5	1	05/05/2017 14:29	WG976270
PCB 1248	ND		17.5	1	05/05/2017 14:29	WG976270
PCB 1254	ND		17.5	1	05/05/2017 14:29	WG976270
PCB 1260	ND		17.5	1	05/05/2017 14:29	WG976270
(S) Decachlorobiphenyl	56.5		10.0-148		05/05/2017 14:29	WG976270
(S) Tetrachloro-m-xylene	79.4		21.0-146		05/05/2017 14:29	WG976270



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		34.0	1	05/04/2017 02:25	WG975549
Acenaphthene	ND		34.0	1	05/04/2017 02:25	WG975549
Acenaphthylene	ND		34.0	1	05/04/2017 02:25	WG975549
Benzo(a)anthracene	ND		34.0	1	05/04/2017 02:25	WG975549
Benzo(a)pyrene	ND		34.0	1	05/04/2017 02:25	WG975549
Benzo(b)fluoranthene	ND		34.0	1	05/04/2017 02:25	WG975549
Benzo(g,h,i)perylene	ND		34.0	1	05/04/2017 02:25	WG975549
Benzo(k)fluoranthene	ND		34.0	1	05/04/2017 02:25	WG975549
Chrysene	ND		34.0	1	05/04/2017 02:25	WG975549
Dibenz(a,h)anthracene	ND		34.0	1	05/04/2017 02:25	WG975549
Fluoranthene	ND		34.0	1	05/04/2017 02:25	WG975549
Fluorene	ND		34.0	1	05/04/2017 02:25	WG975549
Indeno(1,2,3-cd)pyrene	ND		34.0	1	05/04/2017 02:25	WG975549
Naphthalene	ND		34.0	1	05/04/2017 02:25	WG975549
Phenanthrene	ND		34.0	1	05/04/2017 02:25	WG975549
Pyrene	ND		34.0	1	05/04/2017 02:25	WG975549
(S) Nitrobenzene-d5	86.6		31.0-146		05/04/2017 02:25	WG975549
(S) 2-Fluorobiphenyl	86.0		31.0-130		05/04/2017 02:25	WG975549
(S) p-Terphenyl-d14	77.6		20.0-127		05/04/2017 02:25	WG975549

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	66.2		1	05/02/2017 12:49	WG975765

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	34.0		30.2	1	05/03/2017 11:14	WG975451

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	3520		755	5	05/02/2017 01:57	WG975333
Barium	1010000		1510	5	05/02/2017 01:57	WG975333
Cadmium	ND		755	5	05/02/2017 19:59	WG975333
Chromium	4370		755	5	05/02/2017 19:59	WG975333
Copper	125000		755	5	05/02/2017 01:57	WG975333
Lead	541000		755	5	05/02/2017 01:57	WG975333
Selenium	ND		755	5	05/02/2017 01:57	WG975333
Silver	1380		755	5	05/02/2017 19:59	WG975333
Zinc	259000		7550	5	05/02/2017 01:57	WG975333

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1690	22.5	05/06/2017 18:38	WG977045
Acrylonitrile	ND		340	22.5	05/06/2017 18:38	WG977045
Benzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Bromobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Bromodichloromethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
Bromoform	ND		34.0	22.5	05/06/2017 18:38	WG977045
Bromomethane	ND		169	22.5	05/06/2017 18:38	WG977045
n-Butylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
sec-Butylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
tert-Butylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Carbon tetrachloride	ND		34.0	22.5	05/06/2017 18:38	WG977045
Chlorobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Chlorodibromomethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
Chloroethane	ND		169	22.5	05/06/2017 18:38	WG977045
2-Chloroethyl vinyl ether	ND	J3	1690	22.5	05/06/2017 18:38	WG977045
Chloroform	ND		169	22.5	05/06/2017 18:38	WG977045
Chloromethane	ND		84.9	22.5	05/06/2017 18:38	WG977045
2-Chlorotoluene	ND		34.0	22.5	05/06/2017 18:38	WG977045
4-Chlorotoluene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,2-Dibromo-3-Chloropropane	ND		169	22.5	05/06/2017 18:38	WG977045
1,2-Dibromoethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
Dibromomethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,2-Dichlorobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,3-Dichlorobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,4-Dichlorobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Dichlorodifluoromethane	ND		169	22.5	05/06/2017 18:38	WG977045
1,1-Dichloroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,2-Dichloroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1-Dichloroethene	ND		34.0	22.5	05/06/2017 18:38	WG977045
cis-1,2-Dichloroethene	ND		34.0	22.5	05/06/2017 18:38	WG977045
trans-1,2-Dichloroethene	ND		34.0	22.5	05/06/2017 18:38	WG977045



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1-Dichloropropene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,3-Dichloropropane	ND		34.0	22.5	05/06/2017 18:38	WG977045
cis-1,3-Dichloropropene	ND		34.0	22.5	05/06/2017 18:38	WG977045
trans-1,3-Dichloropropene	ND		34.0	22.5	05/06/2017 18:38	WG977045
2,2-Dichloropropane	ND		34.0	22.5	05/06/2017 18:38	WG977045
Di-isopropyl ether	ND		34.0	22.5	05/06/2017 18:38	WG977045
Ethylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Hexachloro-1,3-butadiene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Isopropylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
p-Isopropyltoluene	ND		34.0	22.5	05/06/2017 18:38	WG977045
2-Butanone (MEK)	ND		340	22.5	05/06/2017 18:38	WG977045
Methylene Chloride	ND		169	22.5	05/06/2017 18:38	WG977045
1-Methylnaphthalene	ND		340	22.5	05/06/2017 18:38	WG977045
2-Methylnaphthalene	ND	J4	340	22.5	05/06/2017 18:38	WG977045
4-Methyl-2-pentanone (MIBK)	ND		340	22.5	05/06/2017 18:38	WG977045
Methyl tert-butyl ether	ND		34.0	22.5	05/06/2017 18:38	WG977045
Naphthalene	ND		169	22.5	05/06/2017 18:38	WG977045
n-Propylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Styrene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1,1,2-Tetrachloroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1,2,2-Tetrachloroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1,2-Trichlorotrifluoroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
Tetrachloroethene	381		34.0	22.5	05/06/2017 18:38	WG977045
Toluene	ND		169	22.5	05/06/2017 18:38	WG977045
1,2,3-Trichlorobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,2,4-Trichlorobenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1,1-Trichloroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,1,2-Trichloroethane	ND		34.0	22.5	05/06/2017 18:38	WG977045
Trichloroethene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Trichlorofluoromethane	ND		169	22.5	05/06/2017 18:38	WG977045
1,2,3-Trichloropropane	ND		84.9	22.5	05/06/2017 18:38	WG977045
1,2,4-Trimethylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,2,3-Trimethylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
1,3,5-Trimethylbenzene	ND		34.0	22.5	05/06/2017 18:38	WG977045
Vinyl chloride	ND		34.0	22.5	05/06/2017 18:38	WG977045
Xylenes, Total	ND		102	22.5	05/06/2017 18:38	WG977045
(S) Toluene-d8	109		80.0-120		05/06/2017 18:38	WG977045
(S) Dibromofluoromethane	97.4		74.0-131		05/06/2017 18:38	WG977045
(S) a,a,a-Trifluorotoluene	99.5		80.0-120		05/06/2017 18:38	WG977045
(S) 4-Bromofluorobenzene	99.5		64.0-132		05/06/2017 18:38	WG977045

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		25.7	1	05/05/2017 15:10	WG976270
PCB 1221	ND		25.7	1	05/05/2017 15:10	WG976270
PCB 1232	ND		25.7	1	05/05/2017 15:10	WG976270
PCB 1242	ND		25.7	1	05/05/2017 15:10	WG976270
PCB 1248	ND		25.7	1	05/05/2017 15:10	WG976270
PCB 1254	ND		25.7	1	05/05/2017 15:10	WG976270
PCB 1260	ND		25.7	1	05/05/2017 15:10	WG976270
(S) Decachlorobiphenyl	15.7		10.0-148		05/05/2017 15:10	WG976270
(S) Tetrachloro-m-xylene	15.9	J2	21.0-146		05/05/2017 15:10	WG976270



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		49.8	1	05/04/2017 02:49	WG975549
Acenaphthene	ND		49.8	1	05/04/2017 02:49	WG975549
Acenaphthylene	ND		49.8	1	05/04/2017 02:49	WG975549
Benzo(a)anthracene	ND		49.8	1	05/04/2017 02:49	WG975549
Benzo(a)pyrene	58.8		49.8	1	05/04/2017 02:49	WG975549
Benzo(b)fluoranthene	87.6		49.8	1	05/04/2017 02:49	WG975549
Benzo(g,h,i)perylene	70.0		49.8	1	05/04/2017 02:49	WG975549
Benzo(k)fluoranthene	ND		49.8	1	05/04/2017 02:49	WG975549
Chrysene	60.9		49.8	1	05/04/2017 02:49	WG975549
Dibenz(a,h)anthracene	ND		49.8	1	05/04/2017 02:49	WG975549
Fluoranthene	95.8		49.8	1	05/04/2017 02:49	WG975549
Fluorene	ND		49.8	1	05/04/2017 02:49	WG975549
Indeno(1,2,3-cd)pyrene	59.4		49.8	1	05/04/2017 02:49	WG975549
Naphthalene	ND		49.8	1	05/04/2017 02:49	WG975549
Phenanthrene	57.5		49.8	1	05/04/2017 02:49	WG975549
Pyrene	68.5		49.8	1	05/04/2017 02:49	WG975549
(S) Nitrobenzene-d5	65.5		31.0-146		05/04/2017 02:49	WG975549
(S) 2-Fluorobiphenyl	66.8		31.0-130		05/04/2017 02:49	WG975549
(S) p-Terphenyl-d14	48.5		20.0-127		05/04/2017 02:49	WG975549

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	96.2		1	05/02/2017 12:49	WG975765

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		20.8	1	05/03/2017 11:17	WG975451

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	ND		520	5	05/02/2017 02:01	WG975333
Barium	2960		1040	5	05/02/2017 02:01	WG975333
Cadmium	ND		520	5	05/02/2017 20:02	WG975333
Chromium	1990		520	5	05/02/2017 20:02	WG975333
Copper	959		520	5	05/02/2017 02:01	WG975333
Lead	758		520	5	05/02/2017 02:01	WG975333
Selenium	ND		520	5	05/02/2017 02:01	WG975333
Silver	ND		520	5	05/02/2017 02:01	WG975333
Zinc	ND		5200	5	05/02/2017 02:01	WG975333

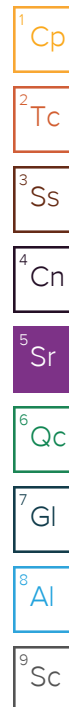
Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1210	23.25	05/06/2017 19:38	WG977045
Acrylonitrile	ND		241	23.25	05/06/2017 19:38	WG977045
Benzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Bromobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Bromodichloromethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
Bromoform	ND		24.1	23.25	05/06/2017 19:38	WG977045
Bromomethane	ND		121	23.25	05/06/2017 19:38	WG977045
n-Butylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
sec-Butylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
tert-Butylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Carbon tetrachloride	ND		24.1	23.25	05/06/2017 19:38	WG977045
Chlorobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Chlorodibromomethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
Chloroethane	ND		121	23.25	05/06/2017 19:38	WG977045
2-Chloroethyl vinyl ether	ND	J3	1210	23.25	05/06/2017 19:38	WG977045
Chloroform	ND		121	23.25	05/06/2017 19:38	WG977045
Chloromethane	ND		60.4	23.25	05/06/2017 19:38	WG977045
2-Chlorotoluene	ND		24.1	23.25	05/06/2017 19:38	WG977045
4-Chlorotoluene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,2-Dibromo-3-Chloropropane	ND		121	23.25	05/06/2017 19:38	WG977045
1,2-Dibromoethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
Dibromomethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,2-Dichlorobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,3-Dichlorobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,4-Dichlorobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Dichlorodifluoromethane	ND		121	23.25	05/06/2017 19:38	WG977045
1,1-Dichloroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,2-Dichloroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1-Dichloroethene	ND		24.1	23.25	05/06/2017 19:38	WG977045
cis-1,2-Dichloroethene	ND		24.1	23.25	05/06/2017 19:38	WG977045
trans-1,2-Dichloroethene	ND		24.1	23.25	05/06/2017 19:38	WG977045



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1-Dichloropropene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,3-Dichloropropane	ND		24.1	23.25	05/06/2017 19:38	WG977045
cis-1,3-Dichloropropene	ND		24.1	23.25	05/06/2017 19:38	WG977045
trans-1,3-Dichloropropene	ND		24.1	23.25	05/06/2017 19:38	WG977045
2,2-Dichloropropane	ND		24.1	23.25	05/06/2017 19:38	WG977045
Di-isopropyl ether	ND		24.1	23.25	05/06/2017 19:38	WG977045
Ethylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Hexachloro-1,3-butadiene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Isopropylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
p-Isopropyltoluene	ND		24.1	23.25	05/06/2017 19:38	WG977045
2-Butanone (MEK)	ND		241	23.25	05/06/2017 19:38	WG977045
Methylene Chloride	ND		121	23.25	05/06/2017 19:38	WG977045
1-Methylnaphthalene	290		241	23.25	05/06/2017 19:38	WG977045
2-Methylnaphthalene	ND	J4	241	23.25	05/06/2017 19:38	WG977045
4-Methyl-2-pentanone (MIBK)	ND		241	23.25	05/06/2017 19:38	WG977045
Methyl tert-butyl ether	ND		24.1	23.25	05/06/2017 19:38	WG977045
Naphthalene	ND		121	23.25	05/06/2017 19:38	WG977045
n-Propylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Styrene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1,1,2-Tetrachloroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1,2,2-Tetrachloroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1,2-Trichlorotrifluoroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
Tetrachloroethene	48.5		24.1	23.25	05/06/2017 19:38	WG977045
Toluene	ND		121	23.25	05/06/2017 19:38	WG977045
1,2,3-Trichlorobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,2,4-Trichlorobenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1,1-Trichloroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,1,2-Trichloroethane	ND		24.1	23.25	05/06/2017 19:38	WG977045
Trichloroethene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Trichlorofluoromethane	ND		121	23.25	05/06/2017 19:38	WG977045
1,2,3-Trichloropropane	ND		60.4	23.25	05/06/2017 19:38	WG977045
1,2,4-Trimethylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,2,3-Trimethylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
1,3,5-Trimethylbenzene	ND		24.1	23.25	05/06/2017 19:38	WG977045
Vinyl chloride	ND		24.1	23.25	05/06/2017 19:38	WG977045
Xylenes, Total	ND		72.6	23.25	05/06/2017 19:38	WG977045
(S) Toluene-d8	109		80.0-120		05/06/2017 19:38	WG977045
(S) Dibromofluoromethane	97.7		74.0-131		05/06/2017 19:38	WG977045
(S) a,a,a-Trifluorotoluene	99.1		80.0-120		05/06/2017 19:38	WG977045
(S) 4-Bromofluorobenzene	99.6		64.0-132		05/06/2017 19:38	WG977045



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		34.3	1	05/04/2017 03:13	WG975549
Acenaphthene	ND		34.3	1	05/04/2017 03:13	WG975549
Acenaphthylene	ND		34.3	1	05/04/2017 03:13	WG975549
Benzo(a)anthracene	ND		34.3	1	05/04/2017 03:13	WG975549
Benzo(a)pyrene	ND		34.3	1	05/04/2017 03:13	WG975549
Benzo(b)fluoranthene	ND		34.3	1	05/04/2017 03:13	WG975549
Benzo(g,h,i)perylene	ND		34.3	1	05/04/2017 03:13	WG975549
Benzo(k)fluoranthene	ND		34.3	1	05/04/2017 03:13	WG975549
Chrysene	ND		34.3	1	05/04/2017 03:13	WG975549
Dibenz(a,h)anthracene	ND		34.3	1	05/04/2017 03:13	WG975549
Fluoranthene	ND		34.3	1	05/04/2017 03:13	WG975549



Collected date/time: 04/27/17 12:35

L905931

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		34.3	1	05/04/2017 03:13	WG975549
Indeno(1,2,3-cd)pyrene	ND		34.3	1	05/04/2017 03:13	WG975549
Naphthalene	ND		34.3	1	05/04/2017 03:13	WG975549
Phenanthrene	ND		34.3	1	05/04/2017 03:13	WG975549
Pyrene	ND		34.3	1	05/04/2017 03:13	WG975549
(S) Nitrobenzene-d5	92.8		31.0-146		05/04/2017 03:13	WG975549
(S) 2-Fluorobiphenyl	88.6		31.0-130		05/04/2017 03:13	WG975549
(S) p-Terphenyl-d14	81.3		20.0-127		05/04/2017 03:13	WG975549

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.4		1	05/02/2017 12:49	WG975765

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	25.6		23.2	1	05/03/2017 11:19	WG975451

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	2080		579	5	05/02/2017 01:11	WG975333
Barium	15400		1160	5	05/02/2017 01:11	WG975333
Cadmium	ND		579	5	05/02/2017 01:11	WG975333
Chromium	2970		579	5	05/02/2017 19:21	WG975333
Copper	12200	O1	579	5	05/02/2017 01:11	WG975333
Lead	37300	J3 J5 O1	579	5	05/02/2017 01:11	WG975333
Selenium	ND		579	5	05/02/2017 01:11	WG975333
Silver	ND		579	5	05/02/2017 01:11	WG975333
Zinc	28500		5790	5	05/02/2017 19:21	WG975333

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1260	21.75	05/06/2017 22:38	WG977045
Acrylonitrile	ND		252	21.75	05/06/2017 22:38	WG977045
Benzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Bromobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Bromodichloromethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
Bromoform	ND		25.2	21.75	05/06/2017 22:38	WG977045
Bromomethane	ND		126	21.75	05/06/2017 22:38	WG977045
n-Butylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
sec-Butylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
tert-Butylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Carbon tetrachloride	ND		25.2	21.75	05/06/2017 22:38	WG977045
Chlorobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Chlorodibromomethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
Chloroethane	ND		126	21.75	05/06/2017 22:38	WG977045
2-Chloroethyl vinyl ether	ND	J3	1260	21.75	05/06/2017 22:38	WG977045
Chloroform	ND		126	21.75	05/06/2017 22:38	WG977045
Chloromethane	ND		63.0	21.75	05/06/2017 22:38	WG977045
2-Chlorotoluene	ND		25.2	21.75	05/06/2017 22:38	WG977045
4-Chlorotoluene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,2-Dibromo-3-Chloropropane	ND		126	21.75	05/06/2017 22:38	WG977045
1,2-Dibromoethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
Dibromomethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,2-Dichlorobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,3-Dichlorobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,4-Dichlorobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Dichlorodifluoromethane	ND		126	21.75	05/06/2017 22:38	WG977045
1,1-Dichloroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,2-Dichloroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1-Dichloroethene	ND		25.2	21.75	05/06/2017 22:38	WG977045
cis-1,2-Dichloroethene	ND		25.2	21.75	05/06/2017 22:38	WG977045
trans-1,2-Dichloroethene	ND		25.2	21.75	05/06/2017 22:38	WG977045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

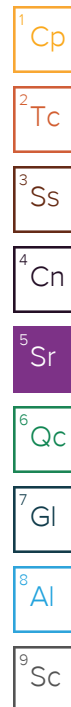
8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1-Dichloropropene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,3-Dichloropropane	ND		25.2	21.75	05/06/2017 22:38	WG977045
cis-1,3-Dichloropropene	ND		25.2	21.75	05/06/2017 22:38	WG977045
trans-1,3-Dichloropropene	ND		25.2	21.75	05/06/2017 22:38	WG977045
2,2-Dichloropropane	ND		25.2	21.75	05/06/2017 22:38	WG977045
Di-isopropyl ether	ND		25.2	21.75	05/06/2017 22:38	WG977045
Ethylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Hexachloro-1,3-butadiene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Isopropylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
p-Isopropyltoluene	ND		25.2	21.75	05/06/2017 22:38	WG977045
2-Butanone (MEK)	ND		25.2	21.75	05/06/2017 22:38	WG977045
Methylene Chloride	ND		126	21.75	05/06/2017 22:38	WG977045
1-Methylnaphthalene	ND		25.2	21.75	05/06/2017 22:38	WG977045
2-Methylnaphthalene	ND	J4	25.2	21.75	05/06/2017 22:38	WG977045
4-Methyl-2-pentanone (MIBK)	ND		25.2	21.75	05/06/2017 22:38	WG977045
Methyl tert-butyl ether	ND		25.2	21.75	05/06/2017 22:38	WG977045
Naphthalene	ND		126	21.75	05/06/2017 22:38	WG977045
n-Propylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Styrene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1,1,2-Tetrachloroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1,2,2-Tetrachloroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1,2-Trichlorotrifluoroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
Tetrachloroethene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Toluene	ND		126	21.75	05/06/2017 22:38	WG977045
1,2,3-Trichlorobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,2,4-Trichlorobenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1,1-Trichloroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,1,2-Trichloroethane	ND		25.2	21.75	05/06/2017 22:38	WG977045
Trichloroethene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Trichlorofluoromethane	ND		126	21.75	05/06/2017 22:38	WG977045
1,2,3-Trichloropropane	ND		63.0	21.75	05/06/2017 22:38	WG977045
1,2,4-Trimethylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,2,3-Trimethylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
1,3,5-Trimethylbenzene	ND		25.2	21.75	05/06/2017 22:38	WG977045
Vinyl chloride	ND		25.2	21.75	05/06/2017 22:38	WG977045
Xylenes, Total	ND		75.5	21.75	05/06/2017 22:38	WG977045
(S) Toluene-d8	109		80.0-120		05/06/2017 22:38	WG977045
(S) Dibromofluoromethane	98.2		74.0-131		05/06/2017 22:38	WG977045
(S) a,a,a-Trifluorotoluene	99.3		80.0-120		05/06/2017 22:38	WG977045
(S) 4-Bromofluorobenzene	102		64.0-132		05/06/2017 22:38	WG977045



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		38.2	1	05/04/2017 03:38	WG975549
Acenaphthene	ND		38.2	1	05/04/2017 03:38	WG975549
Acenaphthylene	ND		38.2	1	05/04/2017 03:38	WG975549
Benzo(a)anthracene	ND		38.2	1	05/04/2017 03:38	WG975549
Benzo(a)pyrene	ND		38.2	1	05/04/2017 03:38	WG975549
Benzo(b)fluoranthene	41.1		38.2	1	05/04/2017 03:38	WG975549
Benzo(g,h,i)perylene	ND		38.2	1	05/04/2017 03:38	WG975549
Benzo(k)fluoranthene	ND		38.2	1	05/04/2017 03:38	WG975549
Chrysene	ND		38.2	1	05/04/2017 03:38	WG975549
Dibenz(a,h)anthracene	ND		38.2	1	05/04/2017 03:38	WG975549
Fluoranthene	58.8		38.2	1	05/04/2017 03:38	WG975549



Collected date/time: 04/27/17 14:00

L905931

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		38.2	1	05/04/2017 03:38	WG975549
Indeno(1,2,3-cd)pyrene	ND		38.2	1	05/04/2017 03:38	WG975549
Naphthalene	ND		38.2	1	05/04/2017 03:38	WG975549
Phenanthrene	ND		38.2	1	05/04/2017 03:38	WG975549
Pyrene	49.9		38.2	1	05/04/2017 03:38	WG975549
(S) Nitrobenzene-d5	95.6		31.0-146		05/04/2017 03:38	WG975549
(S) 2-Fluorobiphenyl	86.2		31.0-130		05/04/2017 03:38	WG975549
(S) p-Terphenyl-d14	85.7		20.0-127		05/04/2017 03:38	WG975549

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.3		1	05/02/2017 12:49	WG975765

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		21.7	1	05/03/2017 11:22	WG975451

⁶ Qc⁷ Gl⁸ Al⁹ Sc

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	ND		542	5	05/02/2017 02:04	WG975333
Barium	3660		1080	5	05/02/2017 02:04	WG975333
Cadmium	ND		542	5	05/02/2017 20:06	WG975333
Chromium	1670		542	5	05/02/2017 20:06	WG975333
Copper	1250		542	5	05/02/2017 02:04	WG975333
Lead	762		542	5	05/02/2017 02:04	WG975333
Selenium	ND		542	5	05/02/2017 02:04	WG975333
Silver	ND		542	5	05/02/2017 02:04	WG975333
Zinc	ND		5420	5	05/02/2017 02:04	WG975333

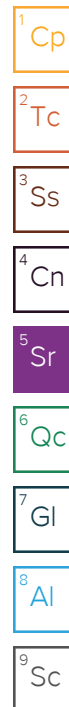
Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1370	25.25	05/06/2017 22:58	WG977045
Acrylonitrile	ND		273	25.25	05/06/2017 22:58	WG977045
Benzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Bromobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Bromodichloromethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
Bromoform	ND		27.3	25.25	05/06/2017 22:58	WG977045
Bromomethane	ND		137	25.25	05/06/2017 22:58	WG977045
n-Butylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
sec-Butylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
tert-Butylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Carbon tetrachloride	ND		27.3	25.25	05/06/2017 22:58	WG977045
Chlorobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Chlorodibromomethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
Chloroethane	ND		137	25.25	05/06/2017 22:58	WG977045
2-Chloroethyl vinyl ether	ND	J3	1370	25.25	05/06/2017 22:58	WG977045
Chloroform	ND		137	25.25	05/06/2017 22:58	WG977045
Chloromethane	ND		68.4	25.25	05/06/2017 22:58	WG977045
2-Chlorotoluene	ND		27.3	25.25	05/06/2017 22:58	WG977045
4-Chlorotoluene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,2-Dibromo-3-Chloropropane	ND		137	25.25	05/06/2017 22:58	WG977045
1,2-Dibromoethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
Dibromomethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,2-Dichlorobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,3-Dichlorobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,4-Dichlorobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Dichlorodifluoromethane	ND		137	25.25	05/06/2017 22:58	WG977045
1,1-Dichloroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,2-Dichloroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1-Dichloroethene	ND		27.3	25.25	05/06/2017 22:58	WG977045
cis-1,2-Dichloroethene	ND		27.3	25.25	05/06/2017 22:58	WG977045
trans-1,2-Dichloroethene	ND		27.3	25.25	05/06/2017 22:58	WG977045



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1-Dichloropropene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,3-Dichloropropane	ND		27.3	25.25	05/06/2017 22:58	WG977045
cis-1,3-Dichloropropene	ND		27.3	25.25	05/06/2017 22:58	WG977045
trans-1,3-Dichloropropene	ND		27.3	25.25	05/06/2017 22:58	WG977045
2,2-Dichloropropane	ND		27.3	25.25	05/06/2017 22:58	WG977045
Di-isopropyl ether	ND		27.3	25.25	05/06/2017 22:58	WG977045
Ethylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Hexachloro-1,3-butadiene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Isopropylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
p-Isopropyltoluene	ND		27.3	25.25	05/06/2017 22:58	WG977045
2-Butanone (MEK)	ND		273	25.25	05/06/2017 22:58	WG977045
Methylene Chloride	ND		137	25.25	05/06/2017 22:58	WG977045
1-Methylnaphthalene	ND		273	25.25	05/06/2017 22:58	WG977045
2-Methylnaphthalene	ND	J4	273	25.25	05/06/2017 22:58	WG977045
4-Methyl-2-pentanone (MIBK)	ND		273	25.25	05/06/2017 22:58	WG977045
Methyl tert-butyl ether	ND		27.3	25.25	05/06/2017 22:58	WG977045
Naphthalene	ND		137	25.25	05/06/2017 22:58	WG977045
n-Propylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Styrene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1,1,2-Tetrachloroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1,2,2-Tetrachloroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1,2-Trichlorotrifluoroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
Tetrachloroethene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Toluene	ND		137	25.25	05/06/2017 22:58	WG977045
1,2,3-Trichlorobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,2,4-Trichlorobenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1,1-Trichloroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,1,2-Trichloroethane	ND		27.3	25.25	05/06/2017 22:58	WG977045
Trichloroethene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Trichlorofluoromethane	ND		137	25.25	05/06/2017 22:58	WG977045
1,2,3-Trichloropropane	ND		68.4	25.25	05/06/2017 22:58	WG977045
1,2,4-Trimethylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,2,3-Trimethylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
1,3,5-Trimethylbenzene	ND		27.3	25.25	05/06/2017 22:58	WG977045
Vinyl chloride	ND		27.3	25.25	05/06/2017 22:58	WG977045
Xylenes, Total	ND		82.2	25.25	05/06/2017 22:58	WG977045
(S) Toluene-d8	110		80.0-120		05/06/2017 22:58	WG977045
(S) Dibromofluoromethane	100		74.0-131		05/06/2017 22:58	WG977045
(S) a,a,a-Trifluorotoluene	99.0		80.0-120		05/06/2017 22:58	WG977045
(S) 4-Bromofluorobenzene	98.3		64.0-132		05/06/2017 22:58	WG977045



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		35.8	1	05/04/2017 08:45	WG975549
Acenaphthene	ND		35.8	1	05/04/2017 08:45	WG975549
Acenaphthylene	ND		35.8	1	05/04/2017 08:45	WG975549
Benzo(a)anthracene	ND		35.8	1	05/04/2017 08:45	WG975549
Benzo(a)pyrene	ND		35.8	1	05/04/2017 08:45	WG975549
Benzo(b)fluoranthene	ND		35.8	1	05/04/2017 08:45	WG975549
Benzo(g,h,i)perylene	ND		35.8	1	05/04/2017 08:45	WG975549
Benzo(k)fluoranthene	ND		35.8	1	05/04/2017 08:45	WG975549
Chrysene	ND		35.8	1	05/04/2017 08:45	WG975549
Dibenz(a,h)anthracene	ND		35.8	1	05/04/2017 08:45	WG975549
Fluoranthene	ND		35.8	1	05/04/2017 08:45	WG975549



Collected date/time: 04/27/17 14:30

L905931

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		35.8	1	05/04/2017 08:45	WG975549
Indeno(1,2,3-cd)pyrene	ND		35.8	1	05/04/2017 08:45	WG975549
Naphthalene	ND		35.8	1	05/04/2017 08:45	WG975549
Phenanthrene	ND		35.8	1	05/04/2017 08:45	WG975549
Pyrene	ND		35.8	1	05/04/2017 08:45	WG975549
(S) Nitrobenzene-d5	83.2		31.0-146		05/04/2017 08:45	WG975549
(S) 2-Fluorobiphenyl	86.0		31.0-130		05/04/2017 08:45	WG975549
(S) p-Terphenyl-d14	85.4		20.0-127		05/04/2017 08:45	WG975549

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	96.6		1	05/02/2017 12:49	WG975765

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		20.7	1	05/03/2017 11:24	WG975451

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	ND		518	5	05/02/2017 02:08	WG975333
Barium	3790		1040	5	05/02/2017 02:08	WG975333
Cadmium	ND		518	5	05/02/2017 20:10	WG975333
Chromium	2080		518	5	05/02/2017 20:10	WG975333
Copper	1060		518	5	05/02/2017 02:08	WG975333
Lead	839		518	5	05/02/2017 02:08	WG975333
Selenium	ND		518	5	05/02/2017 02:08	WG975333
Silver	ND		518	5	05/02/2017 02:08	WG975333
Zinc	ND		5180	5	05/02/2017 02:08	WG975333

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1240	24	05/06/2017 23:18	WG977045
Acrylonitrile	ND		248	24	05/06/2017 23:18	WG977045
Benzene	ND		24.8	24	05/06/2017 23:18	WG977045
Bromobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Bromodichloromethane	ND		24.8	24	05/06/2017 23:18	WG977045
Bromoform	ND		24.8	24	05/06/2017 23:18	WG977045
Bromomethane	ND		124	24	05/06/2017 23:18	WG977045
n-Butylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
sec-Butylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
tert-Butylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Carbon tetrachloride	ND		24.8	24	05/06/2017 23:18	WG977045
Chlorobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Chlorodibromomethane	ND		24.8	24	05/06/2017 23:18	WG977045
Chloroethane	ND		124	24	05/06/2017 23:18	WG977045
2-Chloroethyl vinyl ether	ND	J3	1240	24	05/06/2017 23:18	WG977045
Chloroform	ND		124	24	05/06/2017 23:18	WG977045
Chloromethane	ND		62.1	24	05/06/2017 23:18	WG977045
2-Chlorotoluene	ND		24.8	24	05/06/2017 23:18	WG977045
4-Chlorotoluene	ND		24.8	24	05/06/2017 23:18	WG977045
1,2-Dibromo-3-Chloropropane	ND		124	24	05/06/2017 23:18	WG977045
1,2-Dibromoethane	ND		24.8	24	05/06/2017 23:18	WG977045
Dibromomethane	ND		24.8	24	05/06/2017 23:18	WG977045
1,2-Dichlorobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
1,3-Dichlorobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
1,4-Dichlorobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Dichlorodifluoromethane	ND		124	24	05/06/2017 23:18	WG977045
1,1-Dichloroethane	ND		24.8	24	05/06/2017 23:18	WG977045
1,2-Dichloroethane	ND		24.8	24	05/06/2017 23:18	WG977045
1,1-Dichloroethene	ND		24.8	24	05/06/2017 23:18	WG977045
cis-1,2-Dichloroethene	ND		24.8	24	05/06/2017 23:18	WG977045
trans-1,2-Dichloroethene	ND		24.8	24	05/06/2017 23:18	WG977045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

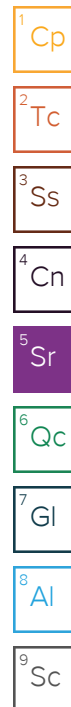
8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		24.8	24	05/06/2017 23:18	WG977045
1,1-Dichloropropene	ND		24.8	24	05/06/2017 23:18	WG977045
1,3-Dichloropropane	ND		24.8	24	05/06/2017 23:18	WG977045
cis-1,3-Dichloropropene	ND		24.8	24	05/06/2017 23:18	WG977045
trans-1,3-Dichloropropene	ND		24.8	24	05/06/2017 23:18	WG977045
2,2-Dichloropropane	ND		24.8	24	05/06/2017 23:18	WG977045
Di-isopropyl ether	ND		24.8	24	05/06/2017 23:18	WG977045
Ethylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Hexachloro-1,3-butadiene	ND		24.8	24	05/06/2017 23:18	WG977045
Isopropylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
p-Isopropyltoluene	ND		24.8	24	05/06/2017 23:18	WG977045
2-Butanone (MEK)	ND		248	24	05/06/2017 23:18	WG977045
Methylene Chloride	ND		124	24	05/06/2017 23:18	WG977045
1-Methylnaphthalene	ND		248	24	05/06/2017 23:18	WG977045
2-Methylnaphthalene	ND	J4	248	24	05/06/2017 23:18	WG977045
4-Methyl-2-pentanone (MIBK)	ND		248	24	05/06/2017 23:18	WG977045
Methyl tert-butyl ether	ND		24.8	24	05/06/2017 23:18	WG977045
Naphthalene	ND		124	24	05/06/2017 23:18	WG977045
n-Propylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Styrene	ND		24.8	24	05/06/2017 23:18	WG977045
1,1,1,2-Tetrachloroethane	ND		24.8	24	05/06/2017 23:18	WG977045
1,1,2,2-Tetrachloroethane	ND		24.8	24	05/06/2017 23:18	WG977045
1,1,2-Trichlorotrifluoroethane	ND		24.8	24	05/06/2017 23:18	WG977045
Tetrachloroethene	85.9		24.8	24	05/06/2017 23:18	WG977045
Toluene	ND		124	24	05/06/2017 23:18	WG977045
1,2,3-Trichlorobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
1,2,4-Trichlorobenzene	ND		24.8	24	05/06/2017 23:18	WG977045
1,1,1-Trichloroethane	ND		24.8	24	05/06/2017 23:18	WG977045
1,1,2-Trichloroethane	ND		24.8	24	05/06/2017 23:18	WG977045
Trichloroethene	ND		24.8	24	05/06/2017 23:18	WG977045
Trichlorofluoromethane	ND		124	24	05/06/2017 23:18	WG977045
1,2,3-Trichloropropane	ND		62.1	24	05/06/2017 23:18	WG977045
1,2,4-Trimethylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
1,2,3-Trimethylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
1,3,5-Trimethylbenzene	ND		24.8	24	05/06/2017 23:18	WG977045
Vinyl chloride	ND		24.8	24	05/06/2017 23:18	WG977045
Xylenes, Total	ND		74.5	24	05/06/2017 23:18	WG977045
(S) Toluene-d8	112		80.0-120		05/06/2017 23:18	WG977045
(S) Dibromofluoromethane	103		74.0-131		05/06/2017 23:18	WG977045
(S) a,a,a-Trifluorotoluene	98.4		80.0-120		05/06/2017 23:18	WG977045
(S) 4-Bromofluorobenzene	99.0		64.0-132		05/06/2017 23:18	WG977045



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		34.2	1	05/04/2017 09:09	WG975549
Acenaphthene	ND		34.2	1	05/04/2017 09:09	WG975549
Acenaphthylene	ND		34.2	1	05/04/2017 09:09	WG975549
Benzo(a)anthracene	ND		34.2	1	05/04/2017 09:09	WG975549
Benzo(a)pyrene	ND		34.2	1	05/04/2017 09:09	WG975549
Benzo(b)fluoranthene	ND		34.2	1	05/04/2017 09:09	WG975549
Benzo(g,h,i)perylene	ND		34.2	1	05/04/2017 09:09	WG975549
Benzo(k)fluoranthene	ND		34.2	1	05/04/2017 09:09	WG975549
Chrysene	ND		34.2	1	05/04/2017 09:09	WG975549
Dibenz(a,h)anthracene	ND		34.2	1	05/04/2017 09:09	WG975549
Fluoranthene	ND		34.2	1	05/04/2017 09:09	WG975549



Collected date/time: 04/27/17 00:00

L905931

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		34.2	1	05/04/2017 09:09	WG975549
Indeno(1,2,3-cd)pyrene	ND		34.2	1	05/04/2017 09:09	WG975549
Naphthalene	ND		34.2	1	05/04/2017 09:09	WG975549
Phenanthrene	ND		34.2	1	05/04/2017 09:09	WG975549
Pyrene	ND		34.2	1	05/04/2017 09:09	WG975549
(S) Nitrobenzene-d5	85.3		31.0-146		05/04/2017 09:09	WG975549
(S) 2-Fluorobiphenyl	87.2		31.0-130		05/04/2017 09:09	WG975549
(S) p-Terphenyl-d14	81.1		20.0-127		05/04/2017 09:09	WG975549

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/kg	Qualifier	RDL ug/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1250	25	05/06/2017 23:38	WG977045
Acrylonitrile	ND		250	25	05/06/2017 23:38	WG977045
Benzene	ND		25.0	25	05/06/2017 23:38	WG977045
Bromobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Bromodichloromethane	ND		25.0	25	05/06/2017 23:38	WG977045
Bromoform	ND		25.0	25	05/06/2017 23:38	WG977045
Bromomethane	ND		125	25	05/06/2017 23:38	WG977045
n-Butylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
sec-Butylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
tert-Butylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Carbon tetrachloride	ND		25.0	25	05/06/2017 23:38	WG977045
Chlorobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Chlorodibromomethane	ND		25.0	25	05/06/2017 23:38	WG977045
Chloroethane	ND		125	25	05/06/2017 23:38	WG977045
2-Chloroethyl vinyl ether	ND	J3	1250	25	05/06/2017 23:38	WG977045
Chloroform	ND		125	25	05/06/2017 23:38	WG977045
Chloromethane	ND		62.5	25	05/06/2017 23:38	WG977045
2-Chlorotoluene	ND		25.0	25	05/06/2017 23:38	WG977045
4-Chlorotoluene	ND		25.0	25	05/06/2017 23:38	WG977045
1,2-Dibromo-3-Chloropropane	ND		125	25	05/06/2017 23:38	WG977045
1,2-Dibromoethane	ND		25.0	25	05/06/2017 23:38	WG977045
Dibromomethane	ND		25.0	25	05/06/2017 23:38	WG977045
1,2-Dichlorobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
1,3-Dichlorobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
1,4-Dichlorobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Dichlorodifluoromethane	ND		125	25	05/06/2017 23:38	WG977045
1,1-Dichloroethane	ND		25.0	25	05/06/2017 23:38	WG977045
1,2-Dichloroethane	ND		25.0	25	05/06/2017 23:38	WG977045
1,1-Dichloroethene	ND		25.0	25	05/06/2017 23:38	WG977045
cis-1,2-Dichloroethene	ND		25.0	25	05/06/2017 23:38	WG977045
trans-1,2-Dichloroethene	ND		25.0	25	05/06/2017 23:38	WG977045
1,2-Dichloropropane	ND		25.0	25	05/06/2017 23:38	WG977045
1,1-Dichloropropene	ND		25.0	25	05/06/2017 23:38	WG977045
1,3-Dichloropropane	ND		25.0	25	05/06/2017 23:38	WG977045
cis-1,3-Dichloropropene	ND		25.0	25	05/06/2017 23:38	WG977045
trans-1,3-Dichloropropene	ND		25.0	25	05/06/2017 23:38	WG977045
2,2-Dichloropropane	ND		25.0	25	05/06/2017 23:38	WG977045
Di-isopropyl ether	ND		25.0	25	05/06/2017 23:38	WG977045
Ethylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Hexachloro-1,3-butadiene	ND		25.0	25	05/06/2017 23:38	WG977045
Isopropylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
p-Isopropyltoluene	ND		25.0	25	05/06/2017 23:38	WG977045
2-Butanone (MEK)	ND		250	25	05/06/2017 23:38	WG977045
Methylene Chloride	ND		125	25	05/06/2017 23:38	WG977045
1-Methylnaphthalene	ND		250	25	05/06/2017 23:38	WG977045
2-Methylnaphthalene	ND	J4	250	25	05/06/2017 23:38	WG977045
4-Methyl-2-pentanone (MIBK)	ND		250	25	05/06/2017 23:38	WG977045
Methyl tert-butyl ether	ND		25.0	25	05/06/2017 23:38	WG977045
Naphthalene	ND		125	25	05/06/2017 23:38	WG977045
n-Propylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Styrene	ND		25.0	25	05/06/2017 23:38	WG977045
1,1,1,2-Tetrachloroethane	ND		25.0	25	05/06/2017 23:38	WG977045
1,1,2,2-Tetrachloroethane	ND		25.0	25	05/06/2017 23:38	WG977045
1,1,2-Trichlorotrifluoroethane	ND		25.0	25	05/06/2017 23:38	WG977045
Tetrachloroethene	ND		25.0	25	05/06/2017 23:38	WG977045
Toluene	ND		125	25	05/06/2017 23:38	WG977045

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/27/17 00:00

L905931

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/kg	Qualifier	RDL ug/kg	Dilution	Analysis date / time	Batch
1,2,3-Trichlorobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
1,2,4-Trichlorobenzene	ND		25.0	25	05/06/2017 23:38	WG977045
1,1,1-Trichloroethane	ND		25.0	25	05/06/2017 23:38	WG977045
1,1,2-Trichloroethane	ND		25.0	25	05/06/2017 23:38	WG977045
Trichloroethene	ND		25.0	25	05/06/2017 23:38	WG977045
Trichlorofluoromethane	ND		125	25	05/06/2017 23:38	WG977045
1,2,3-Trichloropropane	ND		62.5	25	05/06/2017 23:38	WG977045
1,2,4-Trimethylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
1,2,3-Trimethylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
1,3,5-Trimethylbenzene	ND		25.0	25	05/06/2017 23:38	WG977045
Vinyl chloride	ND		25.0	25	05/06/2017 23:38	WG977045
Xylenes, Total	ND		75.0	25	05/06/2017 23:38	WG977045
(S) Toluene-d8	109		80.0-120		05/06/2017 23:38	WG977045
(S) Dibromofluoromethane	98.5		74.0-131		05/06/2017 23:38	WG977045
(S) a,a,a-Trifluorotoluene	99.1		80.0-120		05/06/2017 23:38	WG977045
(S) 4-Bromofluorobenzene	101		64.0-132		05/06/2017 23:38	WG977045

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Method Blank (MB)

(MB) R3215200-1 05/02/17 12:49

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.000200			

L905923-01 Original Sample (OS) • Duplicate (DUP)

(OS) L905923-01 05/02/17 12:49 • (DUP) R3215200-3 05/02/17 12:49

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	97.6	97.2	1	0.422		5

Laboratory Control Sample (LCS)

(LCS) R3215200-2 05/02/17 12:49

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3215264-1 05/03/17 10:46

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/kg		ug/kg	ug/kg
Mercury	U		2.80	20.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215264-2 05/03/17 10:49 • (LCSD) R3215264-3 05/03/17 10:51

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/kg	ug/kg	ug/kg	%	%	%			%	%
Mercury	300	296	292	99	97	80-120			1	20

L905940-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905940-06 05/03/17 10:54 • (MS) R3215264-4 05/03/17 10:56 • (MSD) R3215264-5 05/03/17 10:59

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/kg	ug/kg	ug/kg	ug/kg	%	%		%			%	%
Mercury	300	24.2	331	305	102	94	1	75-125			8	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3214858-1 05/02/17 01:00

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Arsenic	U		12.5	500
Barium	U		160	1000
Cadmium	U		80.0	500
Copper	U		260	500
Lead	U		120	500
Selenium	U		190	500
Silver	U		155	500
Zinc	U		1280	5000

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3215091-1 05/02/17 19:11

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Chromium	U		270	500

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3214858-2 05/02/17 01:04 • (LCSD) R3214858-3 05/02/17 01:07

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100000	102000	108000	102	108	80-120			5	20
Barium	100000	98400	102000	98	102	80-120			4	20
Cadmium	100000	108000	112000	108	112	80-120			4	20
Copper	100000	97000	101000	97	101	80-120			8	20
Lead	100000	104000	109000	104	109	80-120			5	20
Selenium	100000	103000	107000	103	107	80-120			4	20
Silver	20000	21400	22300	107	112	80-120			5	20
Zinc	100000	106000	111000	106	111	80-120			5	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215091-2 05/02/17 19:14 • (LCSD) R3215091-3 05/02/17 19:18

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chromium	100000	102000	103000	102	103	80-120			1	20



L905931-01,02,03,04,05,06,07

L905931-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905931-05 05/02/17 01:11 • (MS) R3214858-6 05/02/17 01:21 • (MSD) R3214858-7 05/02/17 01:24

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	23200	2080	125000	127000	106	108	5	75-125			1	20
Barium	23200	15400	143000	139000	110	107	5	75-125			3	20
Cadmium	23200	ND	132000	136000	114	118	5	75-125			3	20
Copper	23200	12200	133000	138000	102	107	5	75-125	E	E	11	20
Lead	23200	37300	150000	190000	97	132	5	75-125		J3 J5	24	20
Selenium	23200	ND	126000	129000	109	111	5	75-125			2	20
Silver	4630	ND	25800	26700	111	115	5	75-125			3	20
Zinc	23200	30400	154000	167000	107	118	5	75-125			8	20

L905931-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905931-05 05/02/17 19:21 • (MS) R3215091-5 05/02/17 19:32 • (MSD) R3215091-6 05/02/17 19:35

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium	23200	2970	124000	117000	104	98	5	75-125			6	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3216069-3 05/06/17 10:51

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Acetone	U		10.0	50.0
Acrylonitrile	U		1.79	10.0
Benzene	U		0.270	1.00
Bromobenzene	U		0.284	1.00
Bromodichloromethane	U		0.254	1.00
Bromoform	U		0.424	1.00
Bromomethane	U		1.34	5.00
n-Butylbenzene	U		0.258	1.00
sec-Butylbenzene	U		0.201	1.00
tert-Butylbenzene	U		0.206	1.00
Carbon tetrachloride	U		0.328	1.00
Chlorobenzene	U		0.212	1.00
Chlorodibromomethane	U		0.373	1.00
Chloroethane	U		0.946	5.00
2-Chloroethyl vinyl ether	U		2.34	50.0
Chloroform	U		0.229	5.00
Chloromethane	U		0.375	2.50
2-Chlorotoluene	U		0.301	1.00
4-Chlorotoluene	U		0.240	1.00
1,2-Dibromo-3-Chloropropane	U		1.05	5.00
1,2-Dibromoethane	U		0.343	1.00
Dibromomethane	U		0.382	1.00
1,2-Dichlorobenzene	U		0.305	1.00
1,3-Dichlorobenzene	U		0.239	1.00
1,4-Dichlorobenzene	U		0.226	1.00
Dichlorodifluoromethane	U		0.713	5.00
1,1-Dichloroethane	U		0.199	1.00
1,2-Dichloroethane	U		0.265	1.00
1,1-Dichloroethene	U		0.303	1.00
cis-1,2-Dichloroethene	U		0.235	1.00
trans-1,2-Dichloroethene	U		0.264	1.00
1,2-Dichloropropane	U		0.358	1.00
1,1-Dichloropropene	U		0.317	1.00
1,3-Dichloropropane	U		0.207	1.00
cis-1,3-Dichloropropene	U		0.262	1.00
trans-1,3-Dichloropropene	U		0.267	1.00
2,2-Dichloropropane	U		0.279	1.00
Di-isopropyl ether	U		0.248	1.00
Ethylbenzene	U		0.297	1.00
Hexachloro-1,3-butadiene	U		0.342	1.00

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

[L905931-01,02,03,04,05,06,07,08](#)

Method Blank (MB)

(MB) R3216069-3 05/06/17 10:51

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Isopropylbenzene	U		0.243	1.00
p-Isopropyltoluene	U		0.204	1.00
2-Butanone (MEK)	U		4.68	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		1.88	10.0
Methyl tert-butyl ether	U		0.212	1.00
1-Methylnaphthalene	U		0.827	10.0
2-Methylnaphthalene	U		0.833	10.0
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.206	1.00
Styrene	U		0.234	1.00
1,1,1,2-Tetrachloroethane	U		0.264	1.00
1,1,2,2-Tetrachloroethane	U		0.365	1.00
Tetrachloroethene	U		0.276	1.00
Toluene	U		0.434	5.00
1,1,2-Trichlorotrifluoroethane	U		0.365	1.00
1,2,3-Trichlorobenzene	U		0.306	1.00
1,2,4-Trichlorobenzene	U		0.388	1.00
1,1,1-Trichloroethane	U		0.286	1.00
1,1,2-Trichloroethane	U		0.277	1.00
Trichloroethene	U		0.279	1.00
Trichlorofluoromethane	U		0.382	5.00
1,2,3-Trichloropropane	U		0.741	2.50
1,2,3-Trimethylbenzene	U		0.287	1.00
1,2,4-Trimethylbenzene	U		0.211	1.00
1,3,5-Trimethylbenzene	U		0.266	1.00
Vinyl chloride	U		0.291	1.00
Xylenes, Total	U		0.698	3.00
(S) Toluene-d8	109			80.0-120
(S) Dibromofluoromethane	100			74.0-131
(S) a,a,a-Trifluorotoluene	99.3			80.0-120
(S) 4-Bromofluorobenzene	96.6			64.0-132

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3216069-1 05/06/17 09:51 • (LCSD) R3216069-2 05/06/17 10:11

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	134	134	107	107	11.0-160			0.0100	23
Acrylonitrile	125	111	114	88.5	90.9	61.0-143			2.70	20
Benzene	25.0	24.0	24.7	95.8	98.7	71.0-124			2.94	20
Bromobenzene	25.0	22.3	22.6	89.1	90.3	78.0-120			1.31	20
Bromodichloromethane	25.0	21.0	21.4	84.1	85.7	75.0-120			1.83	20
Bromoform	25.0	19.6	20.2	78.6	81.0	65.0-133			2.98	20
Bromomethane	25.0	28.9	29.2	116	117	26.0-160			0.940	20
n-Butylbenzene	25.0	25.6	25.3	102	101	73.0-126			1.31	20
sec-Butylbenzene	25.0	23.5	23.8	93.8	95.1	75.0-121			1.37	20
tert-Butylbenzene	25.0	22.1	22.3	88.5	89.2	74.0-122			0.800	20
Carbon tetrachloride	25.0	19.1	19.7	76.4	78.9	66.0-123			3.33	20
Chlorobenzene	25.0	23.1	23.1	92.4	92.6	79.0-121			0.210	20
Chlorodibromomethane	25.0	21.8	22.1	87.2	88.2	74.0-128			1.20	20
Chloroethane	25.0	26.7	27.8	107	111	51.0-147			4.06	20
2-Chloroethyl vinyl ether	125	62.4	80.3	49.9	64.2	10.0-160		J3	25.0	22
Chloroform	25.0	22.3	22.8	89.1	91.1	73.0-123			2.26	20
Chloromethane	25.0	23.0	23.8	91.9	95.1	51.0-138			3.34	20
2-Chlorotoluene	25.0	22.6	23.0	90.3	92.1	72.0-124			1.96	20
4-Chlorotoluene	25.0	22.9	23.1	91.8	92.4	78.0-120			0.740	20
1,2-Dibromo-3-Chloropropane	25.0	22.1	23.2	88.2	92.7	65.0-126			4.95	20
1,2-Dibromoethane	25.0	22.1	22.7	88.5	90.9	78.0-122			2.70	20
Dibromomethane	25.0	21.3	21.2	85.3	84.7	79.0-120			0.760	20
1,2-Dichlorobenzene	25.0	23.8	24.0	95.0	96.1	80.0-120			1.09	20
1,3-Dichlorobenzene	25.0	22.3	22.8	89.0	91.4	72.0-123			2.57	20
1,4-Dichlorobenzene	25.0	23.3	23.5	93.4	94.1	77.0-120			0.800	20
Dichlorodifluoromethane	25.0	21.1	21.6	84.4	86.5	49.0-155			2.48	20
1,1-Dichloroethane	25.0	22.6	23.2	90.5	92.9	70.0-128			2.62	20
1,2-Dichloroethane	25.0	20.2	21.1	80.8	84.4	69.0-128			4.36	20
1,1-Dichloroethene	25.0	28.3	28.9	113	116	63.0-131			2.10	20
cis-1,2-Dichloroethene	25.0	24.8	25.2	99.4	101	74.0-123			1.39	20
trans-1,2-Dichloroethene	25.0	24.6	25.5	98.4	102	72.0-122			3.62	20
1,2-Dichloropropane	25.0	23.0	23.0	91.8	92.1	75.0-126			0.270	20
1,1-Dichloropropene	25.0	22.5	23.0	90.2	92.2	72.0-130			2.21	20
1,3-Dichloropropane	25.0	22.4	22.8	89.7	91.3	80.0-121			1.73	20
cis-1,3-Dichloropropene	25.0	22.8	23.1	91.4	92.3	80.0-125			0.980	20
trans-1,3-Dichloropropene	25.0	21.9	22.2	87.5	88.8	75.0-129			1.45	20
2,2-Dichloropropane	25.0	21.4	22.2	85.5	88.9	60.0-129			3.83	20
Di-isopropyl ether	25.0	22.3	23.0	89.2	91.9	62.0-133			2.95	20
Ethylbenzene	25.0	23.3	23.5	93.3	94.1	77.0-120			0.830	20
Hexachloro-1,3-butadiene	25.0	19.1	18.9	76.4	75.6	68.0-128			1.03	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3216069-1 05/06/17 09:51 • (LCSD) R3216069-2 05/06/17 10:11

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Isopropylbenzene	25.0	22.8	23.2	91.3	92.9	75.0-120			1.73	20
p-Isopropyltoluene	25.0	22.7	23.1	91.0	92.3	74.0-125			1.42	20
2-Butanone (MEK)	125	131	134	105	107	37.0-159			2.10	20
Methylene Chloride	25.0	23.3	23.8	93.3	95.0	67.0-123			1.84	20
4-Methyl-2-pentanone (MIBK)	125	115	116	91.7	93.1	60.0-144			1.48	20
Methyl tert-butyl ether	25.0	22.3	23.5	89.1	93.9	66.0-125			5.18	20
1-Methylnaphthalene	25.0	34.6	35.1	138	140	46.0-140			1.63	24
2-Methylnaphthalene	25.0	39.5	40.4	158	161	46.0-137	J4	J4	2.12	24
Naphthalene	25.0	25.9	25.5	104	102	64.0-125			1.38	20
n-Propylbenzene	25.0	23.2	23.6	92.8	94.6	78.0-120			1.87	20
Styrene	25.0	22.5	23.8	90.0	95.1	78.0-124			5.47	20
1,1,1,2-Tetrachloroethane	25.0	21.5	21.8	85.9	87.1	74.0-124			1.31	20
1,1,2,2-Tetrachloroethane	25.0	22.5	23.3	90.1	93.0	73.0-120			3.16	20
Tetrachloroethene	25.0	21.7	22.3	86.8	89.1	70.0-127			2.58	20
Toluene	25.0	22.2	22.5	89.0	89.9	77.0-120			1.06	20
1,1,2-Trichlorotrifluoroethane	25.0	26.2	26.6	105	107	64.0-135			1.71	20
1,2,3-Trichlorobenzene	25.0	23.2	22.9	92.6	91.8	68.0-126			0.940	20
1,2,4-Trichlorobenzene	25.0	23.0	23.5	91.9	94.2	70.0-127			2.40	20
1,1,1-Trichloroethane	25.0	20.8	21.3	83.1	85.2	69.0-125			2.42	20
1,1,2-Trichloroethane	25.0	22.8	23.2	91.2	92.9	78.0-120			1.82	20
Trichloroethene	25.0	22.4	22.2	89.6	88.8	79.0-120			0.860	20
Trichlorofluoromethane	25.0	21.3	22.3	85.0	89.0	59.0-136			4.60	20
1,2,3-Trichloropropane	25.0	20.5	21.7	81.9	86.9	73.0-124			5.93	20
1,2,3-Trimethylbenzene	25.0	24.6	23.8	98.3	95.3	76.0-120			3.15	20
1,2,4-Trimethylbenzene	25.0	22.8	23.3	91.3	93.1	75.0-120			1.94	20
1,3,5-Trimethylbenzene	25.0	23.1	23.4	92.4	93.5	75.0-120			1.18	20
Vinyl chloride	25.0	26.8	27.8	107	111	63.0-134			3.62	20
Xylenes, Total	75.0	68.8	70.3	91.7	93.7	77.0-120			2.16	20
(S) Toluene-d8				108	107	80.0-120				
(S) Dibromofluoromethane				103	102	74.0-131				
(S) a,a,a-Trifluorotoluene				98.3	95.9	80.0-120				
(S) 4-Bromofluorobenzene				94.9	96.0	64.0-132				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



L905931-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905931-01 05/06/17 19:58 • (MS) R3216069-4 05/06/17 20:18 • (MSD) R3216069-5 05/06/17 20:38

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	141	ND	1910	2730	60.0	85.7	22.5	10.0-160			35.2	36
Acrylonitrile	141	ND	2310	2490	72.6	78.3	22.5	14.0-160			7.45	33
Benzene	28.3	ND	382	418	60.0	65.7	22.5	13.0-146			9.07	27
Bromobenzene	28.3	ND	401	428	62.9	67.2	22.5	10.0-149			6.54	33
Bromodichloromethane	28.3	ND	394	414	62.0	65.0	22.5	15.0-142			4.75	28
Bromoform	28.3	ND	315	327	49.5	51.3	22.5	10.0-147			3.58	31
Bromomethane	28.3	ND	385	429	60.4	67.4	22.5	10.0-160			10.9	32
n-Butylbenzene	28.3	ND	402	460	63.1	72.3	22.5	10.0-154			13.6	37
sec-Butylbenzene	28.3	ND	371	430	58.3	67.6	22.5	10.0-151			14.7	36
tert-Butylbenzene	28.3	ND	331	378	52.0	59.5	22.5	10.0-152			13.4	35
Carbon tetrachloride	28.3	ND	296	326	46.4	51.3	22.5	13.0-140			9.96	30
Chlorobenzene	28.3	ND	412	445	64.8	70.0	22.5	10.0-149			7.65	31
Chlorodibromomethane	28.3	ND	399	420	62.7	66.1	22.5	12.0-147			5.16	29
Chloroethane	28.3	ND	315	173	49.6	27.1	22.5	10.0-159		J3	58.5	33
2-Chloroethyl vinyl ether	141	ND	2380	641	74.9	20.1	22.5	10.0-160		J3	115	32
Chloroform	28.3	ND	405	446	63.7	70.1	22.5	18.0-148			9.58	28
Chloromethane	28.3	ND	437	499	68.6	78.4	22.5	10.0-146			13.3	29
2-Chlorotoluene	28.3	ND	396	436	62.2	68.5	22.5	10.0-151			9.68	35
4-Chlorotoluene	28.3	ND	403	437	63.3	68.7	22.5	10.0-150			8.15	35
1,2-Dibromo-3-Chloropropane	28.3	ND	395	400	62.0	62.9	22.5	10.0-149			1.31	34
1,2-Dibromoethane	28.3	ND	428	433	67.2	68.0	22.5	14.0-145			1.08	28
Dibromomethane	28.3	ND	367	385	57.7	60.5	22.5	18.0-144			4.75	27
1,2-Dichlorobenzene	28.3	ND	420	455	66.0	71.5	22.5	10.0-153			7.95	34
1,3-Dichlorobenzene	28.3	ND	377	414	59.2	65.0	22.5	10.0-150			9.37	35
1,4-Dichlorobenzene	28.3	ND	397	436	62.4	68.5	22.5	10.0-148			9.34	34
Dichlorodifluoromethane	28.3	ND	402	451	63.2	70.9	22.5	10.0-160			11.5	30
1,1-Dichloroethane	28.3	ND	416	454	65.3	71.3	22.5	19.0-148			8.83	28
1,2-Dichloroethane	28.3	ND	404	433	63.5	68.0	22.5	17.0-147			6.87	27
1,1-Dichloroethene	28.3	ND	381	423	59.9	66.4	22.5	10.0-150			10.4	31
cis-1,2-Dichloroethene	28.3	ND	459	500	72.2	78.6	22.5	16.0-145			8.54	28
trans-1,2-Dichloroethene	28.3	ND	431	470	67.7	73.8	22.5	11.0-142			8.71	29
1,2-Dichloropropane	28.3	ND	431	465	67.8	73.0	22.5	17.0-148			7.51	28
1,1-Dichloropropene	28.3	ND	409	456	64.3	71.7	22.5	10.0-150			10.9	30
1,3-Dichloropropane	28.3	ND	436	441	68.6	69.3	22.5	16.0-148			1.11	27
cis-1,3-Dichloropropene	28.3	ND	461	487	72.4	76.5	22.5	13.0-150			5.61	28
trans-1,3-Dichloropropene	28.3	ND	424	450	66.6	70.8	22.5	10.0-152			6.13	29
2,2-Dichloropropane	28.3	ND	334	363	52.5	57.0	22.5	16.0-143			8.28	30
Di-isopropyl ether	28.3	ND	420	455	65.9	71.6	22.5	16.0-149			8.20	28
Ethylbenzene	28.3	ND	359	394	56.4	62.0	22.5	10.0-147			9.39	31

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L905931-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905931-01 05/06/17 19:58 • (MS) R3216069-4 05/06/17 20:18 • (MSD) R3216069-5 05/06/17 20:38

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	28.3	ND	298	358	46.8	56.2	22.5	10.0-154			18.2	40
Isopropylbenzene	28.3	ND	348	385	54.6	60.5	22.5	10.0-147			10.3	33
p-Isopropyltoluene	28.3	ND	379	429	59.6	67.4	22.5	10.0-156			12.2	37
2-Butanone (MEK)	141	ND	2330	2750	73.3	86.4	22.5	10.0-160			16.4	33
Methylene Chloride	28.3	ND	436	465	68.5	73.0	22.5	16.0-139			6.40	29
4-Methyl-2-pentanone (MIBK)	141	ND	2290	2420	72.0	76.0	22.5	12.0-160			5.39	32
Methyl tert-butyl ether	28.3	ND	448	470	70.4	73.8	22.5	21.0-145			4.82	29
1-Methylnaphthalene	28.3	ND	555	632	79.5	91.6	22.5	10.0-156			12.9	40
2-Methylnaphthalene	28.3	ND	582	679	86.7	102	22.5	10.0-155			15.5	40
Naphthalene	28.3	ND	393	438	61.8	68.8	22.5	10.0-153			10.7	36
n-Propylbenzene	28.3	ND	352	394	55.4	62.0	22.5	10.0-151			11.3	34
Styrene	28.3	ND	395	415	62.1	65.2	22.5	10.0-155			4.86	34
1,1,1,2-Tetrachloroethane	28.3	ND	380	397	59.6	62.4	22.5	10.0-147			4.53	30
1,1,2,2-Tetrachloroethane	28.3	ND	416	432	65.3	67.8	22.5	10.0-155			3.79	31
Tetrachloroethene	28.3	ND	366	397	57.5	62.3	22.5	10.0-144			8.05	32
Toluene	28.3	ND	353	389	55.4	61.1	22.5	10.0-144			9.76	28
1,1,2-Trichlorotrifluoroethane	28.3	ND	308	353	48.5	55.5	22.5	10.0-153			13.5	33
1,2,3-Trichlorobenzene	28.3	ND	377	424	59.2	66.7	22.5	10.0-153			12.0	40
1,2,4-Trichlorobenzene	28.3	ND	366	412	57.5	64.8	22.5	10.0-156			11.9	40
1,1,1-Trichloroethane	28.3	ND	374	428	58.7	67.3	22.5	18.0-145			13.6	29
1,1,2-Trichloroethane	28.3	ND	433	447	68.1	70.3	22.5	12.0-151			3.15	28
Trichloroethene	28.3	ND	396	436	62.3	68.5	22.5	11.0-148			9.58	29
Trichlorofluoromethane	28.3	ND	247	301	38.8	47.3	22.5	10.0-157			19.9	34
1,2,3-Trichloropropane	28.3	ND	393	403	61.7	63.3	22.5	10.0-154			2.63	32
1,2,3-Trimethylbenzene	28.3	ND	376	412	59.1	64.7	22.5	10.0-150			9.13	33
1,2,4-Trimethylbenzene	28.3	ND	390	441	61.3	69.3	22.5	10.0-151			12.2	34
1,3,5-Trimethylbenzene	28.3	ND	387	427	60.8	67.1	22.5	10.0-150			9.78	33
Vinyl chloride	28.3	ND	507	563	79.7	88.4	22.5	10.0-150			10.4	29
Xylenes, Total	84.9	ND	1080	1160	56.7	60.7	22.5	10.0-150			6.76	31
(S) Toluene-d8					108	109		80.0-120				
(S) Dibromofluoromethane					102	102		74.0-131				
(S) o,o,o-Trifluorotoluene					99.0	98.4		80.0-120				
(S) 4-Bromofluorobenzene					96.9	96.1		64.0-132				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Method Blank (MB)

(MB) R3215904-1 05/05/17 11:08

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
PCB 1016	U		3.50	17.0
PCB 1221	U		5.37	17.0
PCB 1232	U		4.17	17.0
PCB 1242	U		3.18	17.0
PCB 1248	U		3.15	17.0
PCB 1254	U		4.72	17.0
PCB 1260	U		4.94	17.0
(S) Decachlorobiphenyl	85.1			10.0-148
(S) Tetrachloro-m-xylene	89.5			21.0-146

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215904-2 05/05/17 11:20 • (LCSD) R3215904-3 05/05/17 11:33

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
PCB 1260	167	182	182	109	109	37.0-145			0.320	37
PCB 1016	167	154	138	92.1	82.7	36.0-141			10.8	35
(S) Decachlorobiphenyl				80.8	79.1	10.0-148				
(S) Tetrachloro-m-xylene				92.6	95.5	21.0-146				

L905931-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905931-02 05/05/17 14:29 • (MS) R3215910-1 05/05/17 14:43 • (MSD) R3215910-2 05/05/17 14:56

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	172	ND	159	153	92.8	89.1	1	10.0-160			4.12	31
PCB 1016	172	ND	186	170	108	98.7	1	17.0-160			9.23	30
(S) Decachlorobiphenyl					87.5	85.8		10.0-148				
(S) Tetrachloro-m-xylene					104	97.9		21.0-146				

Method Blank (MB)

(MB) R3215595-3 05/03/17 18:17

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Anthracene	U		7.28	33.0
Acenaphthene	U		7.37	33.0
Acenaphthylene	U		7.51	33.0
Benzo(a)anthracene	U		4.28	33.0
Benzo(a)pyrene	U		5.02	33.0
Benzo(b)fluoranthene	U		6.95	33.0
Benzo(g,h,i)perylene	U		7.21	33.0
Benzo(k)fluoranthene	U		5.06	33.0
Chrysene	U		7.85	33.0
Dibenz(a,h)anthracene	U		5.91	33.0
Fluoranthene	U		7.08	33.0
Fluorene	U		7.19	33.0
Indeno(1,2,3-cd)pyrene	U		5.61	33.0
Naphthalene	U		5.13	33.0
Phenanthrene	U		7.10	33.0
Pyrene	U		7.76	33.0
(S) Nitrobenzene-d5	88.2			31.0-146
(S) 2-Fluorobiphenyl	90.7			31.0-130
(S) p-Terphenyl-d14	87.5			20.0-127

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215595-1 05/03/17 17:28 • (LCSD) R3215595-2 05/03/17 17:53

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acenaphthene	80.0	84.9	79.5	106	99.4	51.0-126			6.56	20
Acenaphthylene	80.0	79.4	75.5	99.3	94.4	50.0-130			5.06	20
Anthracene	80.0	78.3	73.7	97.9	92.1	48.0-128			6.12	20
Benzo(a)anthracene	80.0	77.6	77.0	97.0	96.3	48.0-127			0.737	20
Benzo(b)fluoranthene	80.0	75.1	75.9	93.9	94.9	44.0-131			1.01	20
Benzo(k)fluoranthene	80.0	81.3	77.0	102	96.3	48.0-128			5.33	20
Benzo(g,h,i)perylene	80.0	84.7	81.2	106	102	46.0-140			4.23	20
Benzo(a)pyrene	80.0	71.1	70.9	88.9	88.6	48.0-136			0.379	20
Chrysene	80.0	84.5	81.8	106	102	49.0-130			3.23	20
Dibenz(a,h)anthracene	80.0	71.0	75.0	88.8	93.7	47.0-135			5.46	20
Fluoranthene	80.0	85.6	80.5	107	101	53.0-131			6.18	20
Fluorene	80.0	75.3	73.5	94.2	91.8	49.0-128			2.50	20
Naphthalene	80.0	71.8	66.4	89.8	83.0	53.0-120			7.81	20
Phenanthrene	80.0	80.8	77.0	101	96.3	47.0-129			4.84	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215595-1 05/03/17 17:28 • (LCSD) R3215595-2 05/03/17 17:53

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Pyrene	80.0	83.3	81.6	104	102	50.0-146			2.08	20
Indeno(1,2,3-cd)pyrene	80.0	78.9	77.0	98.6	96.3	49.0-136			2.44	20
(S) Nitrobenzene-d5				88.5	81.7	31.0-146				
(S) 2-Fluorobiphenyl				90.8	84.6	31.0-130				
(S) p-Terphenyl-d14				82.6	74.6	20.0-127				

L905630-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905630-03 05/03/17 23:58 • (MS) R3215595-4 05/04/17 00:23 • (MSD) R3215595-5 05/04/17 00:47

Analyte	Spike Amount ug/kg	Original Result ug/kg	MS Result ug/kg	MSD Result ug/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	80.0	ND	72.8	71.4	91.0	89.2	1	35.0-125			1.98	20
Acenaphthylene	80.0	ND	69.8	67.7	87.2	84.6	1	41.0-125			3.06	20
Anthracene	80.0	ND	67.4	72.7	84.3	90.9	1	19.0-132			7.55	20
Benzo(a)anthracene	80.0	ND	70.8	66.9	88.5	83.6	1	13.0-130			5.61	22
Benzo(b)fluoranthene	80.0	ND	70.4	62.8	88.0	78.5	1	10.0-133			11.4	25
Benzo(k)fluoranthene	80.0	ND	69.5	64.0	86.9	80.0	1	19.0-125			8.23	26
Benzo(g,h,i)perylene	80.0	ND	74.3	66.3	92.9	82.9	1	10.0-138			11.4	24
Benzo(a)pyrene	80.0	ND	69.9	64.5	87.3	80.6	1	10.0-139			8.01	24
Chrysene	80.0	ND	75.4	71.5	94.3	89.4	1	16.0-133			5.35	21
Dibenz(a,h)anthracene	80.0	ND	72.5	67.9	90.6	84.9	1	21.0-129			6.55	24
Fluoranthene	80.0	ND	87.4	87.3	99.1	109	1	10.0-142			0.164	21
Fluorene	80.0	ND	65.9	68.9	82.4	86.1	1	31.0-126			4.39	20
Naphthalene	80.0	ND	64.2	65.3	80.2	81.6	1	39.0-123			1.77	20
Phenanthrene	80.0	ND	71.1	71.3	88.9	89.1	1	19.0-132			0.287	20
Pyrene	80.0	ND	89.0	73.8	111	92.3	1	11.0-150			18.6	22
Indeno(1,2,3-cd)pyrene	80.0	ND	78.8	67.3	98.5	84.1	1	13.0-133			15.8	24
(S) Nitrobenzene-d5					79.1	89.4		31.0-146				
(S) 2-Fluorobiphenyl					84.4	82.3		31.0-130				
(S) p-Terphenyl-d14					84.4	80.0		20.0-127				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL (dry)	Reported Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

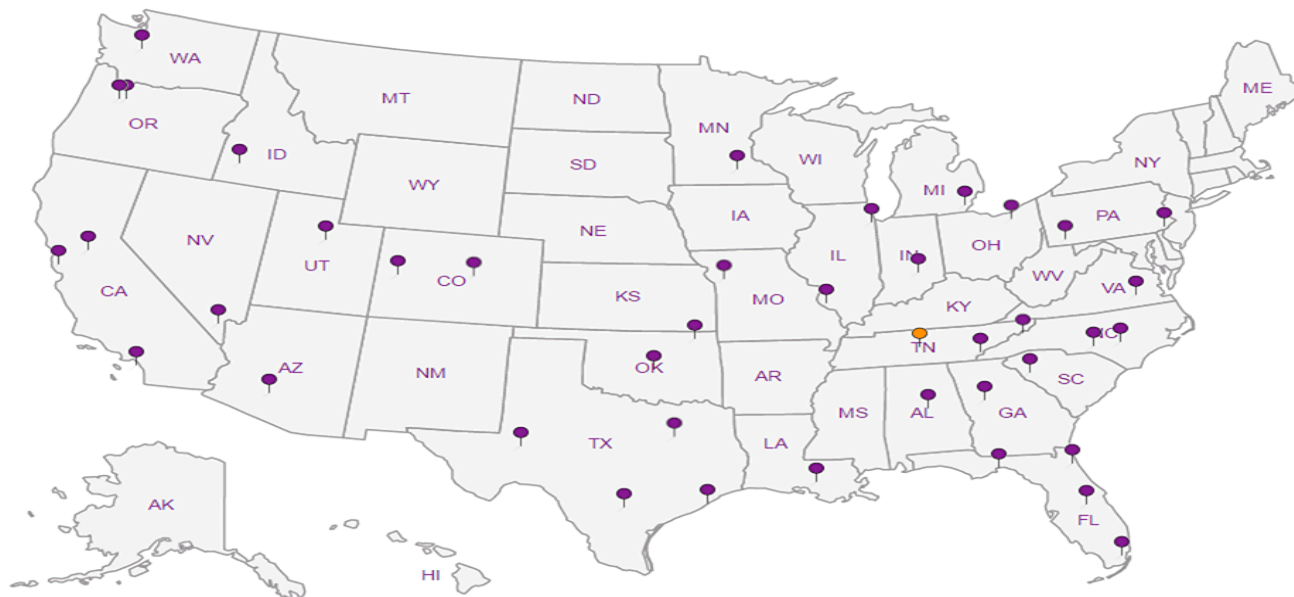
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Third Party & Federal Accreditations

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



ATC Group Service sLLC

108 Ottawa Street
Grayling, MI 49738

Billing Information & Quote Number:

April Hehir
108 Ottawa Street
Grayling, MI 49738

Report to:

APRIL HEHIR

Email To: April.hehir@atcassociates.com

Project

Description: GRAYLING AG + ED

City/State Collected: GRAYLING, MI

Phone: 517-227-4710

Client Project #

Lab Project #

Fax:

N479631701

Collected by (print):

APRIL HEHIR

Site/Facility ID #

P.O. #

Collected by (signature):

[Signature]

Rush? (Lab MUST Be Notified)

Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

Date Results Needed

Email? ☐ No ☐ Yes

FAX? ☐ No ☐ Yes

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	VOC	MI - 10 METALS	PNA	PCB								
ATC-1 (7)	G	SS	7	4-27-17	1030	3	X	X	X									
ATC-2 (4)	G	SS	4	4-27-17	1110	3	X	X	X	X								01
ATC-3 (5)	G	SS	5	4-27-17	1205	3	X	X	X	X								02
ATC-4 (5)	G	SS	5	4-27-17	1235	3	X	X	X									03
ATC-5 (6)	G	SS	6	4-27-17	1400	3	X	X	X									04
ATC-6 (7)	G	SS	7	4-27-17	1430	3	X	X	X									05
DUP-2	G	SS	—	4-27-17	—	3	X	X	X									06
TRIP BLANK	—	—	—	—	—	1	X											07
																		08

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

TRK 7283 8322 2029

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by: (Signature)

[Signature]

Date:

4-27-17

Time:

1600

Received by: (Signature)

ATC STORAGE

Samples returned via: ☐ UPS

☐ FedEx ☐ Courier ☐ _____

Condition:

(lab use only)

Relinquished by: (Signature)

ATC STORAGE

Date:

4-28-17

Time:

1300

Received by: (Signature)

FED EX SHIPPING

Temp: °C Bottles Received:

3.1 M 22

COC Seal Intact: ☒ Y ☐ N ☐ NA

Relinquished by: (Signature)

Date:

4-29-17

Time:

8:45

Received for lab by: (Signature)

[Signature]

Date:

4-29-17

Time:

8:45

pH Checked:

NCF:

Chain of Custody Page ___ of ___



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L #

90593

A162

Acctnum: ATCGMI

Template:

Prelogin:

TSR: 341 - John Hawkins

PB:

Shipped Via:

Rem./Contaminant

Sample # (lab only)

ESC LAB SCIENCES Cooler Receipt Form

Client: <i>ATCGM1</i>	SDG#	905427	
Cooler Received/Opened On: 4/29/17	Temperature:	3.1	
Received By: Timiesha Scott			
Signature: <i>[Signature]</i> <i>[Signature]</i>			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

ATC Group Service sLLC

Sample Delivery Group: L897262
Samples Received: 03/21/2017
Project Number: N479631701
Description: Grayling Agricultural + Ed

Report To: April Hehir
108 Ottawa Street
Grayling, MI 49738

Entire Report Reviewed By:



John Hawkins
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



TMW-1 L897262-01 GW

			Collected by April Hehir	Collected date/time 03/17/17 13:35	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG962994	1	03/21/17 17:51	03/22/17 13:57	NJB
Metals (ICPMS) by Method 6020	WG963036	1	03/22/17 15:55	03/23/17 01:13	LAT
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	1	03/28/17 19:16	03/28/17 19:16	ACG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG963301	1.03	03/22/17 17:40	03/23/17 15:23	KMP

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

TMW-2 L897262-02 GW

			Collected by April Hehir	Collected date/time 03/17/17 14:15	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG962994	1	03/21/17 17:51	03/22/17 14:00	NJB
Metals (ICPMS) by Method 6020	WG963036	1	03/22/17 15:55	03/23/17 01:17	LAT
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	1	03/28/17 19:34	03/28/17 19:34	ACG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG963301	1	03/22/17 17:40	03/23/17 15:45	KMP

TMW-3 L897262-03 GW

			Collected by April Hehir	Collected date/time 03/17/17 14:50	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG962994	1	03/21/17 17:51	03/22/17 14:02	NJB
Metals (ICPMS) by Method 6020	WG963036	1	03/22/17 15:55	03/23/17 01:20	LAT
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	1	03/28/17 19:53	03/28/17 19:53	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	100	03/30/17 02:08	03/30/17 02:08	JHH
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG963301	1	03/22/17 17:40	03/23/17 16:07	KMP

TMW-4 L897262-04 GW

			Collected by April Hehir	Collected date/time 03/17/17 15:20	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG962994	1	03/21/17 17:51	03/22/17 14:04	NJB
Metals (ICPMS) by Method 6020	WG963036	1	03/22/17 15:55	03/23/17 01:24	LAT
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	1	03/28/17 20:12	03/28/17 20:12	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	1	03/30/17 02:27	03/30/17 02:27	JHH
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG963301	1	03/22/17 17:40	03/23/17 16:29	KMP

TRIP BLANK L897262-05 GW

			Collected by April Hehir	Collected date/time 03/17/17 00:00	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG964875	1	03/28/17 17:42	03/28/17 17:42	ACG



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Technical Service Representative



Sample Handling and Receiving

The analysis for 2-Chloroethyl Vinyl Ether was conducted from a chemically preserved container.

ESC Sample ID	Project Sample ID	Method
L897262-01	TMW-1	8260B
L897262-02	TMW-2	8260B
L897262-03	TMW-3	8260B
L897262-04	TMW-4	8260B
L897262-05	TRIP BLANK	8260B



Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	03/22/2017 13:57	WG962994

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	03/23/2017 01:13	WG963036
Barium	29.5		5.00	1	03/23/2017 01:13	WG963036
Cadmium	ND		1.00	1	03/23/2017 01:13	WG963036
Chromium	ND		2.00	1	03/23/2017 01:13	WG963036
Copper	ND		5.00	1	03/23/2017 01:13	WG963036
Lead	ND		2.00	1	03/23/2017 01:13	WG963036
Selenium	ND		2.00	1	03/23/2017 01:13	WG963036
Silver	ND		2.00	1	03/23/2017 01:13	WG963036
Zinc	ND		25.0	1	03/23/2017 01:13	WG963036

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND	J3	50.0	1	03/28/2017 19:16	WG964875
Acrolein	ND	J3 J4	50.0	1	03/28/2017 19:16	WG964875
Acrylonitrile	ND	J3	10.0	1	03/28/2017 19:16	WG964875
Benzene	ND		1.00	1	03/28/2017 19:16	WG964875
Bromobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Bromodichloromethane	ND		1.00	1	03/28/2017 19:16	WG964875
Bromoform	ND		1.00	1	03/28/2017 19:16	WG964875
Bromomethane	ND		5.00	1	03/28/2017 19:16	WG964875
n-Butylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
sec-Butylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
tert-Butylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Carbon tetrachloride	ND		1.00	1	03/28/2017 19:16	WG964875
Chlorobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Chlorodibromomethane	ND		1.00	1	03/28/2017 19:16	WG964875
Chloroethane	ND		5.00	1	03/28/2017 19:16	WG964875
2-Chloroethyl vinyl ether	ND	J3 J4	50.0	1	03/28/2017 19:16	WG964875
Chloroform	ND		5.00	1	03/28/2017 19:16	WG964875
Chloromethane	ND	J3	2.50	1	03/28/2017 19:16	WG964875
2-Chlorotoluene	ND		1.00	1	03/28/2017 19:16	WG964875
4-Chlorotoluene	ND		1.00	1	03/28/2017 19:16	WG964875
1,2-Dibromo-3-Chloropropane	ND	J3	5.00	1	03/28/2017 19:16	WG964875
1,2-Dibromoethane	ND		1.00	1	03/28/2017 19:16	WG964875
Dibromomethane	ND		1.00	1	03/28/2017 19:16	WG964875
1,2-Dichlorobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
1,3-Dichlorobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
1,4-Dichlorobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Dichlorodifluoromethane	ND	J3	5.00	1	03/28/2017 19:16	WG964875
1,1-Dichloroethane	ND		1.00	1	03/28/2017 19:16	WG964875
1,2-Dichloroethane	ND		1.00	1	03/28/2017 19:16	WG964875
1,1-Dichloroethene	ND		1.00	1	03/28/2017 19:16	WG964875
cis-1,2-Dichloroethene	ND		1.00	1	03/28/2017 19:16	WG964875
trans-1,2-Dichloroethene	ND		1.00	1	03/28/2017 19:16	WG964875
1,2-Dichloropropane	ND		1.00	1	03/28/2017 19:16	WG964875
1,1-Dichloropropene	ND		1.00	1	03/28/2017 19:16	WG964875
1,3-Dichloropropane	ND		1.00	1	03/28/2017 19:16	WG964875
cis-1,3-Dichloropropene	ND		1.00	1	03/28/2017 19:16	WG964875
trans-1,3-Dichloropropene	ND		1.00	1	03/28/2017 19:16	WG964875





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND		1.00	1	03/28/2017 19:16	WG964875
Di-isopropyl ether	ND		1.00	1	03/28/2017 19:16	WG964875
Ethylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Hexachloro-1,3-butadiene	ND		1.00	1	03/28/2017 19:16	WG964875
Isopropylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
p-Isopropyltoluene	ND		1.00	1	03/28/2017 19:16	WG964875
2-Butanone (MEK)	ND		10.0	1	03/28/2017 19:16	WG964875
Methylene Chloride	ND		5.00	1	03/28/2017 19:16	WG964875
1-Methylnaphthalene	ND		10.0	1	03/28/2017 19:16	WG964875
2-Methylnaphthalene	ND		10.0	1	03/28/2017 19:16	WG964875
4-Methyl-2-pentanone (MIBK)	ND	<u>J3</u>	10.0	1	03/28/2017 19:16	WG964875
Methyl tert-butyl ether	ND		1.00	1	03/28/2017 19:16	WG964875
Naphthalene	ND		5.00	1	03/28/2017 19:16	WG964875
n-Propylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Styrene	ND		1.00	1	03/28/2017 19:16	WG964875
1,1,1,2-Tetrachloroethane	ND		1.00	1	03/28/2017 19:16	WG964875
1,1,2,2-Tetrachloroethane	ND		1.00	1	03/28/2017 19:16	WG964875
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	03/28/2017 19:16	WG964875
Tetrachloroethene	3.28		1.00	1	03/28/2017 19:16	WG964875
Toluene	ND		1.00	1	03/28/2017 19:16	WG964875
1,2,3-Trichlorobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
1,2,4-Trichlorobenzene	ND		1.00	1	03/28/2017 19:16	WG964875
1,1,1-Trichloroethane	ND		1.00	1	03/28/2017 19:16	WG964875
1,1,2-Trichloroethane	ND		1.00	1	03/28/2017 19:16	WG964875
Trichloroethene	ND		1.00	1	03/28/2017 19:16	WG964875
Trichlorofluoromethane	ND		5.00	1	03/28/2017 19:16	WG964875
1,2,3-Trichloropropane	ND		2.50	1	03/28/2017 19:16	WG964875
1,2,4-Trimethylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
1,2,3-Trimethylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
1,3,5-Trimethylbenzene	ND		1.00	1	03/28/2017 19:16	WG964875
Vinyl chloride	ND		1.00	1	03/28/2017 19:16	WG964875
Xylenes, Total	ND		3.00	1	03/28/2017 19:16	WG964875
(S) Toluene-d8	108		80.0-120		03/28/2017 19:16	WG964875
(S) Dibromofluoromethane	104		76.0-123		03/28/2017 19:16	WG964875
(S) a,a,a-Trifluorotoluene	107		80.0-120		03/28/2017 19:16	WG964875
(S) 4-Bromofluorobenzene	101		80.0-120		03/28/2017 19:16	WG964875



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Acenaphthene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Acenaphthylene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Benzo(a)anthracene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Benzo(a)pyrene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Benzo(b)fluoranthene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Benzo(g,h,i)perylene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Benzo(k)fluoranthene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Chrysene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Dibenz(a,h)anthracene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Fluoranthene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Fluorene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Indeno(1,2,3-cd)pyrene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Naphthalene	ND		0.258	1.03	03/23/2017 15:23	WG963301
Phenanthrene	ND		0.0515	1.03	03/23/2017 15:23	WG963301
Pyrene	ND		0.0515	1.03	03/23/2017 15:23	WG963301



Collected date/time: 03/17/17 13:35

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Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.258	1.03	03/23/2017 15:23	WG963301
2-Methylnaphthalene	ND		0.258	1.03	03/23/2017 15:23	WG963301
2-Chloronaphthalene	ND		0.258	1.03	03/23/2017 15:23	WG963301
(S) Nitrobenzene-d5	76.9		31.0-160		03/23/2017 15:23	WG963301
(S) 2-Fluorobiphenyl	120		48.0-148		03/23/2017 15:23	WG963301
(S) p-Terphenyl-d14	108		37.0-146		03/23/2017 15:23	WG963301

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al



Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	03/22/2017 14:00	WG962994

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	03/23/2017 01:17	WG963036
Barium	24.4		5.00	1	03/23/2017 01:17	WG963036
Cadmium	ND		1.00	1	03/23/2017 01:17	WG963036
Chromium	ND		2.00	1	03/23/2017 01:17	WG963036
Copper	ND		5.00	1	03/23/2017 01:17	WG963036
Lead	ND		2.00	1	03/23/2017 01:17	WG963036
Selenium	ND		2.00	1	03/23/2017 01:17	WG963036
Silver	ND		2.00	1	03/23/2017 01:17	WG963036
Zinc	ND		25.0	1	03/23/2017 01:17	WG963036

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND	J3	50.0	1	03/28/2017 19:34	WG964875
Acrolein	ND	J3 J4	50.0	1	03/28/2017 19:34	WG964875
Acrylonitrile	ND	J3	10.0	1	03/28/2017 19:34	WG964875
Benzene	ND		1.00	1	03/28/2017 19:34	WG964875
Bromobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Bromodichloromethane	ND		1.00	1	03/28/2017 19:34	WG964875
Bromoform	ND		1.00	1	03/28/2017 19:34	WG964875
Bromomethane	ND		5.00	1	03/28/2017 19:34	WG964875
n-Butylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
sec-Butylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
tert-Butylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Carbon tetrachloride	ND		1.00	1	03/28/2017 19:34	WG964875
Chlorobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Chlorodibromomethane	ND		1.00	1	03/28/2017 19:34	WG964875
Chloroethane	ND		5.00	1	03/28/2017 19:34	WG964875
2-Chloroethyl vinyl ether	ND	J3 J4	50.0	1	03/28/2017 19:34	WG964875
Chloroform	ND		5.00	1	03/28/2017 19:34	WG964875
Chloromethane	ND	J3	2.50	1	03/28/2017 19:34	WG964875
2-Chlorotoluene	ND		1.00	1	03/28/2017 19:34	WG964875
4-Chlorotoluene	ND		1.00	1	03/28/2017 19:34	WG964875
1,2-Dibromo-3-Chloropropane	ND	J3	5.00	1	03/28/2017 19:34	WG964875
1,2-Dibromoethane	ND		1.00	1	03/28/2017 19:34	WG964875
Dibromomethane	ND		1.00	1	03/28/2017 19:34	WG964875
1,2-Dichlorobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
1,3-Dichlorobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
1,4-Dichlorobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Dichlorodifluoromethane	ND	J3	5.00	1	03/28/2017 19:34	WG964875
1,1-Dichloroethane	ND		1.00	1	03/28/2017 19:34	WG964875
1,2-Dichloroethane	ND		1.00	1	03/28/2017 19:34	WG964875
1,1-Dichloroethene	ND		1.00	1	03/28/2017 19:34	WG964875
cis-1,2-Dichloroethene	ND		1.00	1	03/28/2017 19:34	WG964875
trans-1,2-Dichloroethene	ND		1.00	1	03/28/2017 19:34	WG964875
1,2-Dichloropropane	ND		1.00	1	03/28/2017 19:34	WG964875
1,1-Dichloropropene	ND		1.00	1	03/28/2017 19:34	WG964875
1,3-Dichloropropane	ND		1.00	1	03/28/2017 19:34	WG964875
cis-1,3-Dichloropropene	ND		1.00	1	03/28/2017 19:34	WG964875
trans-1,3-Dichloropropene	ND		1.00	1	03/28/2017 19:34	WG964875





Collected date/time: 03/17/17 14:15

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Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND		1.00	1	03/28/2017 19:34	WG964875
Di-isopropyl ether	ND		1.00	1	03/28/2017 19:34	WG964875
Ethylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Hexachloro-1,3-butadiene	ND		1.00	1	03/28/2017 19:34	WG964875
Isopropylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
p-Isopropyltoluene	ND		1.00	1	03/28/2017 19:34	WG964875
2-Butanone (MEK)	ND		10.0	1	03/28/2017 19:34	WG964875
Methylene Chloride	ND		5.00	1	03/28/2017 19:34	WG964875
1-Methylnaphthalene	ND		10.0	1	03/28/2017 19:34	WG964875
2-Methylnaphthalene	ND		10.0	1	03/28/2017 19:34	WG964875
4-Methyl-2-pentanone (MIBK)	ND	<u>J3</u>	10.0	1	03/28/2017 19:34	WG964875
Methyl tert-butyl ether	ND		1.00	1	03/28/2017 19:34	WG964875
Naphthalene	ND		5.00	1	03/28/2017 19:34	WG964875
n-Propylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Styrene	ND		1.00	1	03/28/2017 19:34	WG964875
1,1,1,2-Tetrachloroethane	ND		1.00	1	03/28/2017 19:34	WG964875
1,1,2,2-Tetrachloroethane	ND		1.00	1	03/28/2017 19:34	WG964875
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	03/28/2017 19:34	WG964875
Tetrachloroethene	40.4		1.00	1	03/28/2017 19:34	WG964875
Toluene	ND		1.00	1	03/28/2017 19:34	WG964875
1,2,3-Trichlorobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
1,2,4-Trichlorobenzene	ND		1.00	1	03/28/2017 19:34	WG964875
1,1,1-Trichloroethane	ND		1.00	1	03/28/2017 19:34	WG964875
1,1,2-Trichloroethane	ND		1.00	1	03/28/2017 19:34	WG964875
Trichloroethene	ND		1.00	1	03/28/2017 19:34	WG964875
Trichlorofluoromethane	ND		5.00	1	03/28/2017 19:34	WG964875
1,2,3-Trichloropropane	ND		2.50	1	03/28/2017 19:34	WG964875
1,2,4-Trimethylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
1,2,3-Trimethylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
1,3,5-Trimethylbenzene	ND		1.00	1	03/28/2017 19:34	WG964875
Vinyl chloride	ND		1.00	1	03/28/2017 19:34	WG964875
Xylenes, Total	ND		3.00	1	03/28/2017 19:34	WG964875
(S) Toluene-d8	107		80.0-120		03/28/2017 19:34	WG964875
(S) Dibromofluoromethane	101		76.0-123		03/28/2017 19:34	WG964875
(S) a,a,a-Trifluorotoluene	104		80.0-120		03/28/2017 19:34	WG964875
(S) 4-Bromofluorobenzene	98.1		80.0-120		03/28/2017 19:34	WG964875



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0500	1	03/23/2017 15:45	WG963301
Acenaphthene	ND		0.0500	1	03/23/2017 15:45	WG963301
Acenaphthylene	ND		0.0500	1	03/23/2017 15:45	WG963301
Benzo(a)anthracene	ND		0.0500	1	03/23/2017 15:45	WG963301
Benzo(a)pyrene	ND		0.0500	1	03/23/2017 15:45	WG963301
Benzo(b)fluoranthene	ND		0.0500	1	03/23/2017 15:45	WG963301
Benzo(g,h,i)perylene	ND		0.0500	1	03/23/2017 15:45	WG963301
Benzo(k)fluoranthene	ND		0.0500	1	03/23/2017 15:45	WG963301
Chrysene	ND		0.0500	1	03/23/2017 15:45	WG963301
Dibenz(a,h)anthracene	ND		0.0500	1	03/23/2017 15:45	WG963301
Fluoranthene	ND		0.0500	1	03/23/2017 15:45	WG963301
Fluorene	ND		0.0500	1	03/23/2017 15:45	WG963301
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	03/23/2017 15:45	WG963301
Naphthalene	ND		0.250	1	03/23/2017 15:45	WG963301
Phenanthrene	ND		0.0500	1	03/23/2017 15:45	WG963301
Pyrene	ND		0.0500	1	03/23/2017 15:45	WG963301



Collected date/time: 03/17/17 14:15

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Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.250	1	03/23/2017 15:45	WG963301
2-Methylnaphthalene	ND		0.250	1	03/23/2017 15:45	WG963301
2-Chloronaphthalene	ND		0.250	1	03/23/2017 15:45	WG963301
(S) Nitrobenzene-d5	70.4		31.0-160		03/23/2017 15:45	WG963301
(S) 2-Fluorobiphenyl	108		48.0-148		03/23/2017 15:45	WG963301
(S) p-Terphenyl-d14	101		37.0-146		03/23/2017 15:45	WG963301

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al



Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	03/22/2017 14:02	WG962994

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	03/23/2017 01:20	WG963036
Barium	21.0		5.00	1	03/23/2017 01:20	WG963036
Cadmium	ND		1.00	1	03/23/2017 01:20	WG963036
Chromium	ND		2.00	1	03/23/2017 01:20	WG963036
Copper	5.70		5.00	1	03/23/2017 01:20	WG963036
Lead	ND		2.00	1	03/23/2017 01:20	WG963036
Selenium	2.35		2.00	1	03/23/2017 01:20	WG963036
Silver	ND		2.00	1	03/23/2017 01:20	WG963036
Zinc	ND		25.0	1	03/23/2017 01:20	WG963036

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND	J3	50.0	1	03/28/2017 19:53	WG964875
Acrolein	ND	J3 J4	50.0	1	03/28/2017 19:53	WG964875
Acrylonitrile	ND	J3	10.0	1	03/28/2017 19:53	WG964875
Benzene	ND		1.00	1	03/28/2017 19:53	WG964875
Bromobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Bromodichloromethane	ND		1.00	1	03/28/2017 19:53	WG964875
Bromoform	ND		1.00	1	03/28/2017 19:53	WG964875
Bromomethane	ND		5.00	1	03/28/2017 19:53	WG964875
n-Butylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
sec-Butylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
tert-Butylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Carbon tetrachloride	ND		1.00	1	03/28/2017 19:53	WG964875
Chlorobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Chlorodibromomethane	ND		1.00	1	03/28/2017 19:53	WG964875
Chloroethane	ND		5.00	1	03/28/2017 19:53	WG964875
2-Chloroethyl vinyl ether	ND	J3 J4	50.0	1	03/28/2017 19:53	WG964875
Chloroform	ND		5.00	1	03/28/2017 19:53	WG964875
Chloromethane	ND	J3	2.50	1	03/28/2017 19:53	WG964875
2-Chlorotoluene	ND		1.00	1	03/28/2017 19:53	WG964875
4-Chlorotoluene	ND		1.00	1	03/28/2017 19:53	WG964875
1,2-Dibromo-3-Chloropropane	ND	J3	5.00	1	03/28/2017 19:53	WG964875
1,2-Dibromoethane	ND		1.00	1	03/28/2017 19:53	WG964875
Dibromomethane	ND		1.00	1	03/28/2017 19:53	WG964875
1,2-Dichlorobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
1,3-Dichlorobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
1,4-Dichlorobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Dichlorodifluoromethane	ND	J3	5.00	1	03/28/2017 19:53	WG964875
1,1-Dichloroethane	ND		1.00	1	03/28/2017 19:53	WG964875
1,2-Dichloroethane	ND		1.00	1	03/28/2017 19:53	WG964875
1,1-Dichloroethene	ND		1.00	1	03/28/2017 19:53	WG964875
cis-1,2-Dichloroethene	ND		1.00	1	03/28/2017 19:53	WG964875
trans-1,2-Dichloroethene	ND		1.00	1	03/28/2017 19:53	WG964875
1,2-Dichloropropane	ND		1.00	1	03/28/2017 19:53	WG964875
1,1-Dichloropropene	ND		1.00	1	03/28/2017 19:53	WG964875
1,3-Dichloropropane	ND		1.00	1	03/28/2017 19:53	WG964875
cis-1,3-Dichloropropene	ND		1.00	1	03/28/2017 19:53	WG964875
trans-1,3-Dichloropropene	ND		1.00	1	03/28/2017 19:53	WG964875





Collected date/time: 03/17/17 14:50

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Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND		1.00	1	03/28/2017 19:53	WG964875
Di-isopropyl ether	ND		1.00	1	03/28/2017 19:53	WG964875
Ethylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Hexachloro-1,3-butadiene	ND		1.00	1	03/28/2017 19:53	WG964875
Isopropylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
p-Isopropyltoluene	ND		1.00	1	03/28/2017 19:53	WG964875
2-Butanone (MEK)	ND		10.0	1	03/28/2017 19:53	WG964875
Methylene Chloride	ND		5.00	1	03/28/2017 19:53	WG964875
1-Methylnaphthalene	ND		10.0	1	03/28/2017 19:53	WG964875
2-Methylnaphthalene	ND		10.0	1	03/28/2017 19:53	WG964875
4-Methyl-2-pentanone (MIBK)	ND	<u>J3</u>	10.0	1	03/28/2017 19:53	WG964875
Methyl tert-butyl ether	ND		1.00	1	03/28/2017 19:53	WG964875
Naphthalene	ND		5.00	1	03/28/2017 19:53	WG964875
n-Propylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Styrene	ND		1.00	1	03/28/2017 19:53	WG964875
1,1,1,2-Tetrachloroethane	ND		1.00	1	03/28/2017 19:53	WG964875
1,1,2,2-Tetrachloroethane	ND		1.00	1	03/28/2017 19:53	WG964875
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	03/28/2017 19:53	WG964875
Tetrachloroethene	2010		100	100	03/30/2017 02:08	WG964875
Toluene	ND		1.00	1	03/28/2017 19:53	WG964875
1,2,3-Trichlorobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
1,2,4-Trichlorobenzene	ND		1.00	1	03/28/2017 19:53	WG964875
1,1,1-Trichloroethane	ND		1.00	1	03/28/2017 19:53	WG964875
1,1,2-Trichloroethane	ND		1.00	1	03/28/2017 19:53	WG964875
Trichloroethene	ND		1.00	1	03/28/2017 19:53	WG964875
Trichlorofluoromethane	ND		5.00	1	03/28/2017 19:53	WG964875
1,2,3-Trichloropropane	ND		2.50	1	03/28/2017 19:53	WG964875
1,2,4-Trimethylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
1,2,3-Trimethylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
1,3,5-Trimethylbenzene	ND		1.00	1	03/28/2017 19:53	WG964875
Vinyl chloride	ND		1.00	1	03/28/2017 19:53	WG964875
Xylenes, Total	ND		3.00	1	03/28/2017 19:53	WG964875
(S) Toluene-d8	105		80.0-120		03/30/2017 02:08	WG964875
(S) Toluene-d8	106		80.0-120		03/28/2017 19:53	WG964875
(S) Dibromofluoromethane	95.4		76.0-123		03/30/2017 02:08	WG964875
(S) Dibromofluoromethane	103		76.0-123		03/28/2017 19:53	WG964875
(S) a,a,a-Trifluorotoluene	103		80.0-120		03/28/2017 19:53	WG964875
(S) a,a,a-Trifluorotoluene	107		80.0-120		03/30/2017 02:08	WG964875
(S) 4-Bromofluorobenzene	95.5		80.0-120		03/28/2017 19:53	WG964875
(S) 4-Bromofluorobenzene	103		80.0-120		03/30/2017 02:08	WG964875



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0500	1	03/23/2017 16:07	WG963301
Acenaphthene	ND		0.0500	1	03/23/2017 16:07	WG963301
Acenaphthylene	ND		0.0500	1	03/23/2017 16:07	WG963301
Benzo(a)anthracene	ND		0.0500	1	03/23/2017 16:07	WG963301
Benzo(a)pyrene	ND		0.0500	1	03/23/2017 16:07	WG963301
Benzo(b)fluoranthene	ND		0.0500	1	03/23/2017 16:07	WG963301
Benzo(g,h,i)perylene	ND		0.0500	1	03/23/2017 16:07	WG963301
Benzo(k)fluoranthene	ND		0.0500	1	03/23/2017 16:07	WG963301
Chrysene	ND		0.0500	1	03/23/2017 16:07	WG963301
Dibenz(a,h)anthracene	ND		0.0500	1	03/23/2017 16:07	WG963301
Fluoranthene	ND		0.0500	1	03/23/2017 16:07	WG963301
Fluorene	ND		0.0500	1	03/23/2017 16:07	WG963301



Collected date/time: 03/17/17 14:50

L897262

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	03/23/2017 16:07	WG963301
Naphthalene	ND		0.250	1	03/23/2017 16:07	WG963301
Phenanthrene	ND		0.0500	1	03/23/2017 16:07	WG963301
Pyrene	ND		0.0500	1	03/23/2017 16:07	WG963301
1-Methylnaphthalene	ND		0.250	1	03/23/2017 16:07	WG963301
2-Methylnaphthalene	ND		0.250	1	03/23/2017 16:07	WG963301
2-Chloronaphthalene	ND		0.250	1	03/23/2017 16:07	WG963301
(S) Nitrobenzene-d5	64.2		31.0-160		03/23/2017 16:07	WG963301
(S) 2-Fluorobiphenyl	106		48.0-148		03/23/2017 16:07	WG963301
(S) p-Terphenyl-d14	95.8		37.0-146		03/23/2017 16:07	WG963301

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al



Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	03/22/2017 14:04	WG962994

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	03/23/2017 01:24	WG963036
Barium	20.0		5.00	1	03/23/2017 01:24	WG963036
Cadmium	ND		1.00	1	03/23/2017 01:24	WG963036
Chromium	ND		2.00	1	03/23/2017 01:24	WG963036
Copper	ND		5.00	1	03/23/2017 01:24	WG963036
Lead	ND		2.00	1	03/23/2017 01:24	WG963036
Selenium	2.09		2.00	1	03/23/2017 01:24	WG963036
Silver	ND		2.00	1	03/23/2017 01:24	WG963036
Zinc	ND		25.0	1	03/23/2017 01:24	WG963036

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND	J3	50.0	1	03/28/2017 20:12	WG964875
Acrolein	ND	J3 J4	50.0	1	03/28/2017 20:12	WG964875
Acrylonitrile	ND	J3	10.0	1	03/28/2017 20:12	WG964875
Benzene	ND		1.00	1	03/28/2017 20:12	WG964875
Bromobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Bromodichloromethane	ND		1.00	1	03/28/2017 20:12	WG964875
Bromoform	ND		1.00	1	03/28/2017 20:12	WG964875
Bromomethane	ND		5.00	1	03/28/2017 20:12	WG964875
n-Butylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
sec-Butylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
tert-Butylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Carbon tetrachloride	ND		1.00	1	03/28/2017 20:12	WG964875
Chlorobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Chlorodibromomethane	ND		1.00	1	03/28/2017 20:12	WG964875
Chloroethane	ND		5.00	1	03/28/2017 20:12	WG964875
2-Chloroethyl vinyl ether	ND	J3 J4	50.0	1	03/28/2017 20:12	WG964875
Chloroform	ND		5.00	1	03/28/2017 20:12	WG964875
Chloromethane	ND	J3	2.50	1	03/28/2017 20:12	WG964875
2-Chlorotoluene	ND		1.00	1	03/28/2017 20:12	WG964875
4-Chlorotoluene	ND		1.00	1	03/28/2017 20:12	WG964875
1,2-Dibromo-3-Chloropropane	ND	J3	5.00	1	03/28/2017 20:12	WG964875
1,2-Dibromoethane	ND		1.00	1	03/28/2017 20:12	WG964875
Dibromomethane	ND		1.00	1	03/28/2017 20:12	WG964875
1,2-Dichlorobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
1,3-Dichlorobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
1,4-Dichlorobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Dichlorodifluoromethane	ND	J3	5.00	1	03/28/2017 20:12	WG964875
1,1-Dichloroethane	ND		1.00	1	03/28/2017 20:12	WG964875
1,2-Dichloroethane	ND		1.00	1	03/28/2017 20:12	WG964875
1,1-Dichloroethene	ND		1.00	1	03/28/2017 20:12	WG964875
cis-1,2-Dichloroethene	ND		1.00	1	03/28/2017 20:12	WG964875
trans-1,2-Dichloroethene	ND		1.00	1	03/28/2017 20:12	WG964875
1,2-Dichloropropane	ND		1.00	1	03/28/2017 20:12	WG964875
1,1-Dichloropropene	ND		1.00	1	03/28/2017 20:12	WG964875
1,3-Dichloropropane	ND		1.00	1	03/28/2017 20:12	WG964875
cis-1,3-Dichloropropene	ND		1.00	1	03/28/2017 20:12	WG964875
trans-1,3-Dichloropropene	ND		1.00	1	03/28/2017 20:12	WG964875





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND		1.00	1	03/28/2017 20:12	WG964875
Di-isopropyl ether	ND		1.00	1	03/28/2017 20:12	WG964875
Ethylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Hexachloro-1,3-butadiene	ND		1.00	1	03/28/2017 20:12	WG964875
Isopropylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
p-Isopropyltoluene	ND		1.00	1	03/28/2017 20:12	WG964875
2-Butanone (MEK)	ND		10.0	1	03/28/2017 20:12	WG964875
Methylene Chloride	ND		5.00	1	03/28/2017 20:12	WG964875
1-Methylnaphthalene	ND		10.0	1	03/28/2017 20:12	WG964875
2-Methylnaphthalene	ND		10.0	1	03/28/2017 20:12	WG964875
4-Methyl-2-pentanone (MIBK)	ND	<u>J3</u>	10.0	1	03/28/2017 20:12	WG964875
Methyl tert-butyl ether	ND		1.00	1	03/28/2017 20:12	WG964875
Naphthalene	ND		5.00	1	03/28/2017 20:12	WG964875
n-Propylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Styrene	ND		1.00	1	03/28/2017 20:12	WG964875
1,1,1,2-Tetrachloroethane	ND		1.00	1	03/28/2017 20:12	WG964875
1,1,2,2-Tetrachloroethane	ND		1.00	1	03/28/2017 20:12	WG964875
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	03/28/2017 20:12	WG964875
Tetrachloroethene	ND		1.00	1	03/30/2017 02:27	WG964875
Toluene	ND		1.00	1	03/28/2017 20:12	WG964875
1,2,3-Trichlorobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
1,2,4-Trichlorobenzene	ND		1.00	1	03/28/2017 20:12	WG964875
1,1,1-Trichloroethane	ND		1.00	1	03/28/2017 20:12	WG964875
1,1,2-Trichloroethane	ND		1.00	1	03/28/2017 20:12	WG964875
Trichloroethene	ND		1.00	1	03/28/2017 20:12	WG964875
Trichlorofluoromethane	ND		5.00	1	03/28/2017 20:12	WG964875
1,2,3-Trichloropropane	ND		2.50	1	03/28/2017 20:12	WG964875
1,2,4-Trimethylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
1,2,3-Trimethylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
1,3,5-Trimethylbenzene	ND		1.00	1	03/28/2017 20:12	WG964875
Vinyl chloride	ND		1.00	1	03/28/2017 20:12	WG964875
Xylenes, Total	ND		3.00	1	03/28/2017 20:12	WG964875
(S) Toluene-d8	105		80.0-120		03/30/2017 02:27	WG964875
(S) Toluene-d8	108		80.0-120		03/28/2017 20:12	WG964875
(S) Dibromofluoromethane	94.8		76.0-123		03/30/2017 02:27	WG964875
(S) Dibromofluoromethane	105		76.0-123		03/28/2017 20:12	WG964875
(S) a,a,a-Trifluorotoluene	103		80.0-120		03/28/2017 20:12	WG964875
(S) a,a,a-Trifluorotoluene	106		80.0-120		03/30/2017 02:27	WG964875
(S) 4-Bromofluorobenzene	98.3		80.0-120		03/28/2017 20:12	WG964875
(S) 4-Bromofluorobenzene	102		80.0-120		03/30/2017 02:27	WG964875



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0500	1	03/23/2017 16:29	WG963301
Acenaphthene	ND		0.0500	1	03/23/2017 16:29	WG963301
Acenaphthylene	ND		0.0500	1	03/23/2017 16:29	WG963301
Benzo(a)anthracene	ND		0.0500	1	03/23/2017 16:29	WG963301
Benzo(a)pyrene	ND		0.0500	1	03/23/2017 16:29	WG963301
Benzo(b)fluoranthene	ND		0.0500	1	03/23/2017 16:29	WG963301
Benzo(g,h,i)perylene	ND		0.0500	1	03/23/2017 16:29	WG963301
Benzo(k)fluoranthene	ND		0.0500	1	03/23/2017 16:29	WG963301
Chrysene	ND		0.0500	1	03/23/2017 16:29	WG963301
Dibenz(a,h)anthracene	ND		0.0500	1	03/23/2017 16:29	WG963301
Fluoranthene	ND		0.0500	1	03/23/2017 16:29	WG963301
Fluorene	ND		0.0500	1	03/23/2017 16:29	WG963301



Collected date/time: 03/17/17 15:20

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Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	03/23/2017 16:29	WG963301
Naphthalene	ND		0.250	1	03/23/2017 16:29	WG963301
Phenanthrene	ND		0.0500	1	03/23/2017 16:29	WG963301
Pyrene	ND		0.0500	1	03/23/2017 16:29	WG963301
1-Methylnaphthalene	ND		0.250	1	03/23/2017 16:29	WG963301
2-Methylnaphthalene	ND		0.250	1	03/23/2017 16:29	WG963301
2-Chloronaphthalene	ND		0.250	1	03/23/2017 16:29	WG963301
(S) Nitrobenzene-d5	64.4		31.0-160		03/23/2017 16:29	WG963301
(S) 2-Fluorobiphenyl	107		48.0-148		03/23/2017 16:29	WG963301
(S) p-Terphenyl-d14	99.8		37.0-146		03/23/2017 16:29	WG963301

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND	J3	50.0	1	03/28/2017 17:42	WG964875
Acrolein	ND	J3 J4	50.0	1	03/28/2017 17:42	WG964875
Acrylonitrile	ND	J3	10.0	1	03/28/2017 17:42	WG964875
Benzene	ND		1.00	1	03/28/2017 17:42	WG964875
Bromobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Bromodichloromethane	ND		1.00	1	03/28/2017 17:42	WG964875
Bromoform	ND		1.00	1	03/28/2017 17:42	WG964875
Bromomethane	ND		5.00	1	03/28/2017 17:42	WG964875
n-Butylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
sec-Butylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
tert-Butylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Carbon tetrachloride	ND		1.00	1	03/28/2017 17:42	WG964875
Chlorobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Chlorodibromomethane	ND		1.00	1	03/28/2017 17:42	WG964875
Chloroethane	ND		5.00	1	03/28/2017 17:42	WG964875
2-Chloroethyl vinyl ether	ND	J3 J4	50.0	1	03/28/2017 17:42	WG964875
Chloroform	ND		5.00	1	03/28/2017 17:42	WG964875
Chloromethane	ND	J3	2.50	1	03/28/2017 17:42	WG964875
2-Chlorotoluene	ND		1.00	1	03/28/2017 17:42	WG964875
4-Chlorotoluene	ND		1.00	1	03/28/2017 17:42	WG964875
1,2-Dibromo-3-Chloropropane	ND	J3	5.00	1	03/28/2017 17:42	WG964875
1,2-Dibromoethane	ND		1.00	1	03/28/2017 17:42	WG964875
Dibromomethane	ND		1.00	1	03/28/2017 17:42	WG964875
1,2-Dichlorobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
1,3-Dichlorobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
1,4-Dichlorobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Dichlorodifluoromethane	ND	J3	5.00	1	03/28/2017 17:42	WG964875
1,1-Dichloroethane	ND		1.00	1	03/28/2017 17:42	WG964875
1,2-Dichloroethane	ND		1.00	1	03/28/2017 17:42	WG964875
1,1-Dichloroethene	ND		1.00	1	03/28/2017 17:42	WG964875
cis-1,2-Dichloroethene	ND		1.00	1	03/28/2017 17:42	WG964875
trans-1,2-Dichloroethene	ND		1.00	1	03/28/2017 17:42	WG964875
1,2-Dichloropropane	ND		1.00	1	03/28/2017 17:42	WG964875
1,1-Dichloropropene	ND		1.00	1	03/28/2017 17:42	WG964875
1,3-Dichloropropane	ND		1.00	1	03/28/2017 17:42	WG964875
cis-1,3-Dichloropropene	ND		1.00	1	03/28/2017 17:42	WG964875
trans-1,3-Dichloropropene	ND		1.00	1	03/28/2017 17:42	WG964875
2,2-Dichloropropane	ND		1.00	1	03/28/2017 17:42	WG964875
Di-isopropyl ether	ND		1.00	1	03/28/2017 17:42	WG964875
Ethylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Hexachloro-1,3-butadiene	ND		1.00	1	03/28/2017 17:42	WG964875
Isopropylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
p-Isopropyltoluene	ND		1.00	1	03/28/2017 17:42	WG964875
2-Butanone (MEK)	ND		10.0	1	03/28/2017 17:42	WG964875
Methylene Chloride	ND		5.00	1	03/28/2017 17:42	WG964875
1-Methylnaphthalene	ND		10.0	1	03/28/2017 17:42	WG964875
2-Methylnaphthalene	ND		10.0	1	03/28/2017 17:42	WG964875
4-Methyl-2-pentanone (MIBK)	ND	J3	10.0	1	03/28/2017 17:42	WG964875
Methyl tert-butyl ether	ND		1.00	1	03/28/2017 17:42	WG964875
Naphthalene	ND		5.00	1	03/28/2017 17:42	WG964875
n-Propylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Styrene	ND		1.00	1	03/28/2017 17:42	WG964875
1,1,1,2-Tetrachloroethane	ND		1.00	1	03/28/2017 17:42	WG964875
1,1,2,2-Tetrachloroethane	ND		1.00	1	03/28/2017 17:42	WG964875
1,1,2-Trichlorotrifluoroethane	ND		1.00	1	03/28/2017 17:42	WG964875
Tetrachloroethene	ND		1.00	1	03/28/2017 17:42	WG964875

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al



Collected date/time: 03/17/17 00:00

L897262

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Toluene	ND		1.00	1	03/28/2017 17:42	WG964875
1,2,3-Trichlorobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
1,2,4-Trichlorobenzene	ND		1.00	1	03/28/2017 17:42	WG964875
1,1,1-Trichloroethane	ND		1.00	1	03/28/2017 17:42	WG964875
1,1,2-Trichloroethane	ND		1.00	1	03/28/2017 17:42	WG964875
Trichloroethene	ND		1.00	1	03/28/2017 17:42	WG964875
Trichlorofluoromethane	ND		5.00	1	03/28/2017 17:42	WG964875
1,2,3-Trichloropropane	ND		2.50	1	03/28/2017 17:42	WG964875
1,2,4-Trimethylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
1,2,3-Trimethylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
1,3,5-Trimethylbenzene	ND		1.00	1	03/28/2017 17:42	WG964875
Vinyl chloride	ND		1.00	1	03/28/2017 17:42	WG964875
Xylenes, Total	ND		3.00	1	03/28/2017 17:42	WG964875
(S) Toluene-d8	108		80.0-120		03/28/2017 17:42	WG964875
(S) Dibromofluoromethane	103		76.0-123		03/28/2017 17:42	WG964875
(S) a,a,a-Trifluorotoluene	105		80.0-120		03/28/2017 17:42	WG964875
(S) 4-Bromofluorobenzene	99.8		80.0-120		03/28/2017 17:42	WG964875

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al

Method Blank (MB)

(MB) R3205051-1 03/22/17 13:17

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205051-2 03/22/17 13:19 • (LCSD) R3205051-3 03/22/17 13:22

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Mercury	3.00	3.16	2.94	105	98	80-120			7	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al



Method Blank (MB)

(MB) R3205247-1 03/22/17 22:29

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Cadmium	U		0.160	1.00
Chromium	U		0.540	2.00
Copper	U		0.520	5.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Silver	U		0.310	2.00
Zinc	U		2.56	25.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205247-2 03/22/17 22:33 • (LCSD) R3205247-3 03/22/17 22:36

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	47.0	47.2	94	94	80-120			0	20
Barium	50.0	47.2	47.2	94	94	80-120			0	20
Cadmium	50.0	49.0	50.0	98	100	80-120			2	20
Chromium	50.0	47.8	47.4	96	95	80-120			1	20
Copper	50.0	49.7	50.4	99	101	80-120			1	20
Lead	50.0	47.5	48.1	95	96	80-120			1	20
Selenium	50.0	48.8	49.5	98	99	80-120			1	20
Silver	50.0	50.8	51.4	102	103	80-120			1	20
Zinc	50.0	47.4	48.5	95	97	80-120			2	20

L896625-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L896625-01 03/22/17 22:40 • (MS) R3205247-5 03/22/17 22:47 • (MSD) R3205247-6 03/22/17 22:50

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	1.59	49.5	49.1	96	95	1	75-125			1	20
Barium	50.0	139	188	186	98	95	1	75-125			1	20
Cadmium	50.0	U	50.7	50.4	101	101	1	75-125			0	20
Chromium	50.0	U	48.6	47.7	97	95	1	75-125			2	20
Copper	50.0	2.93	53.6	54.4	101	103	1	75-125			1	20
Lead	50.0	U	50.9	49.9	102	100	1	75-125			2	20
Selenium	50.0	U	51.2	50.9	102	102	1	75-125			1	20
Silver	50.0	U	52.1	50.8	104	102	1	75-125			3	20
Zinc	50.0	50.4	98.7	99.7	97	99	1	75-125			1	20

L897262-01,02,03,04,05

Method Blank (MB)

(MB) R3206726-2 03/28/17 15:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
2-Chloroethyl vinyl ether	U		3.01	50.0
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

Method Blank (MB)

(MB) R3206726-2 03/28/17 15:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Hexachloro-1,3-butadiene	U		0.256	1.00
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
1-Methylnaphthalene	U		5.03	10.0
2-Methylnaphthalene	U		3.30	10.0
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,3-Trimethylbenzene	U		0.321	1.00
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	109			80.0-120
(S) Dibromofluoromethane	101			76.0-123
(S) a,a,a-Trifluorotoluene	106			80.0-120
(S) 4-Bromofluorobenzene	97.9			80.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3206726-1 03/28/17 14:24 • (LCSD) R3206726-3 03/29/17 00:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	188	149	151	119	10.0-160		J3	23.2	23
Acrolein	125	543	859	435	687	10.0-160	J4	J3 J4	45.0	20
Acrylonitrile	125	103	128	82.4	102	60.0-142		J3	21.3	20
Benzene	25.0	24.1	22.8	96.4	91.0	69.0-123			5.79	20
Bromobenzene	25.0	23.9	24.1	95.7	96.3	79.0-120			0.710	20
Bromodichloromethane	25.0	21.9	24.3	87.5	97.0	76.0-120			10.4	20
Bromoform	25.0	24.7	24.3	98.6	97.1	67.0-132			1.52	20
Bromomethane	25.0	16.9	14.5	67.5	57.9	18.0-160			15.2	20
n-Butylbenzene	25.0	24.2	23.9	96.7	95.4	72.0-126			1.35	20
sec-Butylbenzene	25.0	26.8	24.7	107	98.6	74.0-121			8.17	20
tert-Butylbenzene	25.0	26.7	22.0	107	88.1	75.0-122			19.3	20
Carbon tetrachloride	25.0	24.3	21.7	97.3	87.0	63.0-122			11.3	20
Chlorobenzene	25.0	25.4	25.7	102	103	79.0-121			1.09	20
Chlorodibromomethane	25.0	23.6	25.8	94.2	103	75.0-125			9.02	20
Chloroethane	25.0	28.3	30.4	113	122	47.0-152			7.10	20
2-Chloroethyl vinyl ether	125	217	279	174	223	10.0-160	J4	J3 J4	24.7	22
Chloroform	25.0	23.4	24.6	93.5	98.4	72.0-121			5.08	20
Chloromethane	25.0	19.2	24.3	76.9	97.3	48.0-139		J3	23.5	20
2-Chlorotoluene	25.0	27.4	26.5	109	106	74.0-122			3.11	20
4-Chlorotoluene	25.0	26.0	25.7	104	103	79.0-120			1.15	20
1,2-Dibromo-3-Chloropropane	25.0	19.9	24.9	79.6	99.4	64.0-127		J3	22.1	20
1,2-Dibromoethane	25.0	22.4	25.2	89.6	101	77.0-123			11.6	20
Dibromomethane	25.0	22.4	24.2	89.5	96.7	78.0-120			7.80	20
1,2-Dichlorobenzene	25.0	24.0	25.3	95.9	101	80.0-120			5.27	20
1,3-Dichlorobenzene	25.0	26.7	26.2	107	105	72.0-123			2.20	20
1,4-Dichlorobenzene	25.0	23.3	23.5	93.2	94.1	77.0-120			0.920	20
Dichlorodifluoromethane	25.0	22.9	29.8	91.7	119	49.0-155		J3	25.9	20
1,1-Dichloroethane	25.0	24.0	25.9	96.0	103	70.0-126			7.40	20
1,2-Dichloroethane	25.0	21.1	25.2	84.4	101	67.0-126			17.6	20
1,1-Dichloroethene	25.0	23.0	25.3	92.0	101	64.0-129			9.45	20
cis-1,2-Dichloroethene	25.0	23.7	27.0	95.0	108	73.0-120			12.8	20
trans-1,2-Dichloroethene	25.0	23.3	25.0	93.2	100	71.0-121			7.09	20
1,2-Dichloropropane	25.0	24.9	26.2	99.4	105	75.0-125			5.31	20
1,1-Dichloropropene	25.0	25.1	26.3	100	105	71.0-129			4.70	20
1,3-Dichloropropane	25.0	23.4	26.2	93.6	105	80.0-121			11.3	20
cis-1,3-Dichloropropene	25.0	24.7	28.6	98.9	114	79.0-123			14.4	20
trans-1,3-Dichloropropene	25.0	24.7	26.1	98.9	104	74.0-127			5.22	20
2,2-Dichloropropane	25.0	20.5	22.1	82.0	88.3	60.0-125			7.50	20
Di-isopropyl ether	25.0	22.4	24.5	89.6	97.8	59.0-133			8.80	20
Ethylbenzene	25.0	26.1	21.9	104	87.8	77.0-120			17.4	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3206726-1 03/28/17 14:24 • (LCSD) R3206726-3 03/29/17 00:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	25.0	23.4	21.8	93.5	87.3	64.0-131			6.77	20
Isopropylbenzene	25.0	25.3	21.1	101	84.3	75.0-120			18.1	20
p-Isopropyltoluene	25.0	28.0	26.6	112	106	74.0-126			4.93	20
2-Butanone (MEK)	125	109	120	87.3	95.8	37.0-158			9.27	20
Methylene Chloride	25.0	22.4	25.7	89.6	103	66.0-121			13.9	20
4-Methyl-2-pentanone (MIBK)	125	122	161	98.0	129	59.0-143		J3	27.1	20
Methyl tert-butyl ether	25.0	20.2	24.5	80.7	98.1	64.0-123			19.5	20
1-Methylnaphthalene	25.0	21.7	25.8	86.6	103	43.0-140			17.5	21
2-Methylnaphthalene	25.0	19.9	23.1	79.5	92.4	37.0-141			15.0	25
Naphthalene	25.0	19.9	21.5	79.4	86.1	62.0-128			8.05	20
n-Propylbenzene	25.0	25.3	21.7	101	86.7	79.0-120			15.5	20
Styrene	25.0	27.2	24.7	109	98.9	78.0-124			9.31	20
1,1,1,2-Tetrachloroethane	25.0	24.0	24.5	95.8	98.2	75.0-122			2.40	20
1,1,2,2-Tetrachloroethane	25.0	20.5	23.8	82.0	95.4	71.0-122			15.0	20
Tetrachloroethene	25.0	25.2	24.9	101	99.7	70.0-127			1.28	20
Toluene	25.0	23.7	21.8	94.8	87.0	77.0-120			8.54	20
1,1,2-Trichlorotrifluoroethane	25.0	24.6	24.2	98.5	96.7	61.0-136			1.85	20
1,2,3-Trichlorobenzene	25.0	21.0	24.8	84.0	99.3	61.0-133			16.7	20
1,2,4-Trichlorobenzene	25.0	22.1	24.2	88.5	96.8	69.0-129			8.96	20
1,1,1-Trichloroethane	25.0	23.3	24.0	93.3	95.9	68.0-122			2.78	20
1,1,2-Trichloroethane	25.0	23.1	24.8	92.2	99.1	78.0-120			7.22	20
Trichloroethene	25.0	26.3	26.4	105	105	78.0-120			0.350	20
Trichlorofluoromethane	25.0	21.2	24.1	84.8	96.4	56.0-137			12.7	20
1,2,3-Trichloropropane	25.0	22.9	24.7	91.5	98.9	72.0-124			7.76	20
1,2,3-Trimethylbenzene	25.0	23.1	21.0	92.3	83.8	75.0-120			9.65	20
1,2,4-Trimethylbenzene	25.0	25.2	24.9	101	99.5	75.0-120			1.34	20
1,3,5-Trimethylbenzene	25.0	25.8	24.8	103	99.1	75.0-120			4.01	20
Vinyl chloride	25.0	27.8	31.3	111	125	64.0-133			11.8	20
Xylenes, Total	75.0	77.2	66.0	103	88.0	77.0-120			15.6	20
(S) Toluene-d8				104	104	80.0-120				
(S) Dibromofluoromethane				96.3	98.7	76.0-123				
(S) a,a,a-Trifluorotoluene				104	102	80.0-120				
(S) 4-Bromofluorobenzene				104	98.9	80.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al



Method Blank (MB)

(MB) R3205637-3 03/23/17 08:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Anthracene	U		0.0140	0.0500
Acenaphthene	U		0.0100	0.0500
Acenaphthylene	U		0.0120	0.0500
Benzo(a)anthracene	0.00791	J	0.00410	0.0500
Benzo(a)pyrene	U		0.0116	0.0500
Benzo(b)fluoranthene	U		0.00212	0.0500
Benzo(g,h,i)perylene	U		0.00227	0.0500
Benzo(k)fluoranthene	U		0.0136	0.0500
Chrysene	U		0.0108	0.0500
Dibenz(a,h)anthracene	U		0.00396	0.0500
Fluoranthene	U		0.0157	0.0500
Fluorene	U		0.00850	0.0500
Indeno(1,2,3-cd)pyrene	U		0.0148	0.0500
Naphthalene	0.0479	J	0.0198	0.250
Phenanthrene	U		0.00820	0.0500
Pyrene	U		0.0117	0.0500
1-Methylnaphthalene	U		0.00821	0.250
2-Methylnaphthalene	U		0.00902	0.250
2-Chloronaphthalene	U		0.00647	0.250
(S) Nitrobenzene-d5	63.4			31.0-160
(S) 2-Fluorobiphenyl	104			48.0-148
(S) p-Terphenyl-d14	91.7			37.0-146

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205637-1 03/23/17 08:06 • (LCSD) R3205637-2 03/23/17 08:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	2.00	1.98	1.85	99.1	92.5	64.0-142			6.90	20
Acenaphthene	2.00	2.09	1.91	104	95.7	66.0-132			8.57	20
Acenaphthylene	2.00	1.90	1.72	95.2	86.1	65.0-132			9.99	20
Benzo(a)anthracene	2.00	1.86	1.85	93.1	92.3	59.0-134			0.870	20
Benzo(a)pyrene	2.00	2.00	1.91	100	95.4	61.0-145			4.79	20
Benzo(b)fluoranthene	2.00	2.07	1.84	104	92.1	57.0-136			11.8	20
Benzo(g,h,i)perylene	2.00	1.95	1.84	97.7	92.1	54.0-140			5.84	20
Benzo(k)fluoranthene	2.00	2.03	2.12	102	106	57.0-141			4.21	20
Chrysene	2.00	2.15	2.09	108	104	63.0-140			3.03	20
Dibenz(a,h)anthracene	2.00	1.67	1.58	83.7	79.1	49.0-141			5.60	20
Fluoranthene	2.00	2.20	2.06	110	103	65.0-143			6.36	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205637-1 03/23/17 08:06 • (LCSD) R3205637-2 03/23/17 08:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	2.00	1.93	1.82	96.3	91.1	64.0-129			5.53	20
Indeno(1,2,3-cd)pyrene	2.00	1.84	1.74	92.2	86.9	53.0-141			5.93	20
Naphthalene	2.00	1.94	1.84	96.8	91.8	68.0-129			5.38	20
Phenanthrene	2.00	1.96	1.81	97.9	90.3	62.0-132			8.09	20
Pyrene	2.00	2.04	1.89	102	94.3	58.0-156			8.05	20
1-Methylnaphthalene	2.00	2.05	1.93	103	96.7	68.0-137			5.84	20
2-Methylnaphthalene	2.00	1.95	1.84	97.4	92.1	68.0-134			5.59	20
2-Chloronaphthalene	2.00	2.18	1.99	109	99.3	65.0-129			9.40	20
(S) Nitrobenzene-d5				77.6	70.9	31.0-160				
(S) 2-Fluorobiphenyl				116	101	48.0-148				
(S) p-Terphenyl-d14				106	97.6	37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

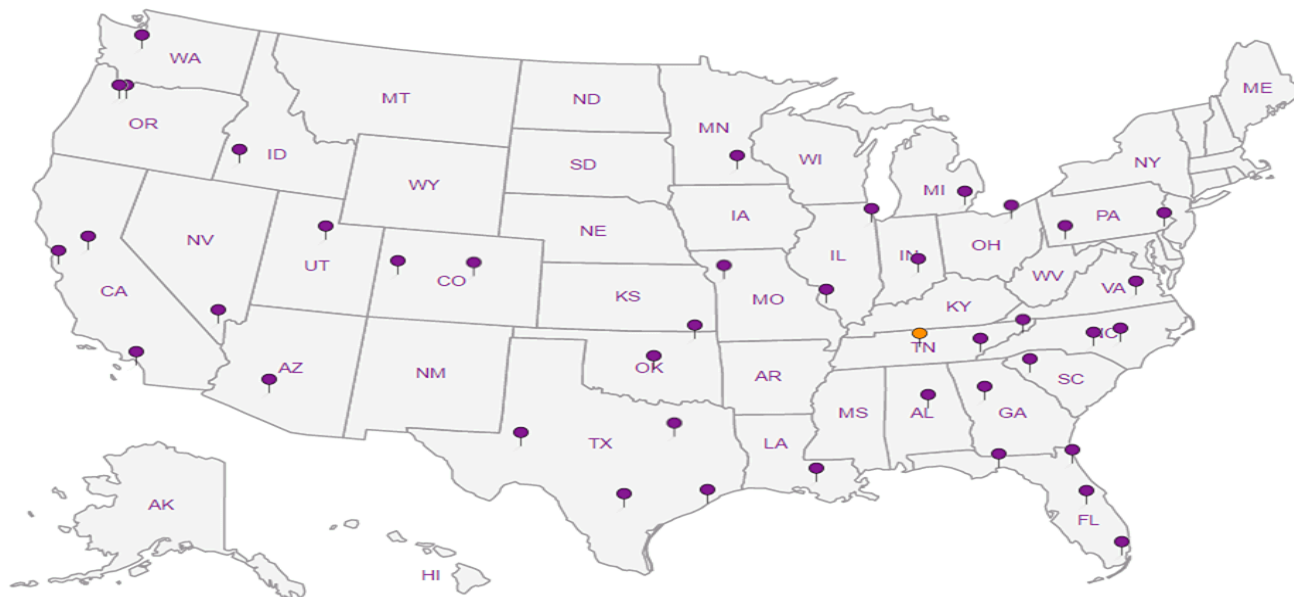
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



ATC Group Service sLLC

Sample Delivery Group: L905929
Samples Received: 04/29/2017
Project Number: N479631701
Description: Garyling AG & ED

Report To: April Hehir
108 Ottawa Street
Grayling, MI 49738

Entire Report Reviewed By:



John Hawkins
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



ATC-2 L905929-01 GW

Collected by
April Hehir

Collected date/time
04/27/17 11:35

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG975439	1	05/02/17 07:47	05/02/17 10:15	TRB
Metals (ICPMS) by Method 6020	WG975340	1	05/02/17 14:58	05/02/17 20:27	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG976333	1	05/04/17 00:23	05/04/17 00:23	JHH
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG975284	1	04/30/17 22:09	05/03/17 11:32	ADF

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ATC-6 L905929-02 GW

Collected by
April Hehir

Collected date/time
04/27/17 15:00

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG975439	1	05/02/17 07:47	05/02/17 10:17	TRB
Metals (ICPMS) by Method 6020	WG975340	1	05/02/17 14:58	05/02/17 20:30	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG976333	1	05/04/17 00:44	05/04/17 00:44	JHH
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG975284	1	04/30/17 22:09	05/03/17 11:54	ADF

DUP-1 L905929-03 GW

Collected by
April Hehir

Collected date/time
04/27/17 00:00

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG975439	1	05/02/17 07:47	05/02/17 10:20	TRB
Metals (ICPMS) by Method 6020	WG975340	1	05/02/17 14:58	05/02/17 20:34	VSS
Volatile Organic Compounds (GC/MS) by Method 8260B	WG976333	1	05/04/17 01:05	05/04/17 01:05	JHH
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG975284	1	04/30/17 22:09	05/03/17 12:16	ADF

TRIP BLANK L905929-04 GW

Collected by
April Hehir

Collected date/time
04/27/17 00:00

Received date/time
04/29/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG976333	1	05/04/17 01:25	05/04/17 01:25	JHH



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Technical Service Representative

Sample Handling and Receiving

The analysis for 2-Chloroethyl Vinyl Ether was conducted from a chemically preserved container.

ESC Sample ID	Project Sample ID	Method
L905929-01	ATC-2	8260B
L905929-02	ATC-6	8260B
L905929-03	DUP-1	8260B
L905929-04	TRIP BLANK	8260B

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	05/02/2017 10:15	WG975439

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	05/02/2017 20:27	WG975340
Barium	23.5		5.00	1	05/02/2017 20:27	WG975340
Cadmium	ND		1.00	1	05/02/2017 20:27	WG975340
Chromium	ND		2.00	1	05/02/2017 20:27	WG975340
Copper	22.4		5.00	1	05/02/2017 20:27	WG975340
Lead	ND		2.00	1	05/02/2017 20:27	WG975340
Selenium	2.31		2.00	1	05/02/2017 20:27	WG975340
Silver	ND		2.00	1	05/02/2017 20:27	WG975340
Zinc	56.1		25.0	1	05/02/2017 20:27	WG975340

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		50.0	1	05/04/2017 00:23	WG976333
Acrolein	ND		50.0	1	05/04/2017 00:23	WG976333
Acrylonitrile	ND		10.0	1	05/04/2017 00:23	WG976333
Benzene	ND		1.00	1	05/04/2017 00:23	WG976333
Bromobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Bromodichloromethane	ND		1.00	1	05/04/2017 00:23	WG976333
Bromoform	ND		1.00	1	05/04/2017 00:23	WG976333
Bromomethane	ND		5.00	1	05/04/2017 00:23	WG976333
n-Butylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
sec-Butylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
tert-Butylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Carbon tetrachloride	ND	J3	1.00	1	05/04/2017 00:23	WG976333
Chlorobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Chlorodibromomethane	ND		1.00	1	05/04/2017 00:23	WG976333
Chloroethane	ND		5.00	1	05/04/2017 00:23	WG976333
2-Chloroethyl vinyl ether	ND		50.0	1	05/04/2017 00:23	WG976333
Chloroform	ND		5.00	1	05/04/2017 00:23	WG976333
Chloromethane	ND		2.50	1	05/04/2017 00:23	WG976333
2-Chlorotoluene	ND		1.00	1	05/04/2017 00:23	WG976333
4-Chlorotoluene	ND		1.00	1	05/04/2017 00:23	WG976333
1,2-Dibromo-3-Chloropropane	ND		5.00	1	05/04/2017 00:23	WG976333
1,2-Dibromoethane	ND		1.00	1	05/04/2017 00:23	WG976333
Dibromomethane	ND		1.00	1	05/04/2017 00:23	WG976333
1,2-Dichlorobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
1,3-Dichlorobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
1,4-Dichlorobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Dichlorodifluoromethane	ND	J3	5.00	1	05/04/2017 00:23	WG976333
1,1-Dichloroethane	ND		1.00	1	05/04/2017 00:23	WG976333
1,2-Dichloroethane	ND		1.00	1	05/04/2017 00:23	WG976333
1,1-Dichloroethene	ND	J3	1.00	1	05/04/2017 00:23	WG976333
cis-1,2-Dichloroethene	ND		1.00	1	05/04/2017 00:23	WG976333
trans-1,2-Dichloroethene	ND	J3	1.00	1	05/04/2017 00:23	WG976333
1,2-Dichloropropane	ND		1.00	1	05/04/2017 00:23	WG976333
1,1-Dichloropropene	ND	J3	1.00	1	05/04/2017 00:23	WG976333
1,3-Dichloropropane	ND		1.00	1	05/04/2017 00:23	WG976333
cis-1,3-Dichloropropene	ND		1.00	1	05/04/2017 00:23	WG976333
trans-1,3-Dichloropropene	ND		1.00	1	05/04/2017 00:23	WG976333



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND	J3	1.00	1	05/04/2017 00:23	WG976333
Di-isopropyl ether	ND		1.00	1	05/04/2017 00:23	WG976333
Ethylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Hexachloro-1,3-butadiene	ND		1.00	1	05/04/2017 00:23	WG976333
Isopropylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
p-Isopropyltoluene	ND		1.00	1	05/04/2017 00:23	WG976333
2-Butanone (MEK)	ND		10.0	1	05/04/2017 00:23	WG976333
Methylene Chloride	ND		5.00	1	05/04/2017 00:23	WG976333
1-Methylnaphthalene	ND		10.0	1	05/04/2017 00:23	WG976333
2-Methylnaphthalene	ND		10.0	1	05/04/2017 00:23	WG976333
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	05/04/2017 00:23	WG976333
Methyl tert-butyl ether	ND		1.00	1	05/04/2017 00:23	WG976333
Naphthalene	ND		5.00	1	05/04/2017 00:23	WG976333
n-Propylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Styrene	ND		1.00	1	05/04/2017 00:23	WG976333
1,1,1,2-Tetrachloroethane	ND		1.00	1	05/04/2017 00:23	WG976333
1,1,2,2-Tetrachloroethane	ND	J3	1.00	1	05/04/2017 00:23	WG976333
1,1,2-Trichlorotrifluoroethane	ND	J3	1.00	1	05/04/2017 00:23	WG976333
Tetrachloroethene	ND		1.00	1	05/04/2017 00:23	WG976333
Toluene	ND		1.00	1	05/04/2017 00:23	WG976333
1,2,3-Trichlorobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
1,2,4-Trichlorobenzene	ND		1.00	1	05/04/2017 00:23	WG976333
1,1,1-Trichloroethane	ND		1.00	1	05/04/2017 00:23	WG976333
1,1,2-Trichloroethane	ND		1.00	1	05/04/2017 00:23	WG976333
Trichloroethene	ND		1.00	1	05/04/2017 00:23	WG976333
Trichlorofluoromethane	ND		5.00	1	05/04/2017 00:23	WG976333
1,2,3-Trichloropropane	ND		2.50	1	05/04/2017 00:23	WG976333
1,2,4-Trimethylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
1,2,3-Trimethylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
1,3,5-Trimethylbenzene	ND		1.00	1	05/04/2017 00:23	WG976333
Vinyl chloride	ND		1.00	1	05/04/2017 00:23	WG976333
Xylenes, Total	ND		3.00	1	05/04/2017 00:23	WG976333
(S) Toluene-d8	105		80.0-120		05/04/2017 00:23	WG976333
(S) Dibromofluoromethane	97.7		76.0-123		05/04/2017 00:23	WG976333
(S) a,a,a-Trifluorotoluene	104		80.0-120		05/04/2017 00:23	WG976333
(S) 4-Bromofluorobenzene	99.4		80.0-120		05/04/2017 00:23	WG976333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0500	1	05/03/2017 11:32	WG975284
Acenaphthene	ND		0.0500	1	05/03/2017 11:32	WG975284
Acenaphthylene	ND		0.0500	1	05/03/2017 11:32	WG975284
Benzo(a)anthracene	ND		0.0500	1	05/03/2017 11:32	WG975284
Benzo(a)pyrene	ND		0.0500	1	05/03/2017 11:32	WG975284
Benzo(b)fluoranthene	ND		0.0500	1	05/03/2017 11:32	WG975284
Benzo(g,h,i)perylene	ND		0.0500	1	05/03/2017 11:32	WG975284
Benzo(k)fluoranthene	ND		0.0500	1	05/03/2017 11:32	WG975284
Chrysene	ND		0.0500	1	05/03/2017 11:32	WG975284
Dibenz(a,h)anthracene	ND		0.0500	1	05/03/2017 11:32	WG975284
Fluoranthene	ND		0.0500	1	05/03/2017 11:32	WG975284
Fluorene	ND		0.0500	1	05/03/2017 11:32	WG975284
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	05/03/2017 11:32	WG975284
Naphthalene	ND		0.250	1	05/03/2017 11:32	WG975284
Phenanthrene	ND		0.0500	1	05/03/2017 11:32	WG975284
Pyrene	ND		0.0500	1	05/03/2017 11:32	WG975284



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.250	1	05/03/2017 11:32	WG975284
2-Methylnaphthalene	ND		0.250	1	05/03/2017 11:32	WG975284
2-Chloronaphthalene	ND		0.250	1	05/03/2017 11:32	WG975284
(S) Nitrobenzene-d5	98.3		31.0-160		05/03/2017 11:32	WG975284
(S) 2-Fluorobiphenyl	99.3		48.0-148		05/03/2017 11:32	WG975284
(S) p-Terphenyl-d14	106		37.0-146		05/03/2017 11:32	WG975284

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Mercury by Method 7470A

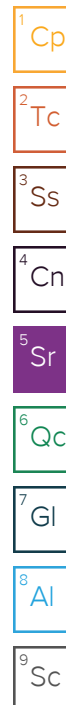
Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	05/02/2017 10:17	WG975439

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	05/02/2017 20:30	WG975340
Barium	37.9		5.00	1	05/02/2017 20:30	WG975340
Cadmium	ND		1.00	1	05/02/2017 20:30	WG975340
Chromium	ND		2.00	1	05/02/2017 20:30	WG975340
Copper	ND		5.00	1	05/02/2017 20:30	WG975340
Lead	ND		2.00	1	05/02/2017 20:30	WG975340
Selenium	5.03		2.00	1	05/02/2017 20:30	WG975340
Silver	ND		2.00	1	05/02/2017 20:30	WG975340
Zinc	ND		25.0	1	05/02/2017 20:30	WG975340

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		50.0	1	05/04/2017 00:44	WG976333
Acrolein	ND		50.0	1	05/04/2017 00:44	WG976333
Acrylonitrile	ND		10.0	1	05/04/2017 00:44	WG976333
Benzene	ND		1.00	1	05/04/2017 00:44	WG976333
Bromobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Bromodichloromethane	ND		1.00	1	05/04/2017 00:44	WG976333
Bromoform	ND		1.00	1	05/04/2017 00:44	WG976333
Bromomethane	ND		5.00	1	05/04/2017 00:44	WG976333
n-Butylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
sec-Butylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
tert-Butylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Carbon tetrachloride	ND	J3	1.00	1	05/04/2017 00:44	WG976333
Chlorobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Chlorodibromomethane	ND		1.00	1	05/04/2017 00:44	WG976333
Chloroethane	ND		5.00	1	05/04/2017 00:44	WG976333
2-Chloroethyl vinyl ether	ND		50.0	1	05/04/2017 00:44	WG976333
Chloroform	ND		5.00	1	05/04/2017 00:44	WG976333
Chloromethane	ND		2.50	1	05/04/2017 00:44	WG976333
2-Chlorotoluene	ND		1.00	1	05/04/2017 00:44	WG976333
4-Chlorotoluene	ND		1.00	1	05/04/2017 00:44	WG976333
1,2-Dibromo-3-Chloropropane	ND		5.00	1	05/04/2017 00:44	WG976333
1,2-Dibromoethane	ND		1.00	1	05/04/2017 00:44	WG976333
Dibromomethane	ND		1.00	1	05/04/2017 00:44	WG976333
1,2-Dichlorobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
1,3-Dichlorobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
1,4-Dichlorobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Dichlorodifluoromethane	ND	J3	5.00	1	05/04/2017 00:44	WG976333
1,1-Dichloroethane	ND		1.00	1	05/04/2017 00:44	WG976333
1,2-Dichloroethane	ND		1.00	1	05/04/2017 00:44	WG976333
1,1-Dichloroethene	ND	J3	1.00	1	05/04/2017 00:44	WG976333
cis-1,2-Dichloroethene	ND		1.00	1	05/04/2017 00:44	WG976333
trans-1,2-Dichloroethene	ND	J3	1.00	1	05/04/2017 00:44	WG976333
1,2-Dichloropropane	ND		1.00	1	05/04/2017 00:44	WG976333
1,1-Dichloropropene	ND	J3	1.00	1	05/04/2017 00:44	WG976333
1,3-Dichloropropane	ND		1.00	1	05/04/2017 00:44	WG976333
cis-1,3-Dichloropropene	ND		1.00	1	05/04/2017 00:44	WG976333
trans-1,3-Dichloropropene	ND		1.00	1	05/04/2017 00:44	WG976333





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND	J3	1.00	1	05/04/2017 00:44	WG976333
Di-isopropyl ether	ND		1.00	1	05/04/2017 00:44	WG976333
Ethylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Hexachloro-1,3-butadiene	ND		1.00	1	05/04/2017 00:44	WG976333
Isopropylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
p-Isopropyltoluene	ND		1.00	1	05/04/2017 00:44	WG976333
2-Butanone (MEK)	ND		10.0	1	05/04/2017 00:44	WG976333
Methylene Chloride	ND		5.00	1	05/04/2017 00:44	WG976333
1-Methylnaphthalene	ND		10.0	1	05/04/2017 00:44	WG976333
2-Methylnaphthalene	ND		10.0	1	05/04/2017 00:44	WG976333
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	05/04/2017 00:44	WG976333
Methyl tert-butyl ether	ND		1.00	1	05/04/2017 00:44	WG976333
Naphthalene	ND		5.00	1	05/04/2017 00:44	WG976333
n-Propylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Styrene	ND		1.00	1	05/04/2017 00:44	WG976333
1,1,1,2-Tetrachloroethane	ND		1.00	1	05/04/2017 00:44	WG976333
1,1,2,2-Tetrachloroethane	ND	J3	1.00	1	05/04/2017 00:44	WG976333
1,1,2-Trichlorotrifluoroethane	ND	J3	1.00	1	05/04/2017 00:44	WG976333
Tetrachloroethene	ND		1.00	1	05/04/2017 00:44	WG976333
Toluene	ND		1.00	1	05/04/2017 00:44	WG976333
1,2,3-Trichlorobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
1,2,4-Trichlorobenzene	ND		1.00	1	05/04/2017 00:44	WG976333
1,1,1-Trichloroethane	ND		1.00	1	05/04/2017 00:44	WG976333
1,1,2-Trichloroethane	ND		1.00	1	05/04/2017 00:44	WG976333
Trichloroethene	ND		1.00	1	05/04/2017 00:44	WG976333
Trichlorofluoromethane	ND		5.00	1	05/04/2017 00:44	WG976333
1,2,3-Trichloropropane	ND		2.50	1	05/04/2017 00:44	WG976333
1,2,4-Trimethylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
1,2,3-Trimethylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
1,3,5-Trimethylbenzene	ND		1.00	1	05/04/2017 00:44	WG976333
Vinyl chloride	ND		1.00	1	05/04/2017 00:44	WG976333
Xylenes, Total	ND		3.00	1	05/04/2017 00:44	WG976333
(S) Toluene-d8	105		80.0-120		05/04/2017 00:44	WG976333
(S) Dibromofluoromethane	101		76.0-123		05/04/2017 00:44	WG976333
(S) a,a,a-Trifluorotoluene	107		80.0-120		05/04/2017 00:44	WG976333
(S) 4-Bromofluorobenzene	104		80.0-120		05/04/2017 00:44	WG976333

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0500	1	05/03/2017 11:54	WG975284
Acenaphthene	ND		0.0500	1	05/03/2017 11:54	WG975284
Acenaphthylene	ND		0.0500	1	05/03/2017 11:54	WG975284
Benzo(a)anthracene	ND		0.0500	1	05/03/2017 11:54	WG975284
Benzo(a)pyrene	ND		0.0500	1	05/03/2017 11:54	WG975284
Benzo(b)fluoranthene	ND		0.0500	1	05/03/2017 11:54	WG975284
Benzo(g,h,i)perylene	ND		0.0500	1	05/03/2017 11:54	WG975284
Benzo(k)fluoranthene	ND		0.0500	1	05/03/2017 11:54	WG975284
Chrysene	ND		0.0500	1	05/03/2017 11:54	WG975284
Dibenz(a,h)anthracene	ND		0.0500	1	05/03/2017 11:54	WG975284
Fluoranthene	ND		0.0500	1	05/03/2017 11:54	WG975284
Fluorene	ND		0.0500	1	05/03/2017 11:54	WG975284
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	05/03/2017 11:54	WG975284
Naphthalene	ND		0.250	1	05/03/2017 11:54	WG975284
Phenanthrene	ND		0.0500	1	05/03/2017 11:54	WG975284
Pyrene	ND		0.0500	1	05/03/2017 11:54	WG975284



Collected date/time: 04/27/17 15:00

L905929

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.250	1	05/03/2017 11:54	WG975284
2-Methylnaphthalene	ND		0.250	1	05/03/2017 11:54	WG975284
2-Chloronaphthalene	ND		0.250	1	05/03/2017 11:54	WG975284
(S) Nitrobenzene-d5	91.9		31.0-160		05/03/2017 11:54	WG975284
(S) 2-Fluorobiphenyl	93.3		48.0-148		05/03/2017 11:54	WG975284
(S) p-Terphenyl-d14	99.2		37.0-146		05/03/2017 11:54	WG975284

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	05/02/2017 10:20	WG975439

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Arsenic	ND		2.00	1	05/02/2017 20:34	WG975340
Barium	23.1		5.00	1	05/02/2017 20:34	WG975340
Cadmium	ND		1.00	1	05/02/2017 20:34	WG975340
Chromium	ND		2.00	1	05/02/2017 20:34	WG975340
Copper	ND		5.00	1	05/02/2017 20:34	WG975340
Lead	ND		2.00	1	05/02/2017 20:34	WG975340
Selenium	2.35		2.00	1	05/02/2017 20:34	WG975340
Silver	ND		2.00	1	05/02/2017 20:34	WG975340
Zinc	ND		25.0	1	05/02/2017 20:34	WG975340

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		50.0	1	05/04/2017 01:05	WG976333
Acrolein	ND		50.0	1	05/04/2017 01:05	WG976333
Acrylonitrile	ND		10.0	1	05/04/2017 01:05	WG976333
Benzene	ND		1.00	1	05/04/2017 01:05	WG976333
Bromobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Bromodichloromethane	ND		1.00	1	05/04/2017 01:05	WG976333
Bromoform	ND		1.00	1	05/04/2017 01:05	WG976333
Bromomethane	ND		5.00	1	05/04/2017 01:05	WG976333
n-Butylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
sec-Butylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
tert-Butylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Carbon tetrachloride	ND	J3	1.00	1	05/04/2017 01:05	WG976333
Chlorobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Chlorodibromomethane	ND		1.00	1	05/04/2017 01:05	WG976333
Chloroethane	ND		5.00	1	05/04/2017 01:05	WG976333
2-Chloroethyl vinyl ether	ND		50.0	1	05/04/2017 01:05	WG976333
Chloroform	ND		5.00	1	05/04/2017 01:05	WG976333
Chloromethane	ND		2.50	1	05/04/2017 01:05	WG976333
2-Chlorotoluene	ND		1.00	1	05/04/2017 01:05	WG976333
4-Chlorotoluene	ND		1.00	1	05/04/2017 01:05	WG976333
1,2-Dibromo-3-Chloropropane	ND		5.00	1	05/04/2017 01:05	WG976333
1,2-Dibromoethane	ND		1.00	1	05/04/2017 01:05	WG976333
Dibromomethane	ND		1.00	1	05/04/2017 01:05	WG976333
1,2-Dichlorobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
1,3-Dichlorobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
1,4-Dichlorobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Dichlorodifluoromethane	ND	J3	5.00	1	05/04/2017 01:05	WG976333
1,1-Dichloroethane	ND		1.00	1	05/04/2017 01:05	WG976333
1,2-Dichloroethane	ND		1.00	1	05/04/2017 01:05	WG976333
1,1-Dichloroethene	ND	J3	1.00	1	05/04/2017 01:05	WG976333
cis-1,2-Dichloroethene	ND		1.00	1	05/04/2017 01:05	WG976333
trans-1,2-Dichloroethene	ND	J3	1.00	1	05/04/2017 01:05	WG976333
1,2-Dichloropropane	ND		1.00	1	05/04/2017 01:05	WG976333
1,1-Dichloropropene	ND	J3	1.00	1	05/04/2017 01:05	WG976333
1,3-Dichloropropane	ND		1.00	1	05/04/2017 01:05	WG976333
cis-1,3-Dichloropropene	ND		1.00	1	05/04/2017 01:05	WG976333
trans-1,3-Dichloropropene	ND		1.00	1	05/04/2017 01:05	WG976333

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	ND	J3	1.00	1	05/04/2017 01:05	WG976333
Di-isopropyl ether	ND		1.00	1	05/04/2017 01:05	WG976333
Ethylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Hexachloro-1,3-butadiene	ND		1.00	1	05/04/2017 01:05	WG976333
Isopropylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
p-Isopropyltoluene	ND		1.00	1	05/04/2017 01:05	WG976333
2-Butanone (MEK)	ND		10.0	1	05/04/2017 01:05	WG976333
Methylene Chloride	ND		5.00	1	05/04/2017 01:05	WG976333
1-Methylnaphthalene	ND		10.0	1	05/04/2017 01:05	WG976333
2-Methylnaphthalene	ND		10.0	1	05/04/2017 01:05	WG976333
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	05/04/2017 01:05	WG976333
Methyl tert-butyl ether	ND		1.00	1	05/04/2017 01:05	WG976333
Naphthalene	ND		5.00	1	05/04/2017 01:05	WG976333
n-Propylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Styrene	ND		1.00	1	05/04/2017 01:05	WG976333
1,1,1,2-Tetrachloroethane	ND		1.00	1	05/04/2017 01:05	WG976333
1,1,2,2-Tetrachloroethane	ND	J3	1.00	1	05/04/2017 01:05	WG976333
1,1,2-Trichlorotrifluoroethane	ND	J3	1.00	1	05/04/2017 01:05	WG976333
Tetrachloroethene	ND		1.00	1	05/04/2017 01:05	WG976333
Toluene	ND		1.00	1	05/04/2017 01:05	WG976333
1,2,3-Trichlorobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
1,2,4-Trichlorobenzene	ND		1.00	1	05/04/2017 01:05	WG976333
1,1,1-Trichloroethane	ND		1.00	1	05/04/2017 01:05	WG976333
1,1,2-Trichloroethane	ND		1.00	1	05/04/2017 01:05	WG976333
Trichloroethene	ND		1.00	1	05/04/2017 01:05	WG976333
Trichlorofluoromethane	ND		5.00	1	05/04/2017 01:05	WG976333
1,2,3-Trichloropropane	ND		2.50	1	05/04/2017 01:05	WG976333
1,2,4-Trimethylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
1,2,3-Trimethylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
1,3,5-Trimethylbenzene	ND		1.00	1	05/04/2017 01:05	WG976333
Vinyl chloride	ND		1.00	1	05/04/2017 01:05	WG976333
Xylenes, Total	ND		3.00	1	05/04/2017 01:05	WG976333
(S) Toluene-d8	105		80.0-120		05/04/2017 01:05	WG976333
(S) Dibromofluoromethane	99.2		76.0-123		05/04/2017 01:05	WG976333
(S) a,a,a-Trifluorotoluene	105		80.0-120		05/04/2017 01:05	WG976333
(S) 4-Bromofluorobenzene	99.8		80.0-120		05/04/2017 01:05	WG976333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0500	1	05/03/2017 12:16	WG975284
Acenaphthene	ND		0.0500	1	05/03/2017 12:16	WG975284
Acenaphthylene	ND		0.0500	1	05/03/2017 12:16	WG975284
Benzo(a)anthracene	ND		0.0500	1	05/03/2017 12:16	WG975284
Benzo(a)pyrene	ND		0.0500	1	05/03/2017 12:16	WG975284
Benzo(b)fluoranthene	ND		0.0500	1	05/03/2017 12:16	WG975284
Benzo(g,h,i)perylene	ND		0.0500	1	05/03/2017 12:16	WG975284
Benzo(k)fluoranthene	ND		0.0500	1	05/03/2017 12:16	WG975284
Chrysene	ND		0.0500	1	05/03/2017 12:16	WG975284
Dibenz(a,h)anthracene	ND		0.0500	1	05/03/2017 12:16	WG975284
Fluoranthene	ND		0.0500	1	05/03/2017 12:16	WG975284
Fluorene	ND		0.0500	1	05/03/2017 12:16	WG975284
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	05/03/2017 12:16	WG975284
Naphthalene	ND		0.250	1	05/03/2017 12:16	WG975284
Phenanthrene	ND		0.0500	1	05/03/2017 12:16	WG975284
Pyrene	ND		0.0500	1	05/03/2017 12:16	WG975284



Collected date/time: 04/27/17 00:00

L905929

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.250	1	05/03/2017 12:16	WG975284
2-Methylnaphthalene	ND		0.250	1	05/03/2017 12:16	WG975284
2-Chloronaphthalene	ND		0.250	1	05/03/2017 12:16	WG975284
(S) Nitrobenzene-d5	93.4		31.0-160		05/03/2017 12:16	WG975284
(S) 2-Fluorobiphenyl	93.8		48.0-148		05/03/2017 12:16	WG975284
(S) p-Terphenyl-d14	101		37.0-146		05/03/2017 12:16	WG975284

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		50.0	1	05/04/2017 01:25	WG976333
Acrolein	ND		50.0	1	05/04/2017 01:25	WG976333
Acrylonitrile	ND		10.0	1	05/04/2017 01:25	WG976333
Benzene	ND		1.00	1	05/04/2017 01:25	WG976333
Bromobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Bromodichloromethane	ND		1.00	1	05/04/2017 01:25	WG976333
Bromoform	ND		1.00	1	05/04/2017 01:25	WG976333
Bromomethane	ND		5.00	1	05/04/2017 01:25	WG976333
n-Butylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
sec-Butylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
tert-Butylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Carbon tetrachloride	ND	J3	1.00	1	05/04/2017 01:25	WG976333
Chlorobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Chlorodibromomethane	ND		1.00	1	05/04/2017 01:25	WG976333
Chloroethane	ND		5.00	1	05/04/2017 01:25	WG976333
2-Chloroethyl vinyl ether	ND		50.0	1	05/04/2017 01:25	WG976333
Chloroform	ND		5.00	1	05/04/2017 01:25	WG976333
Chloromethane	ND		2.50	1	05/04/2017 01:25	WG976333
2-Chlorotoluene	ND		1.00	1	05/04/2017 01:25	WG976333
4-Chlorotoluene	ND		1.00	1	05/04/2017 01:25	WG976333
1,2-Dibromo-3-Chloropropane	ND		5.00	1	05/04/2017 01:25	WG976333
1,2-Dibromoethane	ND		1.00	1	05/04/2017 01:25	WG976333
Dibromomethane	ND		1.00	1	05/04/2017 01:25	WG976333
1,2-Dichlorobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
1,3-Dichlorobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
1,4-Dichlorobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Dichlorodifluoromethane	ND	J3	5.00	1	05/04/2017 01:25	WG976333
1,1-Dichloroethane	ND		1.00	1	05/04/2017 01:25	WG976333
1,2-Dichloroethane	ND		1.00	1	05/04/2017 01:25	WG976333
1,1-Dichloroethene	ND	J3	1.00	1	05/04/2017 01:25	WG976333
cis-1,2-Dichloroethene	ND		1.00	1	05/04/2017 01:25	WG976333
trans-1,2-Dichloroethene	ND	J3	1.00	1	05/04/2017 01:25	WG976333
1,2-Dichloropropane	ND		1.00	1	05/04/2017 01:25	WG976333
1,1-Dichloropropene	ND	J3	1.00	1	05/04/2017 01:25	WG976333
1,3-Dichloropropane	ND		1.00	1	05/04/2017 01:25	WG976333
cis-1,3-Dichloropropene	ND		1.00	1	05/04/2017 01:25	WG976333
trans-1,3-Dichloropropene	ND		1.00	1	05/04/2017 01:25	WG976333
2,2-Dichloropropane	ND	J3	1.00	1	05/04/2017 01:25	WG976333
Di-isopropyl ether	ND		1.00	1	05/04/2017 01:25	WG976333
Ethylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Hexachloro-1,3-butadiene	ND		1.00	1	05/04/2017 01:25	WG976333
Isopropylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
p-Isopropyltoluene	ND		1.00	1	05/04/2017 01:25	WG976333
2-Butanone (MEK)	ND		10.0	1	05/04/2017 01:25	WG976333
Methylene Chloride	ND		5.00	1	05/04/2017 01:25	WG976333
1-Methylnaphthalene	ND		10.0	1	05/04/2017 01:25	WG976333
2-Methylnaphthalene	ND		10.0	1	05/04/2017 01:25	WG976333
4-Methyl-2-pentanone (MIBK)	ND		10.0	1	05/04/2017 01:25	WG976333
Methyl tert-butyl ether	ND		1.00	1	05/04/2017 01:25	WG976333
Naphthalene	ND		5.00	1	05/04/2017 01:25	WG976333
n-Propylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Styrene	ND		1.00	1	05/04/2017 01:25	WG976333
1,1,1,2-Tetrachloroethane	ND		1.00	1	05/04/2017 01:25	WG976333
1,1,2,2-Tetrachloroethane	ND	J3	1.00	1	05/04/2017 01:25	WG976333
1,1,2-Trichlorotrifluoroethane	ND	J3	1.00	1	05/04/2017 01:25	WG976333
Tetrachloroethene	ND		1.00	1	05/04/2017 01:25	WG976333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/27/17 00:00

L905929

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Toluene	ND		1.00	1	05/04/2017 01:25	WG976333
1,2,3-Trichlorobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
1,2,4-Trichlorobenzene	ND		1.00	1	05/04/2017 01:25	WG976333
1,1,1-Trichloroethane	ND		1.00	1	05/04/2017 01:25	WG976333
1,1,2-Trichloroethane	ND		1.00	1	05/04/2017 01:25	WG976333
Trichloroethene	ND		1.00	1	05/04/2017 01:25	WG976333
Trichlorofluoromethane	ND		5.00	1	05/04/2017 01:25	WG976333
1,2,3-Trichloropropane	ND		2.50	1	05/04/2017 01:25	WG976333
1,2,4-Trimethylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
1,2,3-Trimethylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
1,3,5-Trimethylbenzene	ND		1.00	1	05/04/2017 01:25	WG976333
Vinyl chloride	ND		1.00	1	05/04/2017 01:25	WG976333
Xylenes, Total	ND		3.00	1	05/04/2017 01:25	WG976333
(S) Toluene-d8	105		80.0-120		05/04/2017 01:25	WG976333
(S) Dibromofluoromethane	102		76.0-123		05/04/2017 01:25	WG976333
(S) a,a,a-Trifluorotoluene	104		80.0-120		05/04/2017 01:25	WG976333
(S) 4-Bromofluorobenzene	101		80.0-120		05/04/2017 01:25	WG976333

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3214926-1 05/02/17 09:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Mercury	U		0.0490	0.200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3214926-2 05/02/17 09:46 • (LCSD) R3214926-3 05/02/17 09:48

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Mercury	3.00	2.88	2.84	96	95	80-120			1	20

L905855-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905855-04 05/02/17 09:50 • (MS) R3214926-4 05/02/17 09:52 • (MSD) R3214926-5 05/02/17 09:55

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Mercury	3.00	U	3.27	3.25	109	108	1	75-125			1	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3215093-1 05/02/17 18:14

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Cadmium	U		0.160	1.00
Chromium	U		0.540	2.00
Copper	U		0.520	5.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Silver	U		0.310	2.00
Zinc	3.48	J	2.56	25.0

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215093-2 05/02/17 18:18 • (LCSD) R3215093-3 05/02/17 18:21

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Arsenic	50.0	52.8	51.9	106	104	80-120			2	20
Barium	50.0	52.1	50.4	104	101	80-120			3	20
Cadmium	50.0	50.5	51.1	101	102	80-120			1	20
Chromium	50.0	54.0	53.2	108	106	80-120			1	20
Copper	50.0	56.7	55.5	113	111	80-120			2	20
Lead	50.0	51.5	50.7	103	101	80-120			2	20
Selenium	50.0	51.1	51.6	102	103	80-120			1	20
Silver	50.0	51.4	50.6	103	101	80-120			2	20
Zinc	50.0	58.6	56.8	117	114	80-120			3	20

L905855-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905855-04 05/02/17 18:25 • (MS) R3215093-5 05/02/17 18:32 • (MSD) R3215093-6 05/02/17 18:36

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Arsenic	50.0	0.648	50.7	49.0	100	97	1	75-125			3	20
Barium	50.0	221	271	271	99	98	1	75-125			0	20
Cadmium	50.0	U	49.9	49.2	100	98	1	75-125			1	20
Chromium	50.0	U	51.7	50.1	103	100	1	75-125			3	20
Copper	50.0	1.96	53.3	51.7	103	99	1	75-125			3	20
Lead	50.0	0.538	51.6	50.1	102	99	1	75-125			3	20
Selenium	50.0	0.675	52.9	50.8	104	100	1	75-125			4	20
Silver	50.0	U	50.6	48.9	101	98	1	75-125			3	20
Zinc	50.0	11.5	59.9	58.6	97	94	1	75-125			2	20

Method Blank (MB)

(MB) R3216333-3 05/03/17 18:11

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
2-Chloroethyl vinyl ether	U		3.01	50.0
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3216333-3 05/03/17 18:11

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Hexachloro-1,3-butadiene	U		0.256	1.00
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
1-Methylnaphthalene	U		5.03	10.0
2-Methylnaphthalene	U		3.30	10.0
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,3-Trimethylbenzene	U		0.321	1.00
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	106			80.0-120
(S) Dibromofluoromethane	101			76.0-123
(S) a,a,a-Trifluorotoluene	106			80.0-120
(S) 4-Bromofluorobenzene	102			80.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3216333-1 05/03/17 16:44 • (LCSD) R3216333-2 05/03/17 17:04

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	97.3	78.1	77.9	62.5	10.0-160			21.9	23
Acrolein	125	42.2	50.8	33.7	40.7	10.0-160			18.6	20
Acrylonitrile	125	124	129	99.0	103	60.0-142			3.78	20
Benzene	25.0	22.6	26.3	90.6	105	69.0-123			14.8	20
Bromobenzene	25.0	22.3	24.2	89.1	96.7	79.0-120			8.15	20
Bromodichloromethane	25.0	23.5	26.4	94.0	106	76.0-120			11.7	20
Bromoform	25.0	24.5	25.7	98.1	103	67.0-132			4.87	20
Bromomethane	25.0	24.2	25.0	97.0	100	18.0-160			3.23	20
n-Butylbenzene	25.0	24.1	28.6	96.6	115	72.0-126			17.1	20
sec-Butylbenzene	25.0	23.5	27.0	94.0	108	74.0-121			14.0	20
tert-Butylbenzene	25.0	23.2	26.2	92.7	105	75.0-122			12.3	20
Carbon tetrachloride	25.0	22.9	28.0	91.4	112	63.0-122		J3	20.4	20
Chlorobenzene	25.0	22.8	25.2	91.1	101	79.0-121			10.2	20
Chlorodibromomethane	25.0	23.9	25.6	95.7	103	75.0-125			6.88	20
Chloroethane	25.0	27.7	28.0	111	112	47.0-152			1.05	20
2-Chloroethyl vinyl ether	125	133	147	107	118	10.0-160			10.1	22
Chloroform	25.0	22.5	26.4	90.0	106	72.0-121			15.9	20
Chloromethane	25.0	20.7	20.1	82.9	80.3	48.0-139			3.19	20
2-Chlorotoluene	25.0	22.6	25.1	90.3	100	74.0-122			10.5	20
4-Chlorotoluene	25.0	22.3	25.1	89.4	100	79.0-120			11.6	20
1,2-Dibromo-3-Chloropropane	25.0	24.5	24.7	98.1	98.7	64.0-127			0.560	20
1,2-Dibromoethane	25.0	23.8	25.0	95.3	99.9	77.0-123			4.72	20
Dibromomethane	25.0	23.6	25.6	94.5	103	78.0-120			8.10	20
1,2-Dichlorobenzene	25.0	23.1	25.1	92.4	100	80.0-120			8.19	20
1,3-Dichlorobenzene	25.0	22.1	24.4	88.3	97.7	72.0-123			10.0	20
1,4-Dichlorobenzene	25.0	22.2	25.0	88.7	99.8	77.0-120			11.8	20
Dichlorodifluoromethane	25.0	24.2	29.9	96.9	120	49.0-155		J3	20.9	20
1,1-Dichloroethane	25.0	22.9	27.1	91.7	109	70.0-126			16.9	20
1,2-Dichloroethane	25.0	23.1	25.7	92.4	103	67.0-126			10.7	20
1,1-Dichloroethene	25.0	23.4	30.5	93.7	122	64.0-129		J3	26.4	20
cis-1,2-Dichloroethene	25.0	22.2	25.9	88.7	103	73.0-120			15.3	20
trans-1,2-Dichloroethene	25.0	22.0	27.2	87.9	109	71.0-121		J3	21.1	20
1,2-Dichloropropane	25.0	23.8	26.2	95.3	105	75.0-125			9.32	20
1,1-Dichloropropene	25.0	23.1	28.6	92.4	114	71.0-129		J3	21.2	20
1,3-Dichloropropane	25.0	23.9	25.2	95.6	101	80.0-121			5.43	20
cis-1,3-Dichloropropene	25.0	23.1	26.2	92.2	105	79.0-123			12.9	20
trans-1,3-Dichloropropene	25.0	23.3	26.3	93.3	105	74.0-127			12.2	20
2,2-Dichloropropane	25.0	17.4	28.0	69.4	112	60.0-125		J3	46.9	20
Di-isopropyl ether	25.0	23.0	25.9	91.8	104	59.0-133			12.1	20
Ethylbenzene	25.0	23.4	26.3	93.6	105	77.0-120			11.5	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3216333-1 05/03/17 16:44 • (LCSD) R3216333-2 05/03/17 17:04

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	25.0	25.7	29.0	103	116	64.0-131			11.9	20
Isopropylbenzene	25.0	23.4	26.5	93.7	106	75.0-120			12.2	20
p-Isopropyltoluene	25.0	23.5	26.7	93.9	107	74.0-126			13.0	20
2-Butanone (MEK)	125	108	117	86.2	93.6	37.0-158			8.27	20
Methylene Chloride	25.0	21.5	25.2	85.9	101	66.0-121			15.8	20
4-Methyl-2-pentanone (MIBK)	125	128	125	103	99.7	59.0-143			2.79	20
Methyl tert-butyl ether	25.0	22.7	25.4	90.8	101	64.0-123			11.1	20
1-Methylnaphthalene	25.0	30.6	27.8	122	111	43.0-140			9.55	21
2-Methylnaphthalene	25.0	32.1	29.8	128	119	37.0-141			7.18	25
Naphthalene	25.0	25.4	23.8	102	95.4	62.0-128			6.41	20
n-Propylbenzene	25.0	22.9	26.2	91.6	105	79.0-120			13.6	20
Styrene	25.0	23.3	25.8	93.2	103	78.0-124			10.1	20
1,1,1,2-Tetrachloroethane	25.0	23.4	25.8	93.7	103	75.0-122			9.67	20
1,1,2,2-Tetrachloroethane	25.0	18.7	24.1	74.6	96.5	71.0-122		J3	25.5	20
Tetrachloroethene	25.0	23.1	27.8	92.4	111	70.0-127			18.5	20
Toluene	25.0	23.0	26.1	92.1	104	77.0-120			12.3	20
1,1,2-Trichlorotrifluoroethane	25.0	22.7	30.8	91.0	123	61.0-136		J3	30.0	20
1,2,3-Trichlorobenzene	25.0	25.7	24.6	103	98.3	61.0-133			4.64	20
1,2,4-Trichlorobenzene	25.0	24.8	24.7	99.3	98.7	69.0-129			0.600	20
1,1,1-Trichloroethane	25.0	23.4	28.1	93.6	112	68.0-122			18.3	20
1,1,2-Trichloroethane	25.0	23.6	24.9	94.4	99.7	78.0-120			5.45	20
Trichloroethene	25.0	26.4	26.6	106	106	78.0-120			0.780	20
Trichlorofluoromethane	25.0	27.3	30.6	109	122	56.0-137			11.3	20
1,2,3-Trichloropropane	25.0	23.5	24.8	93.9	99.1	72.0-124			5.45	20
1,2,3-Trimethylbenzene	25.0	23.4	25.6	93.4	102	75.0-120			9.23	20
1,2,4-Trimethylbenzene	25.0	23.0	25.5	92.1	102	75.0-120			10.2	20
1,3,5-Trimethylbenzene	25.0	22.9	25.7	91.5	103	75.0-120			11.7	20
Vinyl chloride	25.0	20.4	22.4	81.6	89.4	64.0-133			9.15	20
Xylenes, Total	75.0	69.5	77.8	92.7	104	77.0-120			11.3	20
(S) Toluene-d8				105	104	80.0-120				
(S) Dibromofluoromethane				97.6	101	76.0-123				
(S) a,a,a-Trifluorotoluene				103	102	80.0-120				
(S) 4-Bromofluorobenzene				100	97.8	80.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



L905916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905916-02 05/04/17 01:46 • (MS) R3216333-4 05/04/17 02:07 • (MSD) R3216333-5 05/04/17 02:28

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	125	ND	94.6	54.9	75.6	43.9	1	10.0-139		J3	53.1	25
Acrolein	125	ND	ND	ND	0.000	0.000	1	10.0-160	J6	J6	0.000	25
Acrylonitrile	125	ND	142	101	114	80.8	1	46.0-159		J3	33.8	23
Benzene	25.0	ND	22.4	19.3	89.6	77.3	1	34.0-147			14.8	20
Bromobenzene	25.0	ND	23.5	20.6	94.0	82.6	1	51.0-137			12.9	20
Bromodichloromethane	25.0	ND	27.2	23.1	109	92.5	1	52.0-135			16.3	20
Bromoform	25.0	ND	24.4	20.5	97.8	81.8	1	50.0-146			17.8	20
Bromomethane	25.0	ND	23.2	21.1	92.7	84.5	1	10.0-160			9.26	23
n-Butylbenzene	25.0	ND	24.4	22.9	97.7	91.7	1	50.0-144			6.38	20
sec-Butylbenzene	25.0	ND	24.6	22.0	98.4	87.9	1	48.0-143			11.3	20
tert-Butylbenzene	25.0	ND	23.1	20.0	92.6	79.9	1	50.0-142			14.7	20
Carbon tetrachloride	25.0	ND	24.1	21.2	96.2	84.7	1	41.0-138			12.8	20
Chlorobenzene	25.0	ND	24.8	22.1	99.3	88.4	1	52.0-141			11.6	20
Chlorodibromomethane	25.0	ND	27.6	23.4	110	93.7	1	54.0-142			16.3	20
Chloroethane	25.0	ND	26.1	21.0	104	83.9	1	23.0-160		J3	21.8	20
2-Chloroethyl vinyl ether	125	ND	ND	ND	0.000	0.000	1	10.0-160	J6	J6	0.000	40
Chloroform	25.0	ND	26.0	22.8	104	91.0	1	50.0-139			13.5	20
Chloromethane	25.0	ND	16.2	15.9	64.6	63.7	1	14.0-151			1.41	20
2-Chlorotoluene	25.0	ND	23.9	21.1	95.6	84.2	1	48.0-142			12.7	20
4-Chlorotoluene	25.0	ND	23.8	21.4	95.0	85.8	1	52.0-139			10.2	20
1,2-Dibromo-3-Chloropropane	25.0	ND	27.9	20.2	111	81.0	1	49.0-144		J3	31.6	24
1,2-Dibromoethane	25.0	ND	25.9	22.3	104	89.1	1	54.0-140			15.2	20
Dibromomethane	25.0	ND	23.8	19.8	95.2	79.2	1	53.0-138			18.3	20
1,2-Dichlorobenzene	25.0	ND	25.3	21.6	101	86.2	1	56.0-139			15.9	20
1,3-Dichlorobenzene	25.0	ND	22.5	19.9	90.1	79.8	1	50.0-141			12.1	20
1,4-Dichlorobenzene	25.0	ND	23.3	21.2	93.2	84.7	1	53.0-136			9.53	20
Dichlorodifluoromethane	25.0	ND	21.8	20.2	87.3	80.8	1	20.0-160			7.73	21
1,1-Dichloroethane	25.0	ND	26.4	23.2	105	92.6	1	47.0-143			13.0	20
1,2-Dichloroethane	25.0	ND	26.3	22.1	105	88.3	1	47.0-141			17.4	20
1,1-Dichloroethene	25.0	ND	26.8	24.0	107	96.1	1	31.0-148			10.8	20
cis-1,2-Dichloroethene	25.0	ND	25.1	22.1	101	88.3	1	43.0-142			12.9	20
trans-1,2-Dichloroethene	25.0	ND	23.9	21.5	95.5	86.1	1	36.0-141			10.5	20
1,2-Dichloropropane	25.0	ND	26.5	22.8	106	91.2	1	51.0-141			15.2	20
1,1-Dichloropropene	25.0	ND	25.9	23.8	104	95.0	1	42.0-146			8.78	20
1,3-Dichloropropane	25.0	ND	26.6	22.9	106	91.6	1	58.0-139			15.0	20
cis-1,3-Dichloropropene	25.0	ND	28.6	24.6	115	98.4	1	53.0-139			15.2	20
trans-1,3-Dichloropropene	25.0	ND	27.7	23.7	111	94.8	1	51.0-143			15.4	20
2,2-Dichloropropane	25.0	ND	26.4	22.5	106	90.0	1	43.0-139			16.0	20
Di-isopropyl ether	25.0	ND	25.5	21.5	102	86.1	1	44.0-144			17.0	20
Ethylbenzene	25.0	ND	22.2	19.9	88.8	79.5	1	42.0-147			11.1	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



L905916-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905916-02 05/04/17 01:46 • (MS) R3216333-4 05/04/17 02:07 • (MSD) R3216333-5 05/04/17 02:28

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	25.0	ND	25.0	23.2	99.8	92.8	1	44.0-146			7.25	21
Isopropylbenzene	25.0	ND	22.5	19.9	90.0	79.7	1	48.0-141			12.0	20
p-Isopropyltoluene	25.0	ND	24.7	22.3	98.8	89.0	1	49.0-146			10.4	20
2-Butanone (MEK)	125	ND	102	75.2	81.4	60.2	1	12.0-149	J3		29.9	24
Methylene Chloride	25.0	ND	23.7	20.6	94.8	82.5	1	42.0-135			13.8	20
4-Methyl-2-pentanone (MIBK)	125	ND	143	114	114	91.5	1	44.0-160	J3		22.2	22
Methyl tert-butyl ether	25.0	ND	25.9	21.3	102	83.2	1	42.0-142			19.7	20
1-Methylnaphthalene	25.0	ND	25.7	23.9	103	95.8	1	26.0-160			7.02	32
2-Methylnaphthalene	25.0	ND	26.0	24.8	104	99.4	1	23.0-155			4.70	34
Naphthalene	25.0	ND	23.4	17.9	93.5	71.8	1	42.0-146	J3		26.3	24
n-Propylbenzene	25.0	ND	21.6	19.7	86.2	78.8	1	47.0-144			8.98	20
Styrene	25.0	ND	23.7	21.3	95.0	85.4	1	47.0-147			10.7	20
1,1,1,2-Tetrachloroethane	25.0	ND	26.4	22.2	106	88.7	1	52.0-140			17.5	20
1,1,2,2-Tetrachloroethane	25.0	ND	25.2	20.3	101	81.4	1	46.0-149	J3		21.3	20
Tetrachloroethene	25.0	ND	23.3	22.3	93.2	89.2	1	38.0-147			4.36	20
Toluene	25.0	ND	22.6	19.8	90.3	79.2	1	42.0-141			13.1	20
1,1,2-Trichlorotrifluoroethane	25.0	ND	23.9	23.0	95.6	92.0	1	40.0-151			3.83	21
1,2,3-Trichlorobenzene	25.0	ND	24.9	20.4	99.8	81.8	1	45.0-145			19.8	22
1,2,4-Trichlorobenzene	25.0	ND	23.9	19.8	95.7	79.1	1	49.0-147			19.0	21
1,1,1-Trichloroethane	25.0	ND	28.2	24.2	113	96.9	1	46.0-140			15.3	20
1,1,2-Trichloroethane	25.0	ND	26.1	22.4	105	89.6	1	54.0-139			15.4	20
Trichloroethene	25.0	ND	24.8	22.3	99.4	89.1	1	32.0-156			10.8	20
Trichlorofluoromethane	25.0	ND	28.2	23.6	113	94.4	1	32.0-152			17.7	20
1,2,3-Trichloropropane	25.0	ND	26.8	22.1	107	88.2	1	54.0-143			19.4	21
1,2,3-Trimethylbenzene	25.0	ND	22.8	19.7	91.3	78.8	1	48.0-138			14.8	20
1,2,4-Trimethylbenzene	25.0	ND	24.6	21.4	98.2	85.5	1	41.0-146			13.9	20
1,3,5-Trimethylbenzene	25.0	ND	23.9	21.1	95.6	84.2	1	44.0-143			12.6	20
Vinyl chloride	25.0	ND	18.2	17.2	72.9	68.8	1	24.0-153			5.69	20
Xylenes, Total	75.0	ND	65.9	58.8	87.9	78.4	1	41.0-148			11.4	20
(S) Toluene-d8					105	103		80.0-120				
(S) Dibromofluoromethane					100	99.6		76.0-123				
(S) a,a,a-Trifluorotoluene					102	103		80.0-120				
(S) 4-Bromofluorobenzene					97.8	98.3		80.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3215539-3 05/03/17 05:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Anthracene	U		0.0140	0.0500
Acenaphthene	U		0.0100	0.0500
Acenaphthylene	U		0.0120	0.0500
Benzo(a)anthracene	0.00548	U	0.00410	0.0500
Benzo(a)pyrene	U		0.0116	0.0500
Benzo(b)fluoranthene	U		0.00212	0.0500
Benzo(g,h,i)perylene	U		0.00227	0.0500
Benzo(k)fluoranthene	U		0.0136	0.0500
Chrysene	U		0.0108	0.0500
Dibenz(a,h)anthracene	U		0.00396	0.0500
Fluoranthene	U		0.0157	0.0500
Fluorene	U		0.00850	0.0500
Indeno(1,2,3-cd)pyrene	U		0.0148	0.0500
Naphthalene	0.0458	U	0.0198	0.250
Phenanthrene	U		0.00820	0.0500
Pyrene	U		0.0117	0.0500
1-Methylnaphthalene	0.00916	U	0.00821	0.250
2-Methylnaphthalene	0.00912	U	0.00902	0.250
2-Chloronaphthalene	U		0.00647	0.250
(S) Nitrobenzene-d5	91.7			31.0-160
(S) 2-Fluorobiphenyl	91.4			48.0-148
(S) p-Terphenyl-d14	97.1			37.0-146

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215539-1 05/03/17 05:00 • (LCSD) R3215539-2 05/03/17 05:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	2.00	1.79	1.80	89.5	89.9	64.0-142			0.520	20
Acenaphthene	2.00	1.84	1.86	92.1	92.8	66.0-132			0.680	20
Acenaphthylene	2.00	1.84	1.86	92.2	92.8	65.0-132			0.720	20
Benzo(a)anthracene	2.00	1.78	1.77	88.9	88.3	59.0-134			0.640	20
Benzo(a)pyrene	2.00	1.81	1.81	90.5	90.7	61.0-145			0.200	20
Benzo(b)fluoranthene	2.00	1.81	1.77	90.4	88.5	57.0-136			2.18	20
Benzo(g,h,i)perylene	2.00	1.87	1.84	93.3	92.0	54.0-140			1.41	20
Benzo(k)fluoranthene	2.00	1.85	1.94	92.5	96.8	57.0-141			4.55	20
Chrysene	2.00	1.83	1.81	91.7	90.3	63.0-140			1.53	20
Dibenz(a,h)anthracene	2.00	1.78	1.75	89.0	87.5	49.0-141			1.65	20
Fluoranthene	2.00	1.92	1.94	95.8	96.8	65.0-143			1.02	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215539-1 05/03/17 05:00 • (LCSD) R3215539-2 05/03/17 05:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	2.00	1.75	1.77	87.7	88.5	64.0-129			0.880	20
Indeno(1,2,3-cd)pyrene	2.00	1.86	1.83	92.8	91.5	53.0-141			1.49	20
Naphthalene	2.00	1.94	1.93	97.1	96.5	68.0-129			0.610	20
Phenanthrene	2.00	1.84	1.83	91.9	91.6	62.0-132			0.360	20
Pyrene	2.00	1.78	1.78	89.2	89.1	58.0-156			0.0900	20
1-Methylnaphthalene	2.00	2.03	1.99	102	99.4	68.0-137			2.11	20
2-Methylnaphthalene	2.00	1.92	1.89	96.1	94.3	68.0-134			1.93	20
2-Chloronaphthalene	2.00	1.84	1.85	91.9	92.5	65.0-129			0.570	20
(S) Nitrobenzene-d5				99.5	96.2	31.0-160				
(S) 2-Fluorobiphenyl				95.9	95.8	48.0-148				
(S) p-Terphenyl-d14				97.1	96.6	37.0-146				

L905670-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905670-11 05/03/17 08:16 • (MS) R3215539-4 05/03/17 08:38 • (MSD) R3215539-5 05/03/17 09:00

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	2.00	ND	1.85	1.81	92.4	90.3	1	60.0-142			2.36	20
Acenaphthene	2.00	ND	1.89	1.86	94.2	92.5	1	46.0-149			1.84	20
Acenaphthylene	2.00	ND	1.91	1.88	95.5	93.9	1	54.0-142			1.69	20
Benzo(a)anthracene	2.00	ND	1.82	1.79	90.9	89.2	1	55.0-134			1.93	20
Benzo(a)pyrene	2.00	ND	1.76	1.73	88.1	86.7	1	58.0-136			1.60	20
Benzo(b)fluoranthene	2.00	ND	1.80	1.78	90.0	89.2	1	54.0-130			0.820	20
Benzo(g,h,i)perylene	2.00	ND	1.67	1.64	83.4	82.0	1	46.0-135			1.71	20
Benzo(k)fluoranthene	2.00	ND	1.78	1.78	88.8	88.9	1	52.0-131			0.110	20
Chrysene	2.00	ND	1.82	1.80	90.8	90.0	1	55.0-137			0.840	20
Dibenz(a,h)anthracene	2.00	ND	1.60	1.59	80.1	79.7	1	36.0-140			0.600	20
Fluoranthene	2.00	ND	2.06	1.98	103	98.9	1	58.0-144			4.18	20
Fluorene	2.00	ND	1.83	1.79	91.7	89.3	1	49.0-142			2.69	20
Indeno(1,2,3-cd)pyrene	2.00	ND	1.67	1.65	83.5	82.7	1	46.0-134			0.970	20
Naphthalene	2.00	1.86	3.88	3.75	101	94.7	1	29.0-154			3.41	20
Phenanthrene	2.00	ND	1.94	1.87	96.9	93.7	1	44.0-145			3.30	20
Pyrene	2.00	ND	1.84	1.80	91.9	90.1	1	62.0-150			2.02	20
1-Methylnaphthalene	2.00	0.590	2.64	2.59	103	99.9	1	26.0-160			2.13	20
2-Methylnaphthalene	2.00	0.273	2.20	2.14	96.2	93.2	1	51.0-150			2.79	20
2-Chloronaphthalene	2.00	ND	1.91	1.86	95.3	93.1	1	57.0-136			2.40	20
(S) Nitrobenzene-d5					105	104		31.0-160				
(S) 2-Fluorobiphenyl					98.1	97.3		48.0-148				
(S) p-Terphenyl-d14					97.0	95.4		37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

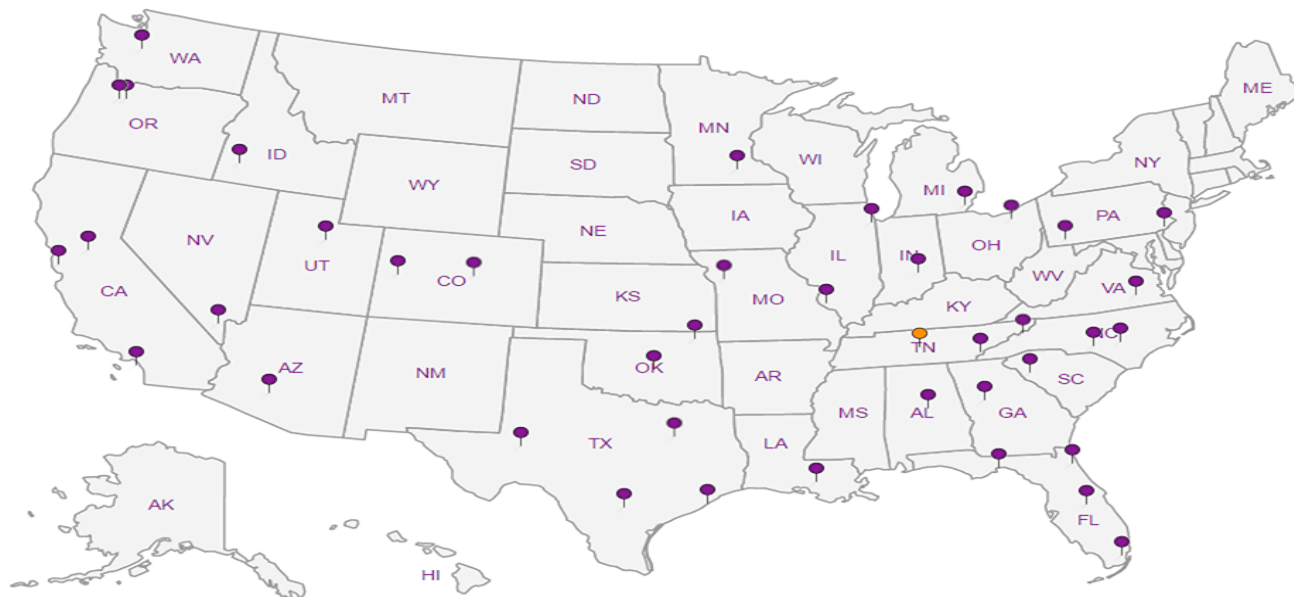
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



ATC Group Service sLLC

108 Ottawa Street
Grayling, MI 49738

Billing Information:

April Hehir
108 Ottawa St.
Grayling, MI 49738

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# 905929

A163

Account: ATCGMI

Template:

Prelogin:

TSR: 341 - John Hawkins

PB:

Shipped Via:

Remarks

Sample # (lab only)

Report to: April Hehir

Email To: april.hehir@atcassociates.com

Project Description: Grayling Ag & ED

City/State Collected: GRAYLING, MI

Phone: 517-227-4710

Client Project # N479631701

Lab Project #

Fax:

Collected by (print): April Hehir

Site/Facility ID #

P.O. #

Collected by (signature): April Hehir

Rush? (Lab MUST Be Notified)

Same Day ☒ Five Day ☐
Next Day ☐ 5 Day (Rad Only) ☐
Two Day ☐ 10 Day (Rad Only) ☐
Three Day ☐

Quote #

Date Results Needed

No.
of
Cntrs

Immediately Packed on Ice N ☐ Y ☒

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

No.
of
Cntrs

VOC

MI-10 METALS

PNA

ATC-2

G

GW

9

4-27-17

1135

6

X

X

X

ATC-6

G

GW

10

4-27-17

1500

6

X

X

X

DUP-1

G

GW

-

4-27-17

-

6

X

X

X

TRIP BLANK

G

GW

-

-

-

2

X

APR 4-27-17

* Matrix:

SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - Waste Water
DW - Drinking Water
OT - Other

Remarks:

Samples returned via:

UPS FedEx Courier

pH Temp

Flow Other

Sample Receipt Checklist

COC Seal Present/Intact: ☒ N
COC Signed/Accurate: ☒ N
Bottles arrive intact: ☒ N
Correct bottles used: ☒ N
Sufficient volume sent: ☒ N
If Applicable
VOA Zero Headspace: ☒ N
Preservation Correct/Checked: ☒ N

Relinquished by: (Signature)

Date:

Time:

Tracking # 7283 8322 2029

Received by: (Signature)

Trip Blank Received: Yes / No

HC / MeOH
TBA

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received:

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

Hold:

Condition:
NCF OK

ATC Group Service sLLC

Sample Delivery Group: L897264
Samples Received: 03/21/2017
Project Number: N479631701
Description: Graying AG & ED

Report To: April Hehir
108 Ottawa Street
Grayling, MI 49738

Entire Report Reviewed By:



John Hawkins
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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VP-1 L897264-01 Air

			Collected by April Hehir	Collected date/time 03/17/17 17:03	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG963239	2	03/23/17 03:23	03/23/17 03:23	MBF

¹Cp²Tc³Ss

VP-2 L897264-02 Air

			Collected by April Hehir	Collected date/time 03/17/17 16:17	Received date/time 03/21/17 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG963239	2	03/23/17 04:08	03/23/17 04:08	MBF

⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Collected date/time: 03/17/17 17:03

L897264

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	2.50	5.94	6.20	14.7		2	WG963239
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG963239
Benzene	71-43-2	78.10	0.400	1.28	ND	ND		2	WG963239
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG963239
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG963239
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG963239
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG963239
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG963239
Carbon disulfide	75-15-0	76.10	0.400	1.24	ND	ND		2	WG963239
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG963239
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG963239
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND	J3 J4	2	WG963239
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG963239
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG963239
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG963239
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG963239
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG963239
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG963239
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG963239
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG963239
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG963239
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG963239
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG963239
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG963239
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG963239
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG963239
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG963239
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG963239
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG963239
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG963239
Ethanol	64-17-5	46.10	1.26	2.38	8.51	16.1		2	WG963239
Ethylbenzene	100-41-4	106	0.400	1.73	ND	ND		2	WG963239
4-Ethyltoluene	622-96-8	120	0.400	1.96	ND	ND		2	WG963239
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG963239
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	0.478	2.36		2	WG963239
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG963239
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG963239
Heptane	142-82-5	100	0.400	1.64	ND	ND		2	WG963239
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG963239
n-Hexane	110-54-3	86.20	0.400	1.41	0.497	1.75		2	WG963239
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG963239
Methylene Chloride	75-09-2	84.90	0.400	1.39	ND	ND		2	WG963239
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG963239
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG963239
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG963239
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG963239
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG963239
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG963239
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG963239
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG963239
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG963239
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG963239
Tetrachloroethylene	127-18-4	166	0.400	2.72	ND	ND		2	WG963239
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	2.33	6.87		2	WG963239
Toluene	108-88-3	92.10	0.400	1.51	ND	ND		2	WG963239
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG963239

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG963239
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG963239
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG963239
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	ND	ND		2	WG963239
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG963239
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG963239
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG963239
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG963239
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG963239
m&p-Xylene	1330-20-7	106	0.800	3.47	ND	ND		2	WG963239
o-Xylene	95-47-6	106	0.400	1.73	ND	ND		2	WG963239
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		99.7				WG963239

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Collected date/time: 03/17/17 16:17

L897264

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	2.50	5.94	6.51	15.5		2	WG963239
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG963239
Benzene	71-43-2	78.10	0.400	1.28	ND	ND		2	WG963239
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG963239
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG963239
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG963239
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG963239
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG963239
Carbon disulfide	75-15-0	76.10	0.400	1.24	ND	ND		2	WG963239
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG963239
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG963239
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND	J3 J4	2	WG963239
Chloroform	67-66-3	119	0.400	1.95	3.15	15.4		2	WG963239
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG963239
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG963239
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG963239
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG963239
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG963239
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG963239
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG963239
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG963239
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG963239
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG963239
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG963239
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG963239
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG963239
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG963239
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG963239
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG963239
1,4-Dioxane	123-91-1	88.10	0.400	1.44	1.00	3.61		2	WG963239
Ethanol	64-17-5	46.10	1.26	2.38	7.27	13.7		2	WG963239
Ethylbenzene	100-41-4	106	0.400	1.73	ND	ND		2	WG963239
4-Ethyltoluene	622-96-8	120	0.400	1.96	ND	ND		2	WG963239
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG963239
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	1.14	5.62		2	WG963239
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG963239
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG963239
Heptane	142-82-5	100	0.400	1.64	ND	ND		2	WG963239
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG963239
n-Hexane	110-54-3	86.20	0.400	1.41	0.520	1.83		2	WG963239
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG963239
Methylene Chloride	75-09-2	84.90	0.400	1.39	ND	ND		2	WG963239
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG963239
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG963239
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG963239
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG963239
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG963239
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG963239
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG963239
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG963239
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG963239
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG963239
Tetrachloroethylene	127-18-4	166	0.400	2.72	0.618	4.19		2	WG963239
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	ND	ND		2	WG963239
Toluene	108-88-3	92.10	0.400	1.51	ND	ND		2	WG963239
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG963239

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 03/17/17 16:17

L897264

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG963239
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG963239
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG963239
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	ND	ND		2	WG963239
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG963239
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG963239
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG963239
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG963239
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG963239
m&p-Xylene	1330-20-7	106	0.800	3.47	ND	ND		2	WG963239
o-Xylene	95-47-6	106	0.400	1.73	ND	ND		2	WG963239
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		100				WG963239

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3205291-2 03/22/17 12:45

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.0569	1.25
Allyl Chloride	U		0.0546	0.200
Benzene	U		0.0460	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0436	0.200
Bromoform	U		0.0786	0.600
Bromomethane	U		0.0609	0.200
1,3-Butadiene	U		0.0563	2.00
Carbon disulfide	U		0.0544	0.200
Carbon tetrachloride	U		0.0585	0.200
Chlorobenzene	U		0.0601	0.200
Chloroethane	U		0.0489	0.200
Chloroform	U		0.0574	0.200
Chloromethane	U		0.0544	0.200
2-Chlorotoluene	U		0.0605	0.200
Cyclohexane	U		0.0534	0.200
Dibromochloromethane	U		0.0494	0.200
1,2-Dibromoethane	U		0.0185	0.200
1,2-Dichlorobenzene	U		0.0603	0.200
1,3-Dichlorobenzene	U		0.0597	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0616	0.200
1,1-Dichloroethane	U		0.0514	0.200
1,1-Dichloroethene	U		0.0490	0.200
cis-1,2-Dichloroethene	U		0.0389	0.200
trans-1,2-Dichloroethene	U		0.0464	0.200
1,2-Dichloropropane	U		0.0599	0.200
cis-1,3-Dichloropropene	U		0.0588	0.200
trans-1,3-Dichloropropene	U		0.0435	0.200
1,4-Dioxane	U		0.0554	0.200
Ethylbenzene	U		0.0506	0.200
4-Ethyltoluene	U		0.0666	0.200
Trichlorofluoromethane	U		0.0673	0.200
Dichlorodifluoromethane	U		0.0601	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0687	0.200
1,2-Dichlorotetrafluoroethane	U		0.0458	0.200
Heptane	U		0.0626	0.200
Hexachloro-1,3-butadiene	U		0.0656	0.630
n-Hexane	U		0.0457	0.200
Isopropylbenzene	U		0.0563	0.200

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3205291-2 03/22/17 12:45

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methylene Chloride	U		0.0465	0.200
Methyl Butyl Ketone	U		0.0682	1.25
2-Butanone (MEK)	U		0.0493	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0650	1.25
Methyl Methacrylate	U		0.0773	0.200
MTBE	U		0.0505	0.200
Naphthalene	U		0.154	0.630
2-Propanol	U		0.0882	1.25
Propene	U		0.0932	0.400
Styrene	U		0.0465	0.200
1,1,2,2-Tetrachloroethane	U		0.0576	0.200
Tetrachloroethylene	U		0.0497	0.200
Tetrahydrofuran	U		0.0508	0.200
Toluene	U		0.0499	0.200
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0665	0.200
1,1,2-Trichloroethane	U		0.0287	0.200
Trichloroethylene	U		0.0545	0.200
1,2,4-Trimethylbenzene	U		0.0483	0.200
1,3,5-Trimethylbenzene	U		0.0631	0.200
2,2,4-Trimethylpentane	U		0.0456	0.200
Vinyl chloride	U		0.0457	0.200
Vinyl Bromide	U		0.0727	0.200
Vinyl acetate	U		0.0639	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
Ethanol	U		0.0832	0.630
(S) 1,4-Bromofluorobenzene	96.2			60.0-140

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205291-1 03/22/17 11:09 • (LCSD) R3205291-3 03/22/17 13:30

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	3.94	3.87	105	103	52.0-158			1.67	25
Propene	3.75	4.40	4.53	117	121	54.0-155			2.90	25
Dichlorodifluoromethane	3.75	4.53	4.65	121	124	69.0-143			2.66	25
1,2-Dichlorotetrafluoroethane	3.75	4.31	4.36	115	116	70.0-130			1.12	25
Chloromethane	3.75	4.28	4.36	114	116	70.0-130			1.73	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205291-1 03/22/17 11:09 • (LCSD) R3205291-3 03/22/17 13:30

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	4.46	4.55	119	121	70.0-130			2.09	25
1,3-Butadiene	3.75	4.24	4.56	113	122	70.0-130			7.37	25
Bromomethane	3.75	4.35	4.12	116	110	70.0-130			5.55	25
Chloroethane	3.75	3.72	5.83	99.3	155	70.0-130		J3 J4	44.1	25
Trichlorofluoromethane	3.75	4.20	4.24	112	113	70.0-130			1.00	25
1,1,2-Trichlorotrifluoroethane	3.75	4.23	4.30	113	115	70.0-130			1.74	25
1,1-Dichloroethene	3.75	4.15	4.20	111	112	70.0-130			1.09	25
1,1-Dichloroethane	3.75	4.22	4.24	113	113	70.0-130			0.460	25
Acetone	3.75	4.01	4.03	107	108	70.0-130			0.560	25
2-Propanol	3.75	4.08	4.07	109	109	66.0-150			0.200	25
Carbon disulfide	3.75	4.04	4.10	108	109	70.0-130			1.59	25
Methylene Chloride	3.75	3.69	3.78	98.3	101	70.0-130			2.41	25
MTBE	3.75	4.09	4.12	109	110	70.0-130			0.800	25
trans-1,2-Dichloroethene	3.75	4.13	4.15	110	111	70.0-130			0.440	25
n-Hexane	3.75	4.08	4.11	109	110	70.0-130			0.550	25
Vinyl acetate	3.75	4.29	4.27	114	114	70.0-130			0.660	25
Methyl Ethyl Ketone	3.75	4.10	4.12	109	110	70.0-130			0.580	25
cis-1,2-Dichloroethene	3.75	4.11	4.11	110	110	70.0-130			0.110	25
Chloroform	3.75	4.13	4.13	110	110	70.0-130			0.000	25
Cyclohexane	3.75	4.26	4.28	114	114	70.0-130			0.330	25
1,1,1-Trichloroethane	3.75	4.19	4.18	112	111	70.0-130			0.350	25
Carbon tetrachloride	3.75	4.18	4.18	111	112	70.0-130			0.220	25
Benzene	3.75	4.08	4.09	109	109	70.0-130			0.270	25
1,2-Dichloroethane	3.75	4.07	4.10	109	109	70.0-130			0.720	25
Heptane	3.75	4.24	4.25	113	113	70.0-130			0.110	25
Trichloroethylene	3.75	4.09	4.11	109	110	70.0-130			0.420	25
1,2-Dichloropropane	3.75	4.17	4.19	111	112	70.0-130			0.560	25
1,4-Dioxane	3.75	3.78	3.69	101	98.4	70.0-152			2.27	25
Bromodichloromethane	3.75	4.14	4.15	110	111	70.0-130			0.440	25
cis-1,3-Dichloropropene	3.75	4.21	4.22	112	112	70.0-130			0.240	25
4-Methyl-2-pentanone (MIBK)	3.75	4.35	4.28	116	114	70.0-142			1.51	25
Toluene	3.75	4.19	4.20	112	112	70.0-130			0.400	25
trans-1,3-Dichloropropene	3.75	4.24	4.25	113	113	70.0-130			0.240	25
1,1,2-Trichloroethane	3.75	4.24	4.20	113	112	70.0-130			0.980	25
Tetrachloroethylene	3.75	4.31	4.32	115	115	70.0-130			0.220	25
Methyl Butyl Ketone	3.75	4.43	4.35	118	116	70.0-150			1.93	25
Dibromochloromethane	3.75	4.49	4.49	120	120	70.0-130			0.100	25
1,2-Dibromoethane	3.75	4.56	4.52	122	121	70.0-130			0.920	25
Chlorobenzene	3.75	4.58	4.53	122	121	70.0-130			1.00	25
Ethylbenzene	3.75	4.23	4.24	113	113	70.0-130			0.130	25

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3205291-1 03/22/17 11:09 • (LCSD) R3205291-3 03/22/17 13:30

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
m&p-Xylene	7.50	8.48	8.47	113	113	70.0-130			0.110	25
o-Xylene	3.75	4.29	4.30	114	115	70.0-130			0.340	25
Styrene	3.75	4.50	4.49	120	120	70.0-130			0.180	25
Bromoform	3.75	4.38	4.42	117	118	70.0-130			1.11	25
1,1,2,2-Tetrachloroethane	3.75	4.25	4.24	113	113	70.0-130			0.310	25
4-Ethyltoluene	3.75	4.35	4.36	116	116	70.0-130			0.250	25
1,3,5-Trimethylbenzene	3.75	4.36	4.37	116	117	70.0-130			0.240	25
1,2,4-Trimethylbenzene	3.75	4.35	4.35	116	116	70.0-130			0.120	25
1,3-Dichlorobenzene	3.75	4.43	4.43	118	118	70.0-130			0.190	25
1,4-Dichlorobenzene	3.75	4.49	4.46	120	119	70.0-130			0.580	25
Benzyl Chloride	3.75	4.45	4.41	119	118	70.0-144			0.890	25
1,2-Dichlorobenzene	3.75	4.33	4.37	115	116	70.0-130			0.940	25
1,2,4-Trichlorobenzene	3.75	3.61	3.63	96.2	96.9	70.0-155			0.700	25
Hexachloro-1,3-butadiene	3.75	3.34	3.44	89.1	91.7	70.0-145			2.84	25
Naphthalene	3.75	3.16	3.17	84.2	84.4	70.0-155			0.200	25
Allyl Chloride	3.75	4.05	4.13	108	110	70.0-130			2.03	25
2-Chlorotoluene	3.75	4.34	4.32	116	115	70.0-130			0.580	25
Methyl Methacrylate	3.75	4.22	4.22	113	113	70.0-130			0.0800	25
Tetrahydrofuran	3.75	4.20	4.15	112	111	70.0-140			0.990	25
2,2,4-Trimethylpentane	3.75	4.25	4.25	113	113	70.0-130			0.130	25
Vinyl Bromide	3.75	4.13	4.21	110	112	70.0-130			1.99	25
Isopropylbenzene	3.75	4.28	4.30	114	115	70.0-130			0.420	25
(S) 1,4-Bromofluorobenzene				99.0	98.7	60.0-140				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
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J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

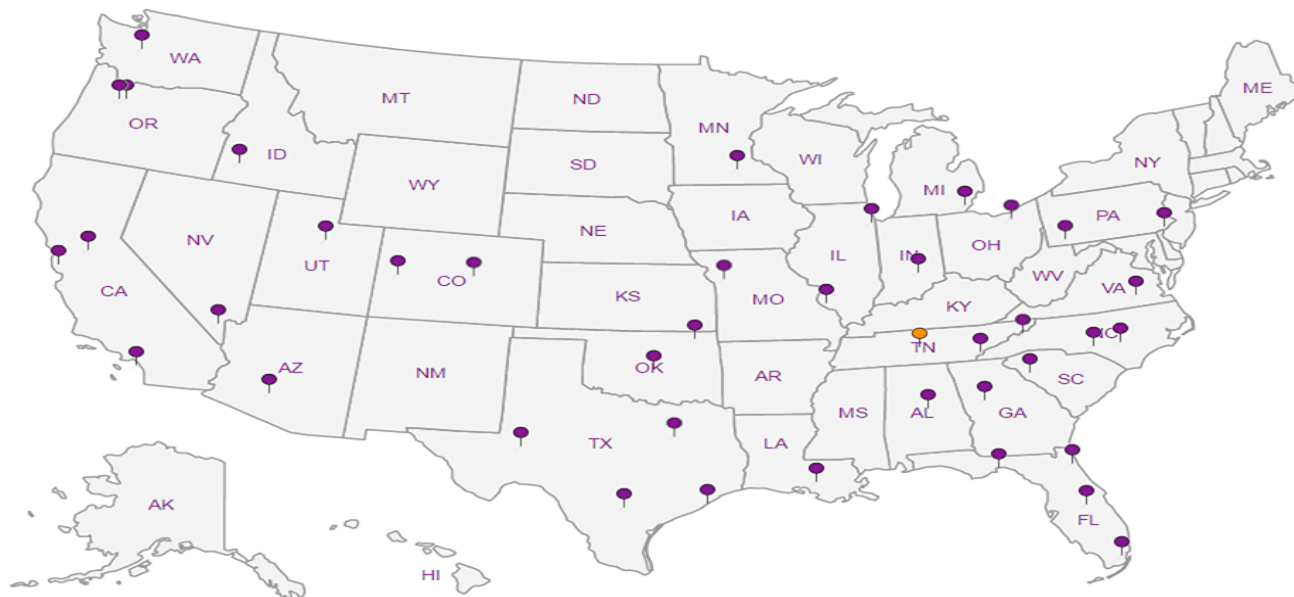
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

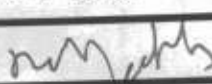
¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



ESC LAB SCIENCES Cooler Receipt Form

Client: <u>ATCGAT</u>		SDG#	<u>247264</u>	
Cooler Received/Opened On: <u>3/21 /17</u>		Temperature:	<u>Amb</u>	
Received By: <u>Nadiar Yakob</u>				
Signature: <u></u>				
		NP	Yes	No
Receipt Check List				
COC Seal Present / Intact?		<u>/</u>	<u>/</u>	
COC Signed / Accurate?			<u>/</u>	
Bottles arrive intact?			<u>/</u>	
Correct bottles used?			<u>/</u>	
Sufficient volume sent?				
If Applicable				
VOA Zero headspace?				
Preservation Correct / Checked?				

ATC Group Service sLLC

Sample Delivery Group: L910403
Samples Received: 05/18/2017
Project Number: N479631701
Description: Grading AG and ED

Report To: April Hehir
108 Ottawa Street
Grayling, MI 49738

Entire Report Reviewed By:



John Hawkins
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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ATC-7 5' L910403-01 Solid

Collected by
April HehirCollected date/time
05/16/17 11:30Received date/time
05/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG982062	1	05/22/17 11:09	05/22/17 11:17	MLW
Mercury by Method 7471A	WG981163	1	05/20/17 05:35	05/23/17 15:06	EL
Metals (ICPMS) by Method 6020	WG981849	5	05/22/17 08:13	05/23/17 12:36	VSS
Metals (ICPMS) by Method 6020	WG981849	5	05/22/17 08:13	05/23/17 18:20	JD
Volatile Organic Compounds (GC/MS) by Method 8260B	WG982734	21	05/16/17 11:30	05/24/17 22:40	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG982734	21	05/16/17 11:30	05/24/17 22:40	DWR
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG982186	1	05/24/17 12:14	05/25/17 04:38	CLG

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

ATC-8 2' L910403-02 Solid

Collected by
April HehirCollected date/time
05/16/17 11:55Received date/time
05/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG982062	1	05/22/17 11:09	05/22/17 11:17	MLW
Mercury by Method 7471A	WG981163	1	05/20/17 05:35	05/23/17 15:44	EL
Metals (ICPMS) by Method 6020	WG981849	5	05/22/17 08:13	05/23/17 14:49	VSS
Metals (ICPMS) by Method 6020	WG981849	5	05/22/17 08:13	05/23/17 18:59	JD
Volatile Organic Compounds (GC/MS) by Method 8260B	WG982734	25.25	05/16/17 11:55	05/24/17 22:53	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG982734	25.25	05/16/17 11:55	05/24/17 22:53	DWR
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG982186	1	05/24/17 12:14	05/25/17 05:00	CLG

ATC-9 2' L910403-03 Solid

Collected by
April HehirCollected date/time
05/16/17 12:25Received date/time
05/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG982062	1	05/22/17 11:09	05/22/17 11:17	MLW
Mercury by Method 7471A	WG981163	1	05/20/17 05:35	05/23/17 15:47	EL
Metals (ICPMS) by Method 6020	WG981849	5	05/22/17 08:13	05/23/17 14:52	VSS
Metals (ICPMS) by Method 6020	WG981849	5	05/22/17 08:13	05/23/17 19:03	JD
Volatile Organic Compounds (GC/MS) by Method 8260B	WG982734	22.5	05/16/17 12:25	05/24/17 23:07	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG982734	22.5	05/16/17 12:25	05/24/17 23:07	DWR
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG982186	1	05/24/17 12:14	05/25/17 05:22	CLG

TRIP BLANK L910403-04 Solid

Collected by
April HehirCollected date/time
05/16/17 00:00Received date/time
05/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG983577	25	05/16/17 00:00	05/26/17 19:25	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG983577	25	05/16/17 00:00	05/26/17 19:25	JAH



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	95.0		1	05/22/2017 11:17	WG982062

1 Cp

2 Tc

3 Ss

4 Cn

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		21.1	1	05/23/2017 15:06	WG981163

5 Sr

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	1490		526	5	05/23/2017 12:36	WG981849
Barium	8710		1050	5	05/23/2017 12:36	WG981849
Cadmium	ND		526	5	05/23/2017 12:36	WG981849
Chromium	3380	Q1	526	5	05/23/2017 12:36	WG981849
Copper	1490		526	5	05/23/2017 12:36	WG981849
Lead	1940	Q1	526	5	05/23/2017 18:20	WG981849
Selenium	ND		526	5	05/23/2017 12:36	WG981849
Silver	ND		526	5	05/23/2017 12:36	WG981849
Zinc	8200		5260	5	05/23/2017 12:36	WG981849

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1110	21	05/24/2017 22:40	WG982734
Acrylonitrile	ND		221	21	05/24/2017 22:40	WG982734
Benzene	ND		22.1	21	05/24/2017 22:40	WG982734
Bromobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Bromodichloromethane	ND		22.1	21	05/24/2017 22:40	WG982734
Bromoform	ND		22.1	21	05/24/2017 22:40	WG982734
Bromomethane	ND		111	21	05/24/2017 22:40	WG982734
n-Butylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
sec-Butylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
tert-Butylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Carbon tetrachloride	ND		22.1	21	05/24/2017 22:40	WG982734
Chlorobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Chlorodibromomethane	ND		22.1	21	05/24/2017 22:40	WG982734
Chloroethane	ND		111	21	05/24/2017 22:40	WG982734
2-Chloroethyl vinyl ether	ND		1110	21	05/24/2017 22:40	WG982734
Chloroform	ND		111	21	05/24/2017 22:40	WG982734
Chloromethane	ND		55.3	21	05/24/2017 22:40	WG982734
2-Chlorotoluene	ND		22.1	21	05/24/2017 22:40	WG982734
4-Chlorotoluene	ND		22.1	21	05/24/2017 22:40	WG982734
1,2-Dibromo-3-Chloropropane	ND		111	21	05/24/2017 22:40	WG982734
1,2-Dibromoethane	ND		22.1	21	05/24/2017 22:40	WG982734
Dibromomethane	ND		22.1	21	05/24/2017 22:40	WG982734
1,2-Dichlorobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
1,3-Dichlorobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
1,4-Dichlorobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Dichlorodifluoromethane	ND		111	21	05/24/2017 22:40	WG982734
1,1-Dichloroethane	ND		22.1	21	05/24/2017 22:40	WG982734
1,2-Dichloroethane	ND		22.1	21	05/24/2017 22:40	WG982734
1,1-Dichloroethene	ND		22.1	21	05/24/2017 22:40	WG982734
cis-1,2-Dichloroethene	ND		22.1	21	05/24/2017 22:40	WG982734
trans-1,2-Dichloroethene	ND		22.1	21	05/24/2017 22:40	WG982734



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		22.1	21	05/24/2017 22:40	WG982734
1,1-Dichloropropene	ND		22.1	21	05/24/2017 22:40	WG982734
1,3-Dichloropropane	ND		22.1	21	05/24/2017 22:40	WG982734
cis-1,3-Dichloropropene	ND		22.1	21	05/24/2017 22:40	WG982734
trans-1,3-Dichloropropene	ND		22.1	21	05/24/2017 22:40	WG982734
2,2-Dichloropropane	ND		22.1	21	05/24/2017 22:40	WG982734
Di-isopropyl ether	ND		22.1	21	05/24/2017 22:40	WG982734
Ethylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Hexachloro-1,3-butadiene	ND		22.1	21	05/24/2017 22:40	WG982734
Isopropylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
p-Isopropyltoluene	ND		22.1	21	05/24/2017 22:40	WG982734
2-Butanone (MEK)	ND		221	21	05/24/2017 22:40	WG982734
Methylene Chloride	ND		111	21	05/24/2017 22:40	WG982734
1-Methylnaphthalene	ND		221	21	05/24/2017 22:40	WG982734
2-Methylnaphthalene	ND		221	21	05/24/2017 22:40	WG982734
4-Methyl-2-pentanone (MIBK)	ND		221	21	05/24/2017 22:40	WG982734
Methyl tert-butyl ether	ND		22.1	21	05/24/2017 22:40	WG982734
Naphthalene	ND		111	21	05/24/2017 22:40	WG982734
n-Propylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Styrene	ND		22.1	21	05/24/2017 22:40	WG982734
1,1,1,2-Tetrachloroethane	ND		22.1	21	05/24/2017 22:40	WG982734
1,1,2,2-Tetrachloroethane	ND		22.1	21	05/24/2017 22:40	WG982734
1,1,2-Trichlorotrifluoroethane	ND		22.1	21	05/24/2017 22:40	WG982734
Tetrachloroethene	ND		22.1	21	05/24/2017 22:40	WG982734
Toluene	ND		111	21	05/24/2017 22:40	WG982734
1,2,3-Trichlorobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
1,2,4-Trichlorobenzene	ND		22.1	21	05/24/2017 22:40	WG982734
1,1,1-Trichloroethane	ND		22.1	21	05/24/2017 22:40	WG982734
1,1,2-Trichloroethane	ND		22.1	21	05/24/2017 22:40	WG982734
Trichloroethene	ND		22.1	21	05/24/2017 22:40	WG982734
Trichlorofluoromethane	ND	J3	111	21	05/24/2017 22:40	WG982734
1,2,3-Trichloropropane	ND		55.3	21	05/24/2017 22:40	WG982734
1,2,4-Trimethylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
1,2,3-Trimethylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
1,3,5-Trimethylbenzene	ND		22.1	21	05/24/2017 22:40	WG982734
Vinyl chloride	ND		22.1	21	05/24/2017 22:40	WG982734
Xylenes, Total	ND		66.3	21	05/24/2017 22:40	WG982734
(S) Toluene-d8	108		80.0-120		05/24/2017 22:40	WG982734
(S) Dibromofluoromethane	102		74.0-131		05/24/2017 22:40	WG982734
(S) a,a,a-Trifluorotoluene	107		80.0-120		05/24/2017 22:40	WG982734
(S) 4-Bromofluorobenzene	101		64.0-132		05/24/2017 22:40	WG982734

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		6.32	1	05/25/2017 04:38	WG982186
Acenaphthene	ND		6.32	1	05/25/2017 04:38	WG982186
Acenaphthylene	ND		6.32	1	05/25/2017 04:38	WG982186
Benzo(a)anthracene	ND		6.32	1	05/25/2017 04:38	WG982186
Benzo(a)pyrene	ND		6.32	1	05/25/2017 04:38	WG982186
Benzo(b)fluoranthene	ND		6.32	1	05/25/2017 04:38	WG982186
Benzo(g,h,i)perylene	ND		6.32	1	05/25/2017 04:38	WG982186
Benzo(k)fluoranthene	ND		6.32	1	05/25/2017 04:38	WG982186
Chrysene	ND		6.32	1	05/25/2017 04:38	WG982186
Dibenz(a,h)anthracene	ND		6.32	1	05/25/2017 04:38	WG982186
Fluoranthene	ND		6.32	1	05/25/2017 04:38	WG982186



Collected date/time: 05/16/17 11:30

L910403

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		6.32	1	05/25/2017 04:38	WG982186
Indeno(1,2,3-cd)pyrene	ND		6.32	1	05/25/2017 04:38	WG982186
Naphthalene	ND		21.1	1	05/25/2017 04:38	WG982186
Phenanthrene	ND		6.32	1	05/25/2017 04:38	WG982186
Pyrene	ND		6.32	1	05/25/2017 04:38	WG982186
1-Methylnaphthalene	ND		21.1	1	05/25/2017 04:38	WG982186
2-Methylnaphthalene	ND		21.1	1	05/25/2017 04:38	WG982186
2-Chloronaphthalene	ND		21.1	1	05/25/2017 04:38	WG982186
(S) p-Terphenyl-d14	56.6		23.0-120		05/25/2017 04:38	WG982186
(S) Nitrobenzene-d5	53.4		14.0-149		05/25/2017 04:38	WG982186
(S) 2-Fluorobiphenyl	73.4		34.0-125		05/25/2017 04:38	WG982186

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	96.2		1	05/22/2017 11:17	WG982062

Mercury by Method 7471A

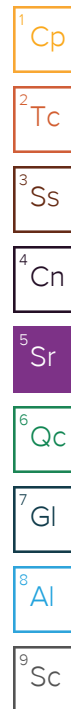
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		20.8	1	05/23/2017 15:44	WG981163

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	770		520	5	05/23/2017 14:49	WG981849
Barium	12400		1040	5	05/23/2017 14:49	WG981849
Cadmium	ND		520	5	05/23/2017 14:49	WG981849
Chromium	2930		520	5	05/23/2017 14:49	WG981849
Copper	3100		520	5	05/23/2017 14:49	WG981849
Lead	7910		520	5	05/23/2017 18:59	WG981849
Selenium	ND		520	5	05/23/2017 14:49	WG981849
Silver	ND		520	5	05/23/2017 14:49	WG981849
Zinc	11500		5200	5	05/23/2017 14:49	WG981849

Volatile Organic Compounds (GC/MS) by Method 8260B

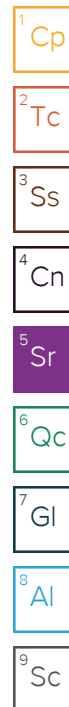
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1310	25.25	05/24/2017 22:53	WG982734
Acrylonitrile	ND		262	25.25	05/24/2017 22:53	WG982734
Benzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Bromobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Bromodichloromethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
Bromoform	ND		26.2	25.25	05/24/2017 22:53	WG982734
Bromomethane	ND		131	25.25	05/24/2017 22:53	WG982734
n-Butylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
sec-Butylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
tert-Butylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Carbon tetrachloride	ND		26.2	25.25	05/24/2017 22:53	WG982734
Chlorobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Chlorodibromomethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
Chloroethane	ND		131	25.25	05/24/2017 22:53	WG982734
2-Chloroethyl vinyl ether	ND		1310	25.25	05/24/2017 22:53	WG982734
Chloroform	ND		131	25.25	05/24/2017 22:53	WG982734
Chloromethane	ND		65.6	25.25	05/24/2017 22:53	WG982734
2-Chlorotoluene	ND		26.2	25.25	05/24/2017 22:53	WG982734
4-Chlorotoluene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,2-Dibromo-3-Chloropropane	ND		131	25.25	05/24/2017 22:53	WG982734
1,2-Dibromoethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
Dibromomethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,2-Dichlorobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,3-Dichlorobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,4-Dichlorobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Dichlorodifluoromethane	ND		131	25.25	05/24/2017 22:53	WG982734
1,1-Dichloroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,2-Dichloroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1-Dichloroethene	ND		26.2	25.25	05/24/2017 22:53	WG982734
cis-1,2-Dichloroethene	ND		26.2	25.25	05/24/2017 22:53	WG982734
trans-1,2-Dichloroethene	ND		26.2	25.25	05/24/2017 22:53	WG982734





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1-Dichloropropene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,3-Dichloropropane	ND		26.2	25.25	05/24/2017 22:53	WG982734
cis-1,3-Dichloropropene	ND		26.2	25.25	05/24/2017 22:53	WG982734
trans-1,3-Dichloropropene	ND		26.2	25.25	05/24/2017 22:53	WG982734
2,2-Dichloropropane	ND		26.2	25.25	05/24/2017 22:53	WG982734
Di-isopropyl ether	ND		26.2	25.25	05/24/2017 22:53	WG982734
Ethylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Hexachloro-1,3-butadiene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Isopropylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
p-Isopropyltoluene	ND		26.2	25.25	05/24/2017 22:53	WG982734
2-Butanone (MEK)	ND		26.2	25.25	05/24/2017 22:53	WG982734
Methylene Chloride	ND		131	25.25	05/24/2017 22:53	WG982734
1-Methylnaphthalene	ND		26.2	25.25	05/24/2017 22:53	WG982734
2-Methylnaphthalene	ND		26.2	25.25	05/24/2017 22:53	WG982734
4-Methyl-2-pentanone (MIBK)	ND		26.2	25.25	05/24/2017 22:53	WG982734
Methyl tert-butyl ether	ND		26.2	25.25	05/24/2017 22:53	WG982734
Naphthalene	ND		131	25.25	05/24/2017 22:53	WG982734
n-Propylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Styrene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1,1,2-Tetrachloroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1,2,2-Tetrachloroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1,2-Trichlorotrifluoroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
Tetrachloroethene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Toluene	ND		131	25.25	05/24/2017 22:53	WG982734
1,2,3-Trichlorobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,2,4-Trichlorobenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1,1-Trichloroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,1,2-Trichloroethane	ND		26.2	25.25	05/24/2017 22:53	WG982734
Trichloroethene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Trichlorofluoromethane	ND		131	25.25	05/24/2017 22:53	WG982734
1,2,3-Trichloropropane	ND		65.6	25.25	05/24/2017 22:53	WG982734
1,2,4-Trimethylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,2,3-Trimethylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
1,3,5-Trimethylbenzene	ND		26.2	25.25	05/24/2017 22:53	WG982734
Vinyl chloride	ND		26.2	25.25	05/24/2017 22:53	WG982734
Xylenes, Total	ND		78.8	25.25	05/24/2017 22:53	WG982734
(S) Toluene-d8	109		80.0-120		05/24/2017 22:53	WG982734
(S) Dibromofluoromethane	101		74.0-131		05/24/2017 22:53	WG982734
(S) a,a,a-Trifluorotoluene	107		80.0-120		05/24/2017 22:53	WG982734
(S) 4-Bromofluorobenzene	105		64.0-132		05/24/2017 22:53	WG982734



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		6.24	1	05/25/2017 05:00	WG982186
Acenaphthene	ND		6.24	1	05/25/2017 05:00	WG982186
Acenaphthylene	ND		6.24	1	05/25/2017 05:00	WG982186
Benzo(a)anthracene	10.2		6.24	1	05/25/2017 05:00	WG982186
Benzo(a)pyrene	10.3		6.24	1	05/25/2017 05:00	WG982186
Benzo(b)fluoranthene	16.9		6.24	1	05/25/2017 05:00	WG982186
Benzo(g,h,i)perylene	9.72		6.24	1	05/25/2017 05:00	WG982186
Benzo(k)fluoranthene	ND		6.24	1	05/25/2017 05:00	WG982186
Chrysene	13.2		6.24	1	05/25/2017 05:00	WG982186
Dibenz(a,h)anthracene	ND		6.24	1	05/25/2017 05:00	WG982186
Fluoranthene	23.8		6.24	1	05/25/2017 05:00	WG982186



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		6.24	1	05/25/2017 05:00	WG982186
Indeno(1,2,3-cd)pyrene	8.96		6.24	1	05/25/2017 05:00	WG982186
Naphthalene	ND		20.8	1	05/25/2017 05:00	WG982186
Phenanthrene	14.3		6.24	1	05/25/2017 05:00	WG982186
Pyrene	17.9		6.24	1	05/25/2017 05:00	WG982186
1-Methylnaphthalene	ND		20.8	1	05/25/2017 05:00	WG982186
2-Methylnaphthalene	ND		20.8	1	05/25/2017 05:00	WG982186
2-Chloronaphthalene	ND		20.8	1	05/25/2017 05:00	WG982186
(S) p-Terphenyl-d14	62.1		23.0-120		05/25/2017 05:00	WG982186
(S) Nitrobenzene-d5	57.7		14.0-149		05/25/2017 05:00	WG982186
(S) 2-Fluorobiphenyl	79.6		34.0-125		05/25/2017 05:00	WG982186

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	95.2		1	05/22/2017 11:17	WG982062

Mercury by Method 7471A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Mercury	ND		21.0	1	05/23/2017 15:47	WG981163

Metals (ICPMS) by Method 6020

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Arsenic	930		525	5	05/23/2017 14:52	WG981849
Barium	16100		1050	5	05/23/2017 14:52	WG981849
Cadmium	ND		525	5	05/23/2017 14:52	WG981849
Chromium	2990		525	5	05/23/2017 14:52	WG981849
Copper	4000		525	5	05/23/2017 14:52	WG981849
Lead	14700		525	5	05/23/2017 19:03	WG981849
Selenium	ND		525	5	05/23/2017 14:52	WG981849
Silver	ND		525	5	05/23/2017 14:52	WG981849
Zinc	10800		5250	5	05/23/2017 14:52	WG981849

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	ug/kg		ug/kg		date / time	
Acetone	ND		1180	22.5	05/24/2017 23:07	WG982734
Acrylonitrile	ND		236	22.5	05/24/2017 23:07	WG982734
Benzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Bromobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Bromodichloromethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
Bromoform	ND		23.6	22.5	05/24/2017 23:07	WG982734
Bromomethane	ND		118	22.5	05/24/2017 23:07	WG982734
n-Butylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
sec-Butylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
tert-Butylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Carbon tetrachloride	ND		23.6	22.5	05/24/2017 23:07	WG982734
Chlorobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Chlorodibromomethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
Chloroethane	ND		118	22.5	05/24/2017 23:07	WG982734
2-Chloroethyl vinyl ether	ND		1180	22.5	05/24/2017 23:07	WG982734
Chloroform	ND		118	22.5	05/24/2017 23:07	WG982734
Chloromethane	ND		59.1	22.5	05/24/2017 23:07	WG982734
2-Chlorotoluene	ND		23.6	22.5	05/24/2017 23:07	WG982734
4-Chlorotoluene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,2-Dibromo-3-Chloropropane	ND		118	22.5	05/24/2017 23:07	WG982734
1,2-Dibromoethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
Dibromomethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,2-Dichlorobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,3-Dichlorobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,4-Dichlorobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Dichlorodifluoromethane	ND		118	22.5	05/24/2017 23:07	WG982734
1,1-Dichloroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,2-Dichloroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1-Dichloroethene	ND		23.6	22.5	05/24/2017 23:07	WG982734
cis-1,2-Dichloroethene	ND		23.6	22.5	05/24/2017 23:07	WG982734
trans-1,2-Dichloroethene	ND		23.6	22.5	05/24/2017 23:07	WG982734

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1-Dichloropropene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,3-Dichloropropane	ND		23.6	22.5	05/24/2017 23:07	WG982734
cis-1,3-Dichloropropene	ND		23.6	22.5	05/24/2017 23:07	WG982734
trans-1,3-Dichloropropene	ND		23.6	22.5	05/24/2017 23:07	WG982734
2,2-Dichloropropane	ND		23.6	22.5	05/24/2017 23:07	WG982734
Di-isopropyl ether	ND		23.6	22.5	05/24/2017 23:07	WG982734
Ethylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Hexachloro-1,3-butadiene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Isopropylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
p-Isopropyltoluene	ND		23.6	22.5	05/24/2017 23:07	WG982734
2-Butanone (MEK)	ND		236	22.5	05/24/2017 23:07	WG982734
Methylene Chloride	ND		118	22.5	05/24/2017 23:07	WG982734
1-Methylnaphthalene	ND		236	22.5	05/24/2017 23:07	WG982734
2-Methylnaphthalene	ND		236	22.5	05/24/2017 23:07	WG982734
4-Methyl-2-pentanone (MIBK)	ND		236	22.5	05/24/2017 23:07	WG982734
Methyl tert-butyl ether	ND		23.6	22.5	05/24/2017 23:07	WG982734
Naphthalene	ND		118	22.5	05/24/2017 23:07	WG982734
n-Propylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Styrene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1,1,2-Tetrachloroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1,2,2-Tetrachloroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1,2-Trichlorotrifluoroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
Tetrachloroethene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Toluene	ND		118	22.5	05/24/2017 23:07	WG982734
1,2,3-Trichlorobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,2,4-Trichlorobenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1,1-Trichloroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,1,2-Trichloroethane	ND		23.6	22.5	05/24/2017 23:07	WG982734
Trichloroethene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Trichlorofluoromethane	ND		118	22.5	05/24/2017 23:07	WG982734
1,2,3-Trichloropropane	ND		59.1	22.5	05/24/2017 23:07	WG982734
1,2,4-Trimethylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,2,3-Trimethylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
1,3,5-Trimethylbenzene	ND		23.6	22.5	05/24/2017 23:07	WG982734
Vinyl chloride	ND		23.6	22.5	05/24/2017 23:07	WG982734
Xylenes, Total	ND		70.9	22.5	05/24/2017 23:07	WG982734
(S) Toluene-d8	107		80.0-120		05/24/2017 23:07	WG982734
(S) Dibromofluoromethane	101		74.0-131		05/24/2017 23:07	WG982734
(S) a,a,a-Trifluorotoluene	106		80.0-120		05/24/2017 23:07	WG982734
(S) 4-Bromofluorobenzene	104		64.0-132		05/24/2017 23:07	WG982734

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Anthracene	7.07		6.31	1	05/25/2017 05:22	WG982186
Acenaphthene	ND		6.31	1	05/25/2017 05:22	WG982186
Acenaphthylene	ND		6.31	1	05/25/2017 05:22	WG982186
Benzo(a)anthracene	36.3		6.31	1	05/25/2017 05:22	WG982186
Benzo(a)pyrene	38.4		6.31	1	05/25/2017 05:22	WG982186
Benzo(b)fluoranthene	57.9		6.31	1	05/25/2017 05:22	WG982186
Benzo(g,h,i)perylene	33.5		6.31	1	05/25/2017 05:22	WG982186
Benzo(k)fluoranthene	14.1		6.31	1	05/25/2017 05:22	WG982186
Chrysene	37.0		6.31	1	05/25/2017 05:22	WG982186
Dibenz(a,h)anthracene	8.08		6.31	1	05/25/2017 05:22	WG982186
Fluoranthene	83.2		6.31	1	05/25/2017 05:22	WG982186



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result (dry) ug/kg	Qualifier	RDL (dry) ug/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		6.31	1	05/25/2017 05:22	WG982186
Indeno(1,2,3-cd)pyrene	33.6		6.31	1	05/25/2017 05:22	WG982186
Naphthalene	ND		21.0	1	05/25/2017 05:22	WG982186
Phenanthrene	54.4		6.31	1	05/25/2017 05:22	WG982186
Pyrene	60.5		6.31	1	05/25/2017 05:22	WG982186
1-Methylnaphthalene	ND		21.0	1	05/25/2017 05:22	WG982186
2-Methylnaphthalene	ND		21.0	1	05/25/2017 05:22	WG982186
2-Chloronaphthalene	ND		21.0	1	05/25/2017 05:22	WG982186
(S) p-Terphenyl-d14	57.4		23.0-120		05/25/2017 05:22	WG982186
(S) Nitrobenzene-d5	54.5		14.0-149		05/25/2017 05:22	WG982186
(S) 2-Fluorobiphenyl	76.6		34.0-125		05/25/2017 05:22	WG982186

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/kg	Qualifier	RDL ug/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1250	25	05/26/2017 19:25	WG983577
Acrylonitrile	ND		250	25	05/26/2017 19:25	WG983577
Benzene	ND		25.0	25	05/26/2017 19:25	WG983577
Bromobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Bromodichloromethane	ND		25.0	25	05/26/2017 19:25	WG983577
Bromoform	ND		25.0	25	05/26/2017 19:25	WG983577
Bromomethane	ND		125	25	05/26/2017 19:25	WG983577
n-Butylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
sec-Butylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
tert-Butylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Carbon tetrachloride	ND		25.0	25	05/26/2017 19:25	WG983577
Chlorobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Chlorodibromomethane	ND		25.0	25	05/26/2017 19:25	WG983577
Chloroethane	ND		125	25	05/26/2017 19:25	WG983577
2-Chloroethyl vinyl ether	ND		1250	25	05/26/2017 19:25	WG983577
Chloroform	ND		125	25	05/26/2017 19:25	WG983577
Chloromethane	ND		62.5	25	05/26/2017 19:25	WG983577
2-Chlorotoluene	ND		25.0	25	05/26/2017 19:25	WG983577
4-Chlorotoluene	ND		25.0	25	05/26/2017 19:25	WG983577
1,2-Dibromo-3-Chloropropane	ND		125	25	05/26/2017 19:25	WG983577
1,2-Dibromoethane	ND		25.0	25	05/26/2017 19:25	WG983577
Dibromomethane	ND		25.0	25	05/26/2017 19:25	WG983577
1,2-Dichlorobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
1,3-Dichlorobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
1,4-Dichlorobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Dichlorodifluoromethane	ND		125	25	05/26/2017 19:25	WG983577
1,1-Dichloroethane	ND		25.0	25	05/26/2017 19:25	WG983577
1,2-Dichloroethane	ND		25.0	25	05/26/2017 19:25	WG983577
1,1-Dichloroethene	ND		25.0	25	05/26/2017 19:25	WG983577
cis-1,2-Dichloroethene	ND		25.0	25	05/26/2017 19:25	WG983577
trans-1,2-Dichloroethene	ND		25.0	25	05/26/2017 19:25	WG983577
1,2-Dichloropropane	ND		25.0	25	05/26/2017 19:25	WG983577
1,1-Dichloropropene	ND		25.0	25	05/26/2017 19:25	WG983577
1,3-Dichloropropane	ND		25.0	25	05/26/2017 19:25	WG983577
cis-1,3-Dichloropropene	ND		25.0	25	05/26/2017 19:25	WG983577
trans-1,3-Dichloropropene	ND		25.0	25	05/26/2017 19:25	WG983577
2,2-Dichloropropane	ND		25.0	25	05/26/2017 19:25	WG983577
Di-isopropyl ether	ND		25.0	25	05/26/2017 19:25	WG983577
Ethylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Hexachloro-1,3-butadiene	ND		25.0	25	05/26/2017 19:25	WG983577
Isopropylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
p-Isopropyltoluene	ND		25.0	25	05/26/2017 19:25	WG983577
2-Butanone (MEK)	ND		250	25	05/26/2017 19:25	WG983577
Methylene Chloride	ND		125	25	05/26/2017 19:25	WG983577
1-Methylnaphthalene	ND		250	25	05/26/2017 19:25	WG983577
2-Methylnaphthalene	ND		250	25	05/26/2017 19:25	WG983577
4-Methyl-2-pentanone (MIBK)	ND		250	25	05/26/2017 19:25	WG983577
Methyl tert-butyl ether	ND		25.0	25	05/26/2017 19:25	WG983577
Naphthalene	ND		125	25	05/26/2017 19:25	WG983577
n-Propylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Styrene	ND		25.0	25	05/26/2017 19:25	WG983577
1,1,1,2-Tetrachloroethane	ND		25.0	25	05/26/2017 19:25	WG983577
1,1,2,2-Tetrachloroethane	ND		25.0	25	05/26/2017 19:25	WG983577
1,1,2-Trichlorotrifluoroethane	ND		25.0	25	05/26/2017 19:25	WG983577
Tetrachloroethene	ND		25.0	25	05/26/2017 19:25	WG983577
Toluene	ND		125	25	05/26/2017 19:25	WG983577

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 05/16/17 00:00

L910403

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/kg	Qualifier	RDL ug/kg	Dilution	Analysis date / time	Batch
1,2,3-Trichlorobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
1,2,4-Trichlorobenzene	ND		25.0	25	05/26/2017 19:25	WG983577
1,1,1-Trichloroethane	ND		25.0	25	05/26/2017 19:25	WG983577
1,1,2-Trichloroethane	ND		25.0	25	05/26/2017 19:25	WG983577
Trichloroethene	ND		25.0	25	05/26/2017 19:25	WG983577
Trichlorofluoromethane	ND		125	25	05/26/2017 19:25	WG983577
1,2,3-Trichloropropane	ND		62.5	25	05/26/2017 19:25	WG983577
1,2,4-Trimethylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
1,2,3-Trimethylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
1,3,5-Trimethylbenzene	ND		25.0	25	05/26/2017 19:25	WG983577
Vinyl chloride	ND		25.0	25	05/26/2017 19:25	WG983577
Xylenes, Total	ND		75.0	25	05/26/2017 19:25	WG983577
(S) Toluene-d8	100		80.0-120		05/26/2017 19:25	WG983577
(S) Dibromofluoromethane	91.6		74.0-131		05/26/2017 19:25	WG983577
(S) o,o,o-Trifluorotoluene	100		80.0-120		05/26/2017 19:25	WG983577
(S) 4-Bromofluorobenzene	103		64.0-132		05/26/2017 19:25	WG983577

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Total Solids by Method 2540 G-2011

[L910403-01,02,03](#)

Method Blank (MB)

(MB) R3220057-1 05/22/17 11:17

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.000300			

L910388-03 Original Sample (OS) • Duplicate (DUP)

(OS) L910388-03 05/22/17 11:17 • (DUP) R3220057-3 05/22/17 11:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	85.1	85.3	1	0.231		5

Laboratory Control Sample (LCS)

(LCS) R3220057-2 05/22/17 11:17

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3220314-1 05/23/17 14:59

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/kg		ug/kg	ug/kg
Mercury	U		2.80	20.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3220314-2 05/23/17 15:01 • (LCSD) R3220314-3 05/23/17 15:04

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/kg	ug/kg	ug/kg	%	%	%			%	%
Mercury	300	284	285	95	95	80-120			0	20

L910403-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910403-01 05/23/17 15:06 • (MS) R3220314-4 05/23/17 15:14 • (MSD) R3220314-5 05/23/17 15:16

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/kg	ug/kg	ug/kg	mg/kg	%	%		%			%	%
Mercury	316	ND	292	272	90	83	1	75-125			7	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3220277-1 05/23/17 12:25

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Arsenic	U		12.5	500
Barium	U		160	1000
Cadmium	U		80.0	500
Chromium	U		270	500
Copper	U		260	500
Selenium	U		190	500
Silver	U		155	500
Zinc	U		1280	5000

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3220277-8 05/23/17 18:07

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Lead	U		120	500

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3220277-2 05/23/17 12:29 • (LCSD) R3220277-3 05/23/17 12:32

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100000	113000	110000	113	110	80-120			3	20
Barium	100000	115000	110000	115	110	80-120			5	20
Cadmium	100000	119000	115000	119	115	80-120			4	20
Chromium	100000	113000	110000	113	110	80-120			3	20
Selenium	100000	110000	109000	110	109	80-120			1	20
Silver	20000	23400	22800	117	114	80-120			3	20
Zinc	100000	116000	114000	116	114	80-120			2	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3220277-9 05/23/17 18:11 • (LCSD) R3220277-10 05/23/17 18:14

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Copper	100000	110000	110000	110	110	80-120			0	20
Lead	100000	109000	109000	109	109	80-120			0	20



L910403-01,02,03

L910403-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910403-01 05/23/17 12:36 • (MS) R3220277-6 05/23/17 12:46 • (MSD) R3220277-7 05/23/17 12:49

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	21100	1490	110000	111000	103	104	5	75-125			1	20
Barium	21100	8710	119000	119000	105	105	5	75-125			0	20
Cadmium	21100	ND	115000	117000	110	111	5	75-125			2	20
Chromium	21100	3380	114000	114000	105	105	5	75-125			0	20
Copper	21100	1490	113000	114000	106	107	5	75-125	E	E	5	20
Selenium	21100	ND	108000	109000	102	103	5	75-125			1	20
Silver	4210	ND	23000	23000	109	109	5	75-125			0	20
Zinc	21100	8200	120000	120000	106	106	5	75-125			0	20

L910403-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910403-01 05/23/17 18:20 • (MS) R3220277-13 05/23/17 18:30 • (MSD) R3220277-14 05/23/17 18:34

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	21100	1940	110000	113000	102	105	5	75-125			3	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3220975-3 05/24/17 10:40

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Acetone	U		10.0	50.0
Acrylonitrile	U		1.79	10.0
Benzene	U		0.270	1.00
Bromobenzene	U		0.284	1.00
Bromodichloromethane	U		0.254	1.00
Bromoform	U		0.424	1.00
Bromomethane	U		1.34	5.00
n-Butylbenzene	U		0.258	1.00
sec-Butylbenzene	U		0.201	1.00
tert-Butylbenzene	U		0.206	1.00
Carbon tetrachloride	U		0.328	1.00
Chlorobenzene	U		0.212	1.00
Chlorodibromomethane	U		0.373	1.00
Chloroethane	U		0.946	5.00
2-Chloroethyl vinyl ether	U		2.34	50.0
Chloroform	U		0.229	5.00
Chloromethane	U		0.375	2.50
2-Chlorotoluene	U		0.301	1.00
4-Chlorotoluene	U		0.240	1.00
1,2-Dibromo-3-Chloropropane	U		1.05	5.00
1,2-Dibromoethane	U		0.343	1.00
Dibromomethane	U		0.382	1.00
1,2-Dichlorobenzene	U		0.305	1.00
1,3-Dichlorobenzene	U		0.239	1.00
1,4-Dichlorobenzene	U		0.226	1.00
Dichlorodifluoromethane	U		0.713	5.00
1,1-Dichloroethane	U		0.199	1.00
1,2-Dichloroethane	U		0.265	1.00
1,1-Dichloroethene	U		0.303	1.00
cis-1,2-Dichloroethene	U		0.235	1.00
trans-1,2-Dichloroethene	U		0.264	1.00
1,2-Dichloropropane	U		0.358	1.00
1,1-Dichloropropene	U		0.317	1.00
1,3-Dichloropropane	U		0.207	1.00
cis-1,3-Dichloropropene	U		0.262	1.00
trans-1,3-Dichloropropene	U		0.267	1.00
2,2-Dichloropropane	U		0.279	1.00
Di-isopropyl ether	U		0.248	1.00
Ethylbenzene	U		0.297	1.00
Hexachloro-1,3-butadiene	U		0.342	1.00

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3220975-3 05/24/17 10:40

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Isopropylbenzene	U		0.243	1.00
p-Isopropyltoluene	U		0.204	1.00
2-Butanone (MEK)	U		4.68	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		1.88	10.0
Methyl tert-butyl ether	U		0.212	1.00
1-Methylnaphthalene	U		0.827	10.0
2-Methylnaphthalene	U		0.833	10.0
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.206	1.00
Styrene	U		0.234	1.00
1,1,1,2-Tetrachloroethane	U		0.264	1.00
1,1,2,2-Tetrachloroethane	U		0.365	1.00
Tetrachloroethene	U		0.276	1.00
Toluene	U		0.434	5.00
1,1,2-Trichlorotrifluoroethane	U		0.365	1.00
1,2,3-Trichlorobenzene	U		0.306	1.00
1,2,4-Trichlorobenzene	U		0.388	1.00
1,1,1-Trichloroethane	U		0.286	1.00
1,1,2-Trichloroethane	U		0.277	1.00
Trichloroethene	U		0.279	1.00
Trichlorofluoromethane	U		0.382	5.00
1,2,3-Trichloropropane	U		0.741	2.50
1,2,3-Trimethylbenzene	U		0.287	1.00
1,2,4-Trimethylbenzene	U		0.211	1.00
1,3,5-Trimethylbenzene	U		0.266	1.00
Vinyl chloride	U		0.291	1.00
Xylenes, Total	U		0.698	3.00
(S) Toluene-d8	111			80.0-120
(S) Dibromofluoromethane	104			74.0-131
(S) a,a,a-Trifluorotoluene	109			80.0-120
(S) 4-Bromofluorobenzene	103			64.0-132

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3220975-1 05/24/17 10:01 • (LCSD) R3220975-2 05/24/17 10:14

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	125	147	99.7	117	11.0-160			16.2	23
Acrylonitrile	125	101	116	81.1	92.5	61.0-143			13.2	20
Benzene	25.0	23.8	25.8	95.1	103	71.0-124			8.10	20
Bromobenzene	25.0	23.0	24.3	91.9	97.3	78.0-120			5.73	20
Bromodichloromethane	25.0	23.6	25.6	94.2	102	75.0-120			8.39	20
Bromoform	25.0	22.6	24.3	90.2	97.3	65.0-133			7.50	20
Bromomethane	25.0	23.7	25.9	94.8	104	26.0-160			8.87	20
n-Butylbenzene	25.0	21.4	23.1	85.6	92.6	73.0-126			7.83	20
sec-Butylbenzene	25.0	22.7	24.3	90.6	97.1	75.0-121			6.86	20
tert-Butylbenzene	25.0	22.7	23.9	90.8	95.5	74.0-122			5.09	20
Carbon tetrachloride	25.0	20.0	24.3	80.0	97.1	66.0-123			19.3	20
Chlorobenzene	25.0	23.4	24.9	93.8	99.5	79.0-121			5.99	20
Chlorodibromomethane	25.0	23.3	25.4	93.0	102	74.0-128			8.85	20
Chloroethane	25.0	24.2	26.5	97.0	106	51.0-147			8.96	20
2-Chloroethyl vinyl ether	125	118	132	94.2	105	10.0-160			11.1	22
Chloroform	25.0	23.2	25.2	92.9	101	73.0-123			8.05	20
Chloromethane	25.0	26.6	28.1	106	112	51.0-138			5.62	20
2-Chlorotoluene	25.0	23.4	24.7	93.5	98.9	72.0-124			5.66	20
4-Chlorotoluene	25.0	23.0	24.4	92.0	97.6	78.0-120			5.91	20
1,2-Dibromo-3-Chloropropane	25.0	18.5	20.1	73.9	80.4	65.0-126			8.47	20
1,2-Dibromoethane	25.0	22.7	24.9	90.8	99.7	78.0-122			9.38	20
Dibromomethane	25.0	23.8	26.1	95.2	104	79.0-120			9.16	20
1,2-Dichlorobenzene	25.0	23.1	24.8	92.5	99.3	80.0-120			7.05	20
1,3-Dichlorobenzene	25.0	22.6	23.7	90.6	94.9	72.0-123			4.63	20
1,4-Dichlorobenzene	25.0	22.6	24.0	90.5	95.8	77.0-120			5.67	20
Dichlorodifluoromethane	25.0	24.0	26.8	96.2	107	49.0-155			11.0	20
1,1-Dichloroethane	25.0	25.0	27.2	100	109	70.0-128			8.26	20
1,2-Dichloroethane	25.0	24.2	26.4	96.9	106	69.0-128			8.70	20
1,1-Dichloroethene	25.0	23.0	24.8	91.8	99.2	63.0-131			7.73	20
cis-1,2-Dichloroethene	25.0	24.3	26.3	97.2	105	74.0-123			7.70	20
trans-1,2-Dichloroethene	25.0	22.9	25.3	91.4	101	72.0-122			9.96	20
1,2-Dichloropropane	25.0	25.3	27.7	101	111	75.0-126			9.07	20
1,1-Dichloropropene	25.0	21.8	23.6	87.3	94.4	72.0-130			7.76	20
1,3-Dichloropropane	25.0	23.2	25.3	92.6	101	80.0-121			8.78	20
cis-1,3-Dichloropropene	25.0	25.3	27.5	101	110	80.0-125			8.06	20
trans-1,3-Dichloropropene	25.0	24.5	26.2	97.8	105	75.0-129			6.92	20
2,2-Dichloropropane	25.0	23.4	25.3	93.5	101	60.0-129			7.93	20
Di-isopropyl ether	25.0	28.0	30.4	112	122	62.0-133			8.26	20
Ethylbenzene	25.0	21.7	23.1	86.9	92.2	77.0-120			5.91	20
Hexachloro-1,3-butadiene	25.0	20.6	22.2	82.3	88.7	68.0-128			7.55	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3220975-1 05/24/17 10:01 • (LCSD) R3220975-2 05/24/17 10:14

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Isopropylbenzene	25.0	22.3	23.4	89.0	93.5	75.0-120			4.89	20
p-Isopropyltoluene	25.0	22.4	23.7	89.8	95.0	74.0-125			5.61	20
2-Butanone (MEK)	125	85.6	98.9	68.5	79.1	37.0-159			14.4	20
Methylene Chloride	25.0	26.8	28.4	107	114	67.0-123			5.86	20
4-Methyl-2-pentanone (MIBK)	125	107	121	85.8	96.7	60.0-144			12.0	20
Methyl tert-butyl ether	25.0	24.5	27.3	98.1	109	66.0-125			10.6	20
1-Methylnaphthalene	25.0	20.0	22.4	80.0	89.6	46.0-140			11.3	24
2-Methylnaphthalene	25.0	19.3	22.3	77.1	89.2	46.0-137			14.5	24
Naphthalene	25.0	20.9	23.2	83.7	93.0	64.0-125			10.5	20
n-Propylbenzene	25.0	22.1	23.5	88.3	93.9	78.0-120			6.07	20
Styrene	25.0	24.7	26.2	98.8	105	78.0-124			6.01	20
1,1,1,2-Tetrachloroethane	25.0	25.3	26.7	101	107	74.0-124			5.21	20
1,1,2,2-Tetrachloroethane	25.0	21.3	23.0	85.1	92.2	73.0-120			8.00	20
Tetrachloroethene	25.0	21.2	23.0	84.8	92.1	70.0-127			8.29	20
Toluene	25.0	22.2	24.1	88.7	96.2	77.0-120			8.14	20
1,1,2-Trichlorotrifluoroethane	25.0	23.1	25.2	92.6	101	64.0-135			8.67	20
1,2,3-Trichlorobenzene	25.0	22.7	24.1	90.7	96.4	68.0-126			6.07	20
1,2,4-Trichlorobenzene	25.0	23.1	25.1	92.2	100	70.0-127			8.55	20
1,1,1-Trichloroethane	25.0	22.4	23.9	89.6	95.5	69.0-125			6.33	20
1,1,2-Trichloroethane	25.0	22.7	24.1	90.7	96.5	78.0-120			6.14	20
Trichloroethene	25.0	22.7	24.5	90.7	98.0	79.0-120			7.71	20
Trichlorofluoromethane	25.0	18.3	20.7	73.3	82.7	59.0-136			12.1	20
1,2,3-Trichloropropane	25.0	21.0	23.1	84.1	92.2	73.0-124			9.25	20
1,2,3-Trimethylbenzene	25.0	22.5	23.9	90.0	95.5	76.0-120			5.90	20
1,2,4-Trimethylbenzene	25.0	22.7	24.0	90.9	96.0	75.0-120			5.47	20
1,3,5-Trimethylbenzene	25.0	23.0	24.5	92.1	97.9	75.0-120			6.13	20
Vinyl chloride	25.0	25.1	27.1	100	108	63.0-134			7.60	20
Xylenes, Total	75.0	65.4	69.4	87.2	92.5	77.0-120			5.93	20
(S) Toluene-d8				106	106	80.0-120				
(S) Dibromofluoromethane				102	101	74.0-131				
(S) a,a,a-Trifluorotoluene				106	104	80.0-120				
(S) 4-Bromofluorobenzene				104	102	64.0-132				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



L910403-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910403-01 05/24/17 22:40 • (MS) R3220975-4 05/24/17 23:33 • (MSD) R3220975-5 05/24/17 23:46

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	132	ND	2150	2010	77.9	72.8	21	10.0-160			6.83	36
Acrylonitrile	132	ND	2170	1960	78.6	71.0	21	14.0-160			10.1	33
Benzene	26.3	ND	403	400	73.0	72.4	21	13.0-146			0.840	27
Bromobenzene	26.3	ND	407	401	73.6	72.6	21	10.0-149			1.30	33
Bromodichloromethane	26.3	ND	432	427	78.2	77.2	21	15.0-142			1.26	28
Bromoform	26.3	ND	405	384	73.3	69.6	21	10.0-147			5.22	31
Bromomethane	26.3	ND	259	245	46.9	44.4	21	10.0-160			5.54	32
n-Butylbenzene	26.3	ND	335	351	60.5	63.5	21	10.0-154			4.79	37
sec-Butylbenzene	26.3	ND	354	368	64.0	66.5	21	10.0-151			3.89	36
tert-Butylbenzene	26.3	ND	375	379	67.8	68.6	21	10.0-152			1.22	35
Carbon tetrachloride	26.3	ND	307	309	55.6	55.9	21	13.0-140			0.500	30
Chlorobenzene	26.3	ND	410	419	74.2	75.7	21	10.0-149			2.06	31
Chlorodibromomethane	26.3	ND	438	428	79.3	77.5	21	12.0-147			2.33	29
Chloroethane	26.3	ND	72.3	71.7	13.1	13.0	21	10.0-159			0.870	33
2-Chloroethyl vinyl ether	132	ND	2540	2350	92.0	84.9	21	10.0-160			8.00	32
Chloroform	26.3	ND	415	404	75.1	73.1	21	18.0-148			2.70	28
Chloromethane	26.3	ND	358	360	64.8	65.2	21	10.0-146			0.610	29
2-Chlorotoluene	26.3	ND	396	404	71.6	73.0	21	10.0-151			1.94	35
4-Chlorotoluene	26.3	ND	396	403	71.6	72.9	21	10.0-150			1.79	35
1,2-Dibromo-3-Chloropropane	26.3	ND	366	312	66.2	56.5	21	10.0-149			15.7	34
1,2-Dibromoethane	26.3	ND	436	420	79.0	75.9	21	14.0-145			3.96	28
Dibromomethane	26.3	ND	459	440	83.0	79.6	21	18.0-144			4.18	27
1,2-Dichlorobenzene	26.3	ND	423	432	76.5	78.2	21	10.0-153			2.20	34
1,3-Dichlorobenzene	26.3	ND	386	384	69.8	69.5	21	10.0-150			0.380	35
1,4-Dichlorobenzene	26.3	ND	391	395	70.8	71.5	21	10.0-148			0.980	34
Dichlorodifluoromethane	26.3	ND	328	348	59.3	63.0	21	10.0-160			6.04	30
1,1-Dichloroethane	26.3	ND	433	422	78.3	76.4	21	19.0-148			2.53	28
1,2-Dichloroethane	26.3	ND	467	443	84.5	80.2	21	17.0-147			5.24	27
1,1-Dichloroethene	26.3	ND	351	347	63.5	62.8	21	10.0-150			1.10	31
cis-1,2-Dichloroethene	26.3	ND	430	421	77.9	76.1	21	16.0-145			2.28	28
trans-1,2-Dichloroethene	26.3	ND	375	380	67.9	68.7	21	11.0-142			1.25	29
1,2-Dichloropropane	26.3	ND	474	458	85.7	82.8	21	17.0-148			3.50	28
1,1-Dichloropropene	26.3	ND	352	353	63.6	63.8	21	10.0-150			0.340	30
1,3-Dichloropropane	26.3	ND	445	435	80.6	78.7	21	16.0-148			2.39	27
cis-1,3-Dichloropropene	26.3	ND	499	483	90.3	87.5	21	13.0-150			3.17	28
trans-1,3-Dichloropropene	26.3	ND	466	448	84.2	81.1	21	10.0-152			3.82	29
2,2-Dichloropropane	26.3	ND	343	340	62.0	61.5	21	16.0-143			0.820	30
Di-isopropyl ether	26.3	ND	522	506	94.4	91.6	21	16.0-149			3.04	28
Ethylbenzene	26.3	ND	351	365	63.4	66.1	21	10.0-147			4.09	31

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L910403-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910403-01 05/24/17 22:40 • (MS) R3220975-4 05/24/17 23:33 • (MSD) R3220975-5 05/24/17 23:46

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	26.3	ND	322	341	58.2	61.7	21	10.0-154			5.83	40
Isopropylbenzene	26.3	ND	353	368	63.8	66.7	21	10.0-147			4.43	33
p-Isopropyltoluene	26.3	ND	369	382	66.8	69.1	21	10.0-156			3.38	37
2-Butanone (MEK)	132	ND	1710	1560	62.0	56.5	21	10.0-160			9.29	33
Methylene Chloride	26.3	ND	485	463	87.8	83.7	21	16.0-139			4.74	29
4-Methyl-2-pentanone (MIBK)	132	ND	2120	1960	76.6	70.9	21	12.0-160			7.78	32
Methyl tert-butyl ether	26.3	ND	487	453	88.0	82.0	21	21.0-145			7.03	29
1-Methylnaphthalene	26.3	ND	347	346	62.7	62.7	21	10.0-156			0.100	40
2-Methylnaphthalene	26.3	ND	330	331	59.7	59.8	21	10.0-155			0.130	40
Naphthalene	26.3	ND	389	381	70.4	68.9	21	10.0-153			2.16	36
n-Propylbenzene	26.3	ND	355	367	64.3	66.3	21	10.0-151			3.12	34
Styrene	26.3	ND	447	448	80.9	81.0	21	10.0-155			0.100	34
1,1,1,2-Tetrachloroethane	26.3	ND	458	456	82.9	82.5	21	10.0-147			0.410	30
1,1,2,2-Tetrachloroethane	26.3	ND	390	367	70.6	66.4	21	10.0-155			6.10	31
Tetrachloroethene	26.3	ND	328	347	59.4	62.8	21	10.0-144			5.53	32
Toluene	26.3	ND	376	374	68.1	67.6	21	10.0-144			0.700	28
1,1,2-Trichlorotrifluoroethane	26.3	ND	344	351	62.2	63.5	21	10.0-153			2.16	33
1,2,3-Trichlorobenzene	26.3	ND	403	396	73.0	71.6	21	10.0-153			1.89	40
1,2,4-Trichlorobenzene	26.3	ND	404	405	73.1	73.2	21	10.0-156			0.0700	40
1,1,1-Trichloroethane	26.3	ND	351	344	63.5	62.3	21	18.0-145			1.95	29
1,1,2-Trichloroethane	26.3	ND	431	417	77.9	75.4	21	12.0-151			3.25	28
Trichloroethene	26.3	ND	380	388	68.7	70.2	21	11.0-148			2.24	29
Trichlorofluoromethane	26.3	ND	90.5	150	16.4	27.1	21	10.0-157		J3	49.4	34
1,2,3-Trichloropropane	26.3	ND	401	374	72.6	67.6	21	10.0-154			7.11	32
1,2,3-Trimethylbenzene	26.3	ND	407	413	73.6	74.7	21	10.0-150			1.54	33
1,2,4-Trimethylbenzene	26.3	ND	385	389	69.7	70.4	21	10.0-151			0.990	34
1,3,5-Trimethylbenzene	26.3	ND	383	391	69.4	70.7	21	10.0-150			1.94	33
Vinyl chloride	26.3	ND	307	312	55.5	56.4	21	10.0-150			1.48	29
Xylenes, Total	79.0	ND	1090	1130	65.8	68.1	21	10.0-150			3.41	31
(S) Toluene-d8					107	106		80.0-120				
(S) Dibromofluoromethane					101	98.2		74.0-131				
(S) o,o,o-Trifluorotoluene					105	105		80.0-120				
(S) 4-Bromofluorobenzene					102	101		64.0-132				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3221299-3 05/26/17 12:15

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Acetone	U		10.0	50.0
Acrylonitrile	U		1.79	10.0
Benzene	U		0.270	1.00
Bromobenzene	U		0.284	1.00
Bromodichloromethane	U		0.254	1.00
Bromoform	U		0.424	1.00
Bromomethane	U		1.34	5.00
n-Butylbenzene	U		0.258	1.00
sec-Butylbenzene	U		0.201	1.00
tert-Butylbenzene	U		0.206	1.00
Carbon tetrachloride	U		0.328	1.00
Chlorobenzene	U		0.212	1.00
Chlorodibromomethane	U		0.373	1.00
Chloroethane	U		0.946	5.00
2-Chloroethyl vinyl ether	U		2.34	50.0
Chloroform	U		0.229	5.00
Chloromethane	U		0.375	2.50
2-Chlorotoluene	U		0.301	1.00
4-Chlorotoluene	U		0.240	1.00
1,2-Dibromo-3-Chloropropane	U		1.05	5.00
1,2-Dibromoethane	U		0.343	1.00
Dibromomethane	U		0.382	1.00
1,2-Dichlorobenzene	U		0.305	1.00
1,3-Dichlorobenzene	U		0.239	1.00
1,4-Dichlorobenzene	U		0.226	1.00
Dichlorodifluoromethane	U		0.713	5.00
1,1-Dichloroethane	U		0.199	1.00
1,2-Dichloroethane	U		0.265	1.00
1,1-Dichloroethene	U		0.303	1.00
cis-1,2-Dichloroethene	U		0.235	1.00
trans-1,2-Dichloroethene	U		0.264	1.00
1,2-Dichloropropane	U		0.358	1.00
1,1-Dichloropropene	U		0.317	1.00
1,3-Dichloropropane	U		0.207	1.00
cis-1,3-Dichloropropene	U		0.262	1.00
trans-1,3-Dichloropropene	U		0.267	1.00
2,2-Dichloropropane	U		0.279	1.00
Di-isopropyl ether	U		0.248	1.00
Ethylbenzene	U		0.297	1.00
Hexachloro-1,3-butadiene	U		0.342	1.00

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3221299-3 05/26/17 12:15

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Isopropylbenzene	U		0.243	1.00
p-Isopropyltoluene	U		0.204	1.00
2-Butanone (MEK)	U		4.68	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		1.88	10.0
Methyl tert-butyl ether	U		0.212	1.00
1-Methylnaphthalene	U		0.827	10.0
2-Methylnaphthalene	U		0.833	10.0
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.206	1.00
Styrene	U		0.234	1.00
1,1,1,2-Tetrachloroethane	U		0.264	1.00
1,1,2,2-Tetrachloroethane	U		0.365	1.00
Tetrachloroethene	U		0.276	1.00
Toluene	U		0.434	5.00
1,1,2-Trichlorotrifluoroethane	U		0.365	1.00
1,2,3-Trichlorobenzene	U		0.306	1.00
1,2,4-Trichlorobenzene	U		0.388	1.00
1,1,1-Trichloroethane	U		0.286	1.00
1,1,2-Trichloroethane	U		0.277	1.00
Trichloroethene	U		0.279	1.00
Trichlorofluoromethane	U		0.382	5.00
1,2,3-Trichloropropane	U		0.741	2.50
1,2,3-Trimethylbenzene	U		0.287	1.00
1,2,4-Trimethylbenzene	U		0.211	1.00
1,3,5-Trimethylbenzene	U		0.266	1.00
Vinyl chloride	U		0.291	1.00
Xylenes, Total	U		0.698	3.00
(S) Toluene-d8	99.4			80.0-120
(S) Dibromofluoromethane	97.3			74.0-131
(S) a,a,a-Trifluorotoluene	102			80.0-120
(S) 4-Bromofluorobenzene	101			64.0-132

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3221299-1 05/26/17 11:23 • (LCSD) R3221299-2 05/26/17 11:40

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	149	121	119	96.5	11.0-160			21.1	23
Acrylonitrile	125	122	119	97.4	94.8	61.0-143			2.69	20
Benzene	25.0	23.7	25.2	94.7	101	71.0-124			6.22	20
Bromobenzene	25.0	26.1	26.9	105	108	78.0-120			2.96	20
Bromodichloromethane	25.0	22.9	24.2	91.5	96.9	75.0-120			5.70	20
Bromoform	25.0	24.9	25.8	99.7	103	65.0-133			3.29	20
Bromomethane	25.0	31.7	30.6	127	122	26.0-160			3.81	20
n-Butylbenzene	25.0	24.6	25.2	98.3	101	73.0-126			2.53	20
sec-Butylbenzene	25.0	27.8	28.2	111	113	75.0-121			1.24	20
tert-Butylbenzene	25.0	28.0	28.5	112	114	74.0-122			1.73	20
Carbon tetrachloride	25.0	26.2	26.8	105	107	66.0-123			2.34	20
Chlorobenzene	25.0	26.7	28.0	107	112	79.0-121			4.67	20
Chlorodibromomethane	25.0	25.1	25.8	100	103	74.0-128			2.55	20
Chloroethane	25.0	28.2	28.4	113	114	51.0-147			0.710	20
2-Chloroethyl vinyl ether	125	129	134	103	107	10.0-160			4.07	22
Chloroform	25.0	24.8	26.3	99.4	105	73.0-123			5.51	20
Chloromethane	25.0	24.0	24.9	95.9	99.5	51.0-138			3.71	20
2-Chlorotoluene	25.0	27.8	28.2	111	113	72.0-124			1.43	20
4-Chlorotoluene	25.0	27.2	28.5	109	114	78.0-120			4.72	20
1,2-Dibromo-3-Chloropropane	25.0	21.6	20.6	86.5	82.2	65.0-126			5.06	20
1,2-Dibromoethane	25.0	26.5	27.4	106	110	78.0-122			3.35	20
Dibromomethane	25.0	24.9	25.8	99.4	103	79.0-120			3.69	20
1,2-Dichlorobenzene	25.0	25.4	26.7	102	107	80.0-120			4.78	20
1,3-Dichlorobenzene	25.0	28.2	29.6	113	118	72.0-123			4.69	20
1,4-Dichlorobenzene	25.0	24.9	26.8	99.7	107	77.0-120			7.30	20
Dichlorodifluoromethane	25.0	31.9	32.2	128	129	49.0-155			0.860	20
1,1-Dichloroethane	25.0	23.5	24.5	94.1	98.0	70.0-128			4.07	20
1,2-Dichloroethane	25.0	25.6	26.2	102	105	69.0-128			2.44	20
1,1-Dichloroethene	25.0	27.0	28.2	108	113	63.0-131			4.29	20
cis-1,2-Dichloroethene	25.0	25.1	26.6	100	106	74.0-123			5.80	20
trans-1,2-Dichloroethene	25.0	24.6	26.1	98.5	104	72.0-122			5.70	20
1,2-Dichloropropane	25.0	24.5	25.5	97.9	102	75.0-126			4.13	20
1,1-Dichloropropene	25.0	23.9	25.1	95.6	100	72.0-130			4.82	20
1,3-Dichloropropane	25.0	25.8	27.2	103	109	80.0-121			5.28	20
cis-1,3-Dichloropropene	25.0	23.6	24.9	94.2	99.5	80.0-125			5.41	20
trans-1,3-Dichloropropene	25.0	24.2	25.6	96.7	103	75.0-129			5.94	20
2,2-Dichloropropane	25.0	27.3	27.7	109	111	60.0-129			1.50	20
Di-isopropyl ether	25.0	22.2	23.0	88.6	91.9	62.0-133			3.61	20
Ethylbenzene	25.0	26.1	27.6	105	111	77.0-120			5.61	20
Hexachloro-1,3-butadiene	25.0	26.8	25.8	107	103	68.0-128			3.79	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3221299-1 05/26/17 11:23 • (LCSD) R3221299-2 05/26/17 11:40

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Isopropylbenzene	25.0	27.4	28.2	110	113	75.0-120			2.78	20
p-Isopropyltoluene	25.0	28.7	28.6	115	114	74.0-125			0.380	20
2-Butanone (MEK)	125	152	138	122	111	37.0-159			9.48	20
Methylene Chloride	25.0	24.1	24.7	96.3	98.7	67.0-123			2.44	20
4-Methyl-2-pentanone (MIBK)	125	119	115	95.4	92.1	60.0-144			3.58	20
Methyl tert-butyl ether	25.0	26.6	26.9	106	108	66.0-125			1.23	20
1-Methylnaphthalene	25.0	26.7	24.9	107	99.4	46.0-140			7.00	24
2-Methylnaphthalene	25.0	26.4	24.7	106	98.8	46.0-137			6.73	24
Naphthalene	25.0	25.8	24.6	103	98.6	64.0-125			4.71	20
n-Propylbenzene	25.0	27.0	27.9	108	111	78.0-120			3.01	20
Styrene	25.0	27.8	29.2	111	117	78.0-124			4.68	20
1,1,1,2-Tetrachloroethane	25.0	27.0	27.3	108	109	74.0-124			0.860	20
1,1,2,2-Tetrachloroethane	25.0	25.5	25.0	102	100	73.0-120			1.67	20
Tetrachloroethene	25.0	27.9	29.6	112	118	70.0-127			5.66	20
Toluene	25.0	24.2	26.1	96.7	104	77.0-120			7.52	20
1,1,2-Trichlorotrifluoroethane	25.0	28.4	28.3	114	113	64.0-135			0.250	20
1,2,3-Trichlorobenzene	25.0	25.9	25.5	104	102	68.0-126			1.85	20
1,2,4-Trichlorobenzene	25.0	27.3	27.0	109	108	70.0-127			1.45	20
1,1,1-Trichloroethane	25.0	26.9	27.6	108	111	69.0-125			2.50	20
1,1,2-Trichloroethane	25.0	26.2	27.0	105	108	78.0-120			2.97	20
Trichloroethene	25.0	26.6	28.4	106	114	79.0-120			6.70	20
Trichlorofluoromethane	25.0	28.2	28.2	113	113	59.0-136			0.0100	20
1,2,3-Trichloropropane	25.0	26.4	26.6	106	106	73.0-124			0.500	20
1,2,3-Trimethylbenzene	25.0	24.3	25.3	97.4	101	76.0-120			3.81	20
1,2,4-Trimethylbenzene	25.0	27.4	28.1	109	112	75.0-120			2.73	20
1,3,5-Trimethylbenzene	25.0	28.0	28.7	112	115	75.0-120			2.43	20
Vinyl chloride	25.0	27.6	27.5	110	110	63.0-134			0.450	20
Xylenes, Total	75.0	79.5	83.1	106	111	77.0-120			4.43	20
(S) Toluene-d8				99.8	99.5	80.0-120				
(S) Dibromofluoromethane				98.3	96.8	74.0-131				
(S) a,a,a-Trifluorotoluene				105	104	80.0-120				
(S) 4-Bromofluorobenzene				103	102	64.0-132				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



L910422-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910422-07 05/26/17 19:42 • (MS) R3221299-4 05/26/17 18:33 • (MSD) R3221299-5 05/26/17 18:50

Analyte	Spike Amount ug/kg	Original Result ug/kg	MS Result ug/kg	MSD Result ug/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	125	ND	1330	1770	42.7	56.7	25	10.0-160			28.2	36
Acrylonitrile	125	ND	1940	2610	62.1	83.5	25	14.0-160			29.4	33
Benzene	25.0	ND	420	450	67.2	71.9	25	13.0-146			6.76	27
Bromobenzene	25.0	ND	542	565	86.8	90.5	25	10.0-149			4.17	33
Bromodichloromethane	25.0	ND	443	466	70.8	74.5	25	15.0-142			5.02	28
Bromoform	25.0	ND	454	476	72.6	76.1	25	10.0-147			4.72	31
Bromomethane	25.0	ND	262	284	42.0	45.5	25	10.0-160			8.01	32
n-Butylbenzene	25.0	ND	485	529	77.5	84.6	25	10.0-154			8.71	37
sec-Butylbenzene	25.0	ND	560	618	89.5	98.9	25	10.0-151			9.94	36
tert-Butylbenzene	25.0	ND	595	640	95.1	102	25	10.0-152			7.37	35
Carbon tetrachloride	25.0	ND	437	486	70.0	77.8	25	13.0-140			10.6	30
Chlorobenzene	25.0	ND	544	582	87.1	93.1	25	10.0-149			6.69	31
Chlorodibromomethane	25.0	ND	486	529	77.7	84.6	25	12.0-147			8.50	29
Chloroethane	25.0	ND	198	130	31.6	20.8	25	10.0-159	J3		41.3	33
2-Chloroethyl vinyl ether	125	ND	3110	3360	99.4	108	25	10.0-160			7.89	32
Chloroform	25.0	ND	484	508	77.5	81.2	25	18.0-148			4.71	28
Chloromethane	25.0	ND	310	324	47.5	49.8	25	10.0-146			4.60	29
2-Chlorotoluene	25.0	ND	576	604	92.2	96.7	25	10.0-151			4.76	35
4-Chlorotoluene	25.0	ND	580	598	92.7	95.8	25	10.0-150			3.22	35
1,2-Dibromo-3-Chloropropane	25.0	ND	412	470	65.9	75.2	25	10.0-149			13.1	34
1,2-Dibromoethane	25.0	ND	536	567	85.8	90.8	25	14.0-145			5.62	28
Dibromomethane	25.0	ND	473	496	75.7	79.3	25	18.0-144			4.72	27
1,2-Dichlorobenzene	25.0	ND	533	561	85.3	89.7	25	10.0-153			5.07	34
1,3-Dichlorobenzene	25.0	ND	585	625	93.6	100	25	10.0-150			6.62	35
1,4-Dichlorobenzene	25.0	ND	522	537	83.6	86.0	25	10.0-148			2.87	34
Dichlorodifluoromethane	25.0	ND	453	500	72.5	80.0	25	10.0-160			9.82	30
1,1-Dichloroethane	25.0	ND	430	455	68.8	72.7	25	19.0-148			5.55	28
1,2-Dichloroethane	25.0	ND	502	507	80.2	81.2	25	17.0-147			1.17	27
1,1-Dichloroethene	25.0	ND	245	394	39.2	63.0	25	10.0-150	J3		46.5	31
cis-1,2-Dichloroethene	25.0	ND	472	505	75.5	80.8	25	16.0-145			6.79	28
trans-1,2-Dichloroethene	25.0	ND	377	391	60.3	62.6	25	11.0-142			3.72	29
1,2-Dichloropropane	25.0	ND	479	492	76.7	78.8	25	17.0-148			2.73	28
1,1-Dichloropropene	25.0	ND	398	433	63.6	69.2	25	10.0-150			8.48	30
1,3-Dichloropropane	25.0	ND	537	562	85.9	90.0	25	16.0-148			4.65	27
cis-1,3-Dichloropropene	25.0	ND	502	515	80.4	82.5	25	13.0-150			2.57	28
trans-1,3-Dichloropropene	25.0	ND	486	524	77.8	83.9	25	10.0-152			7.46	29
2,2-Dichloropropane	25.0	ND	393	411	62.8	65.8	25	16.0-143			4.63	30
Di-isopropyl ether	25.0	ND	423	432	67.7	69.1	25	16.0-149			2.08	28
Ethylbenzene	25.0	ND	512	560	81.9	89.7	25	10.0-147			9.04	31
Hexachloro-1,3-butadiene	25.0	ND	551	621	88.1	99.4	25	10.0-154			12.1	40

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L910422-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910422-07 05/26/17 19:42 • (MS) R3221299-4 05/26/17 18:33 • (MSD) R3221299-5 05/26/17 18:50

Analyte	Spike Amount ug/kg	Original Result ug/kg	MS Result ug/kg	MSD Result ug/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Isopropylbenzene	25.0	ND	555	588	88.8	94.2	25	10.0-147			5.85	33
p-Isopropyltoluene	25.0	ND	592	645	94.8	103	25	10.0-156			8.60	37
2-Butanone (MEK)	125	ND	1910	2780	61.0	88.9	25	10.0-160		J3	37.2	33
Methylene Chloride	25.0	ND	406	427	64.9	68.3	25	16.0-139			5.18	29
4-Methyl-2-pentanone (MIBK)	125	ND	2290	2520	73.4	80.6	25	12.0-160			9.36	32
Methyl tert-butyl ether	25.0	ND	501	529	80.1	84.6	25	21.0-145			5.46	29
1-Methylnaphthalene	25.0	ND	601	622	96.1	99.6	25	10.0-156			3.54	40
2-Methylnaphthalene	25.0	ND	579	580	92.7	92.9	25	10.0-155			0.170	40
Naphthalene	25.0	ND	535	574	85.7	91.8	25	10.0-153			6.87	36
n-Propylbenzene	25.0	ND	547	586	87.5	93.8	25	10.0-151			6.92	34
Styrene	25.0	ND	605	629	96.8	101	25	10.0-155			3.90	34
1,1,1,2-Tetrachloroethane	25.0	ND	565	575	90.4	92.1	25	10.0-147			1.79	30
1,1,2,2-Tetrachloroethane	25.0	ND	507	520	81.1	83.3	25	10.0-155			2.59	31
Tetrachloroethene	25.0	ND	495	553	79.2	88.5	25	10.0-144			11.1	32
Toluene	25.0	ND	446	475	71.4	76.0	25	10.0-144			6.23	28
1,1,2-Trichlorotrifluoroethane	25.0	ND	285	476	45.6	76.2	25	10.0-153		J3	50.2	33
1,2,3-Trichlorobenzene	25.0	ND	550	587	88.0	93.9	25	10.0-153			6.58	40
1,2,4-Trichlorobenzene	25.0	ND	584	609	93.5	97.4	25	10.0-156			4.10	40
1,1,1-Trichloroethane	25.0	ND	489	520	78.3	83.1	25	18.0-145			5.97	29
1,1,2-Trichloroethane	25.0	ND	553	596	88.5	95.4	25	12.0-151			7.53	28
Trichloroethene	25.0	ND	503	548	80.5	87.7	25	11.0-148			8.53	29
Trichlorofluoromethane	25.0	ND	205	70.8	32.9	11.3	25	10.0-157		J3	97.4	34
1,2,3-Trichloropropane	25.0	ND	550	584	88.0	93.5	25	10.0-154			5.96	32
1,2,3-Trimethylbenzene	25.0	ND	509	530	81.5	84.8	25	10.0-150			4.08	33
1,2,4-Trimethylbenzene	25.0	ND	579	607	92.6	97.2	25	10.0-151			4.85	34
1,3,5-Trimethylbenzene	25.0	ND	571	603	91.4	96.5	25	10.0-150			5.39	33
Vinyl chloride	25.0	ND	381	393	60.9	62.9	25	10.0-150			3.17	29
Xylenes, Total	75.0	ND	1580	1670	84.3	89.1	25	10.0-150			5.54	31
(S) Toluene-d8					99.3	99.6		80.0-120				
(S) Dibromofluoromethane					95.3	93.2		74.0-131				
(S) a,a,a-Trifluorotoluene					104	103		80.0-120				
(S) 4-Bromofluorobenzene					105	105		64.0-132				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3221102-3 05/25/17 04:16

Analyte	MB Result ug/kg	MB Qualifier	MB MDL ug/kg	MB RDL ug/kg
Anthracene	U		0.600	6.00
Acenaphthene	U		0.600	6.00
Acenaphthylene	U		0.600	6.00
Benzo(a)anthracene	U		0.600	6.00
Benzo(a)pyrene	U		0.600	6.00
Benzo(b)fluoranthene	U		0.600	6.00
Benzo(g,h,i)perylene	U		0.600	6.00
Benzo(k)fluoranthene	U		0.600	6.00
Chrysene	U		0.600	6.00
Dibenz(a,h)anthracene	U		0.600	6.00
Fluoranthene	U		0.600	6.00
Fluorene	U		0.600	6.00
Indeno(1,2,3-cd)pyrene	U		0.600	6.00
Naphthalene	U		2.00	20.0
Phenanthrene	U		0.600	6.00
Pyrene	U		0.600	6.00
1-Methylnaphthalene	U		2.00	20.0
2-Methylnaphthalene	U		2.00	20.0
2-Chloronaphthalene	U		2.00	20.0
(S) Nitrobenzene-d5	51.0			14.0-149
(S) 2-Fluorobiphenyl	72.3			34.0-125
(S) p-Terphenyl-d14	60.5			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3221102-1 05/25/17 03:32 • (LCSD) R3221102-2 05/25/17 03:54

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	80.0	55.6	52.8	69.5	66.0	50.0-125			5.19	20
Acenaphthene	80.0	62.8	61.1	78.5	76.3	52.0-120			2.84	20
Acenaphthylene	80.0	61.0	58.6	76.2	73.2	51.0-120			4.00	20
Benzo(a)anthracene	80.0	45.3	43.3	56.7	54.1	46.0-121			4.72	20
Benzo(a)pyrene	80.0	46.0	43.1	57.5	53.9	42.0-121			6.44	20
Benzo(b)fluoranthene	80.0	49.4	45.7	61.8	57.2	42.0-123			7.74	20
Benzo(g,h,i)perylene	80.0	51.1	49.0	63.8	61.3	43.0-128			4.08	20
Benzo(k)fluoranthene	80.0	58.0	58.3	72.4	72.9	45.0-128			0.550	20
Chrysene	80.0	56.0	58.9	70.0	73.6	48.0-127			5.01	20
Dibenz(a,h)anthracene	80.0	49.1	44.8	61.3	56.0	43.0-132			9.02	20
Fluoranthene	80.0	51.3	48.4	64.1	60.5	49.0-129			5.76	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3221102-1 05/25/17 03:32 • (LCSD) R3221102-2 05/25/17 03:54

Analyte	Spike Amount ug/kg	LCS Result ug/kg	LCSD Result ug/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	80.0	58.0	56.4	72.5	70.5	50.0-120			2.78	20
Indeno(1,2,3-cd)pyrene	80.0	53.2	50.5	66.5	63.1	44.0-131			5.21	20
Naphthalene	80.0	54.3	54.1	67.9	67.6	50.0-120			0.390	20
Phenanthrene	80.0	50.8	49.4	63.5	61.7	48.0-120			2.83	20
Pyrene	80.0	51.1	51.3	63.9	64.1	48.0-135			0.300	20
1-Methylnaphthalene	80.0	52.5	52.9	65.6	66.1	52.0-122			0.720	20
2-Methylnaphthalene	80.0	51.1	50.9	63.9	63.6	52.0-120			0.520	20
2-Chloronaphthalene	80.0	60.2	58.8	75.3	73.5	50.0-120			2.36	20
(S) Nitrobenzene-d5				52.7	54.9	14.0-149				
(S) 2-Fluorobiphenyl				76.3	75.7	34.0-125				
(S) p-Terphenyl-d14				60.4	59.6	23.0-120				

L910264-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L910264-01 05/25/17 06:05 • (MS) R3221102-4 05/25/17 06:27 • (MSD) R3221102-5 05/25/17 06:49

Analyte	Spike Amount (dry) ug/kg	Original Result (dry) ug/kg	MS Result (dry) ug/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	89.6	ND	56.4	43.9	62.9	49.0	1	20.0-136		J3	24.9	24
Acenaphthene	89.6	ND	65.4	61.0	73.0	68.1	1	29.0-124			6.91	20
Acenaphthylene	89.6	ND	65.7	61.6	73.3	68.8	1	35.0-120			6.29	20
Benzo(a)anthracene	89.6	ND	45.8	34.5	51.2	38.5	1	13.0-132		J3	28.3	27
Benzo(a)pyrene	89.6	ND	51.9	38.8	57.9	43.3	1	14.0-138		J3	28.9	27
Benzo(b)fluoranthene	89.6	ND	43.7	29.4	48.8	32.8	1	10.0-129		J3	39.2	31
Benzo(g,h,i)perylene	89.6	ND	51.9	36.4	57.9	40.6	1	10.0-133		J3	35.1	30
Benzo(k)fluoranthene	89.6	ND	60.8	48.0	67.8	53.5	1	15.0-131			23.5	27
Chrysene	89.6	ND	61.4	49.4	68.5	55.2	1	15.0-137			21.6	25
Dibenz(a,h)anthracene	89.6	ND	65.0	49.6	72.5	55.4	1	15.0-132			26.9	27
Fluoranthene	89.6	ND	45.8	34.6	51.1	38.6	1	13.0-139			27.9	28
Fluorene	89.6	ND	58.2	51.3	65.0	57.3	1	27.0-122			12.6	22
Indeno(1,2,3-cd)pyrene	89.6	ND	53.8	40.6	60.0	45.3	1	11.0-133			27.9	29
Naphthalene	89.6	ND	58.0	57.9	64.7	64.7	1	18.0-136			0.0600	21
Phenanthrene	89.6	ND	49.6	39.9	55.4	44.5	1	15.0-133			21.9	25
Pyrene	89.6	ND	47.7	38.5	53.3	43.0	1	11.0-146			21.3	29
1-Methylnaphthalene	89.6	ND	56.5	54.9	63.1	61.3	1	24.0-137			2.97	22
2-Methylnaphthalene	89.6	ND	56.4	53.1	62.9	59.3	1	23.0-136			6.01	22
2-Chloronaphthalene	89.6	ND	70.1	66.0	69.8	65.3	1	36.0-120			6.02	20
(S) Nitrobenzene-d5					56.6	55.9		14.0-149				
(S) 2-Fluorobiphenyl					68.7	61.7		34.0-125				
(S) p-Terphenyl-d14					49.5	38.3		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL (dry)	Reported Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J3	The associated batch QC was outside the established quality control range for precision.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

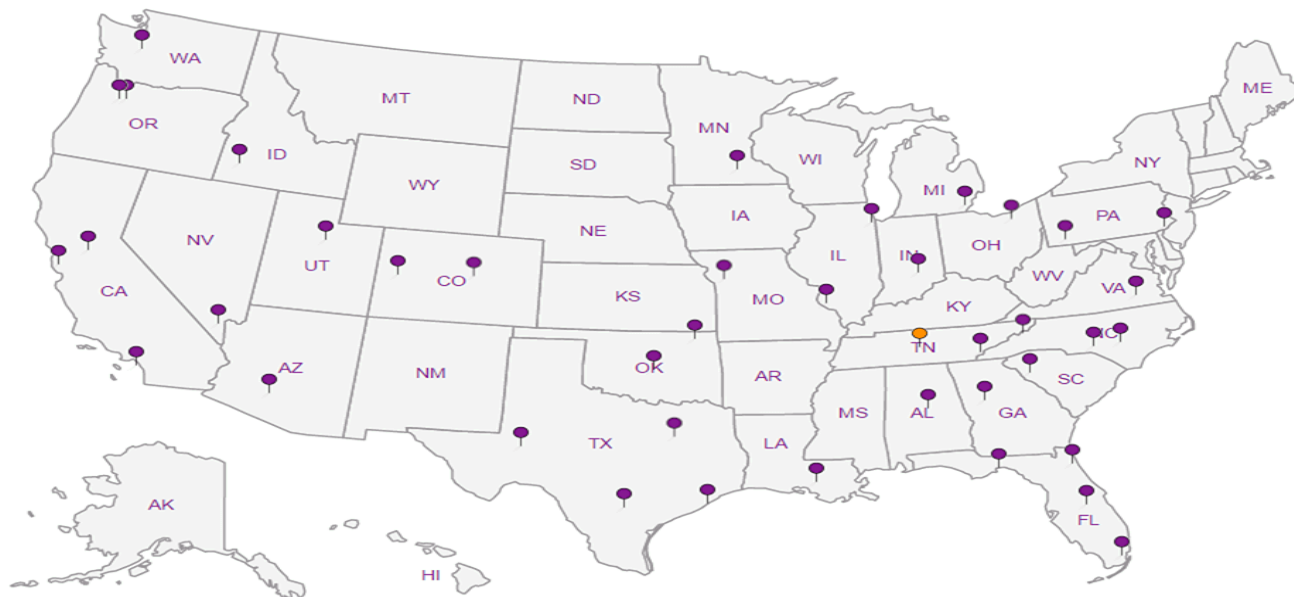
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



ESC LAB SCIENCES Cooler Receipt Form

Client:	ATCGMI	SDG#	L910403	
Cooler Received/Opened On:	5/18/17	Temperature:	25	
Received by : Rickey Mosley				
Signature: 				
Receipt Check List	NP	Yes	No	
COC Seal Present / Intact?		✓		
COC Signed / Accurate?		✓		
Bottles arrive intact?		✓		
Correct bottles used?		✓		
Sufficient volume sent?		✓		
If Applicable				
VOA Zero headspace?				
Preservation Correct / Checked?				