Request for Proposals

City of Minneapolis
Finance and Property Services Department

Architectural & Engineering Services for Hiawatha Maintenance Facility Campus Expansion

RFP 2016-89 Issue Date: July 22, 2016

Proposals Due by: Thursday, August 11, 2016 at 4:00PM Minneapolis Time

Minneapolis
City of Lakes

July 22, 2016

To whom it may concern,

Attached is a Request for Proposal for Architectural & Engineering services. These services are needed for a Hiawatha Maintenance Facility Campus Renovation and Expansion, located at 1901 E. 26th St. in Minneapolis, for the Finance and Property Services Department, Property Services Division. Please consider submitting a proposal for providing these services if your firm meets the qualifications and is available. Please review the RFP for details.

Proposals are due by 4:00 PM Minneapolis time on August 11, 2016. A pre-proposal conference will be held at the Hiawatha Maintenance Facility on July 29, 2016 at 9AM, followed by a brief tour of the buildings and site.

Thank you for your consideration.

Sincerely,

Robert Friddle, RA, AIA, LEED® AP
Director, Facilities Design & Construction
Finance and Property Services Department, Property Services Division

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REQUEST FOR PROPOSALS
FOR
ARCHITECTURAL & ENGINEERING SERVICES
FOR THE
CITY OF MINNEAPOLIS FINANCE & PROPERTY SERVICES DEPARTMENT
HIAWATHA MAINTENANCE FACILITY CAMPUS EXPANSION

I. INVITATION: The City of Minneapolis (hereinafter referred to as the City) makes this Request for Proposals (hereinafter referred to as the RFP) in order to select a qualified consulting firm (hereinafter referred to as the Consultant) for providing Architectural & Engineering Design and Construction Administration Services for the proposed Hiawatha Maintenance Facility Campus Expansion (hereinafter called the Project). The Project is envisioned to be designed, constructed, and commissioned to a LEED® NC 2.2 Gold (Certified) level of quality. Project delivery method will be Design/Bid/Build.

The proposed Project envisions the redevelopment of the properties located at 1860 28th Street E and 2717 Longfellow Avenue, commonly referred to as the "Roof Depot" building and site. The Project will improve and expand the existing municipal operations campus, and facilitate a variety of vehicle, equipment, warehousing and supply storage, repair and maintenance needs, with related offices, support and conferencing. Scope of work will include full site master planning for Public Works and other City Departmental needs, site circulation improvements, and review and implementation of operational efficiencies and best practices. Renovation and/or re-purposing of the existing Central Stores building may be considered. Private commercial development opportunities will be explored if portions of the site are deemed not currently needed.

The Project and process is described in more detail in the "Scope of Services" (Attachment B), contained within this RFP, including descriptions of roles, responsibilities and relationship of the Consultant, City, and other parties involved in the Project.

II. PRE-PROPOSAL CONFERENCE & TOUR: A pre-proposal conference will be held at 9 am, July 29, 2016 at the Hiawatha Maintenance Facility, 1901 26th St., second floor multi-purpose room, followed by a brief tour of the buildings and site. All potential Consultants are encouraged to attend this conference and tour.

III. PROPOSAL DUE DATE and LOCATION: The Consultant shall submit **ten (10) copies** of their proposal to the City of Minneapolis Procurement Office, labeled:

City of Minneapolis - Procurement
Request for Proposals for:
Architectural/Engineering Services
Hiawatha Maintenance Facility Phase II
330 2nd Avenue South, Suite 552
Minneapolis, MN 55401

The submittal shall be made at or before **4:00 P.M. Minneapolis time August 11, 2016.**
NOTE: Late Proposals may not be accepted.

IV. PROPOSAL FORMAT: The Consultant shall provide the appropriate information in sufficient detail to demonstrate that the evaluation criteria has been satisfied as specified in Section V – "EVALUATION OF PROPOSALS".

To allow for easier comparison of proposals during evaluation, proposals should contain the following sections and appendices and be arranged in consecutive order.

1. **Executive Summary** - The Executive Summary should include a clear statement of the Consultant's understanding of the RFP, including a brief summary of the Scope of Work. Include, at a minimum, an outline of the contents of the proposal, an identification of the proposed project team, a description of the responsibilities of the project team, and a summary of the proposed services.

2. **Scope of Services** - Based upon the "Scope of Services" (Attachment B), the Consultant shall describe their understanding of the Project, and their approach to providing full Consultant's services, including their approach to accomplishing "Leadership in Energy and Environmental Design (LEED®) New Construction (NC 2.2) - Gold Certified" for the Project. Include a detailed description of the Consulting services to be provided with a listing of tasks and deliverables.

3. **Previous Similar Experience:** This section should identify **similar projects** involving offices, conferencing centers, locker/shower facilities, equipment repair shops, warehousing and stores, and vehicle storage and maintenance facilities for which the proposing firm and team members have provided **full** planning, design, construction administration, and construction observation services. Experience in planning multi-phase and multi-option Public Works facilities and operations experience is preferred.

   Strategic Master Planning: Identify experience with similar projects involving development and analysis of multiple alternative design options and multi-phased design concepts and projects, for which the proposing firm has provided full planning, design, construction administration, and construction observation services, reflecting programmatic site circulation and integrated building solutions for numerous and varying departmental needs, both distinct and shared.

   Community Engagement: Identify experience with regular public engagement on similar design projects. Explain in detail your approach to Community Engagement and how the Community will be engaged in the decision making process. .

   Sustainable Design: The Consultant shall identify related experience involving LEED®NC building standards. The Consultant shall provide documented design experience in at least two building projects involving LEED® standards at Silver or higher level of Certification. The State of Minnesota B3 projects can be submitted as comparable work. . The projects listed should include references with name, title, date, and phone, together with the approximate cost per square foot of the space.

   Commercial Development: Private development may be an option for a portion of this campus, and the Consultant or its sub-consultants shall demonstrate expertise in this area of development planning, pro-formas, cost estimating and design.

Roles of the firms and key team members involved in these similar projects shall be clearly identified, including percentage of project involvement from start to finish.

4. **Experience and Capacity** - Describe firm and key team member background and related experience, demonstrating availability and ability to provide required services. Indicate if company expansion is required to provide service.

5. **References** - List a minimum of three references from contracts similar in size and scope.

6. **Financial responsibility and capacity of company** including whether or not the company, any affiliates, subsidiaries, officers or directors have filed for federal bankruptcy protection within seven years of the date of this RFP.

7. **Personnel** – This section should include resumes of all proposed Consultant design team members and indicate the number of staff available within the firm and/or sub-consultant's firm, for work on the Project. The Consultant design team shall include a LEED® Accredited Professional (AP). The Consultant shall assign an experienced Project Manager and Team Leader who are experienced in multi-phased design to the Project, who will be responsible for all aspects of service delivery including the qualitative requirements of LEED®- NC 2.2 Gold (Certified). The resumes should identify discipline, level of expertise, years of experience in areas of specialty and any direct work experience on the projects listed under II.B, "Previous Similar Experience", above.

   Use of Consultants: This section should provide a list of sub-consultants which the firm intends to utilize on the Project. Clear indication of previous associations with those consultants as well as the consultant's experience and their intended participation should be included as well as the consultant's commitments to assume responsibility for their performance. Design experience of consultants related to LEED® building standards shall be emphasized.

   SUBP participation – The Consultant shall make and document every reasonable effort to include certified small businesses, including companies owned by women and minority persons, as part of their design team. Identify SUBP team firms, leaders and team members, their scope and percentage of work and fee. See Attachment A, General Conditions, Item 28 for SUBP requirements, Attachment I, Fee Worksheet and Attachment C, MNUCP Report for a list of qualified SUBP firms.

8. **Familiarity with City Offices and Requirements:** This section should clearly describe the familiarity with City of Minneapolis departments and agencies with which the Consultant shall be required to coordinate, such as: the Minneapolis Public Works Department, the Property Services Division, Civil Rights, and the Small and Underutilized Business Program (SUBP).

9. **Cost/Fees** - This section shall provide a detailed breakdown of the cost of services anticipated to perform the work for the base project (the consolidation of Water Distribution & Maintenance and the Meter department), as well as additional fees related to potential additional scope as described herein and outlined in the "Scope of Services" (Attachment B) and Program Options (Attachment E). The base project is estimated to be an approximately 100,000 sf building with related site development. The total base project cost, including site work, building, design fees, overhead, FF&E, contingency and all other

'soft' costs (not including land and environmental cleanup cost) should be assumed not to exceed twenty-five million dollars.

The Consultant should address how they would propose to adjust their fees, should the design scope and budget be increased (or decreased) for additional departmental or developmental uses as a result of the Scope Definition and Master Planning process.

Each phase of services shall be priced separately and should include hourly rates, reimbursable expenses, and a detailed explanation of cost determination. Specifically, the proposing Consultant firm shall identify (as a base fee) those costs related to providing basic services, and then specifically identify those additional costs related to LEED® - NC 2.2 Gold (Certified). Identify anticipated Reimbursables and include them in the total fee. Total fee for the costs of services will be on a lump sum, not-to-exceed basis. **Consultants shall complete the attached Fee Worksheet, Attachment I.**

The cost of services shall include an hourly rate schedule.

V. EVALUATION OF PROPOSALS – SELECTION OF CONSULTANT: Proposals will be reviewed by an Evaluation Panel made up of representatives of the City of Minneapolis, Department of Finance and Property Services and representatives of the Minneapolis Public Works Department, as well as other City staff as they might require. The Evaluation Panel will select a "short list" of qualified Consultants who will be formally interviewed as part of the final selection, as deemed necessary by the City. Evaluations will be based on the required criteria listed in Section IV "PROPOSAL FORMAT", and the following:

A. Quality, thoroughness, and clarity of proposal.
B. Qualifications and experience of staff (includes a review of references).
C. How well the Scope of Services offered meets department objectives.
D. Financial responsibility and capacity of company.
E. Organization and management approach and involvement for a successful project.
F. Small & Underutilized Business participation.
G. Cost of services proposed.
H. Insurance coverage as required for the services by the General Conditions.

A formal Presentation/Interview will be requested of the "short list" Consultants. Specifically, the City requests that the Consultant's Project Manager assigned to the proposed project team lead the Presentation and that actual members of the project team (including key sub-consultants) participate in the formal Presentation/Interview.

The Presentation/Interview of the "short-listed" Consultants will consist of the following elements, at a minimum:

1. Discussion of the Consultant Team's approach to providing professional services for this Project including program development, multi-phase project delivery, A/E design services, construction administration and inspection services.

2. Discussion of the Consultant Firm's understanding and approach to meeting the desired outcomes for the City for the Project

3. Discussion of the Consultant Firm's familiarity with LEED® requirements as established by the U.S. Green Building Council, and how sustainable design could be incorporated into this Project.

4. Discussion of the Consultant Firm's process for Community Engagement.

5. Discussion of the Consultant Firm's abilities to assist with Workflow Analysis and Organizational Development.

6. Overview of the Consultant Firm's experience as related to the Scope of Services. This shall include any directly related experience, related design/construction experience of any sub-consultants and experience related to LEED® requirements.

7. Questions & Answers: A portion of the Presentation/Interview will be dedicated to questions and answers; a formal list of questions covering a variety of Project related issues will be prepared and made available to each firm just prior to the Presentation/Interviews. The Consultant will be expected to respond to each of the questions, and possible follow-up questions that the evaluation panel may have.

The Evaluation Panel will schedule and arrange for the presentations, following which; the Evaluation Panel will evaluate the Presentation/Interview and provide their recommendation of the selected Consultant Firm to the proper City Council Committee(s) and full City Council for its consideration.

VI. PROJECT SCHEDULE: The following is a listing of key Proposal and Project milestones:

RFP Release	July 22, 2016
Pre-Proposal Conference and tour	9:00 AM on July 29, 2016
Questions on RFP Due by 4 pm	August 2, 2016
Responses to Questions posted by end of day	August 5, 2016
Proposals due by	4:00 PM on August 11, 2016
Estimated Shortlist Interviews week of	August 22, 2016
Estimated Consultant selection	August 29, 2016
Estimated contract execution	October 12, 2016
Estimated services start date	October 17, 2016
Estimated Design period	October, 2016 – July 2017
Est. Demolition/site cleanup	August 2017
Est. Construction Start	September 2017
Est. Construction complete	August 2018
Estimated services end date (close-out)	September 2019

VII. PROJECT PARTICIPANTS: Consultant's primary interface with the City will be with the City's Project Manager, who will act as the City's designated representative for the Project. The City, at its discretion, may complete portions of the Project with the City's own work forces. The Consultant shall not assume any reduction in services based on the City utilizing its own work forces.

The City will contract independent of the Consultant Agreement, a Commissioning Agent (CxA) for the project. In addition, the City may contract with, independent of the Consultant Agreement,

other consulting firms and contractors as deemed necessary to complete the Project. The Consultant shall be expected to coordinate and cooperate with all Project team members.

VIII. CONTRACT: The contracting parties will be the City of Minneapolis and the Consultant selected to provide the services as described herein. The selected proposal, along with the RFP and any elements of the Consultant's counter proposal will be incorporated into a formal agreement after negotiations. It is the intent of the City to use the standard form of agreement between Owner and Architect (AIA B101/201-2007 and B214-2012), with City amendments (Attachment K) as a basis for the formal agreement.

IX. DEPARTMENT CONTACT/REQUESTS FOR CLARIFICATION: Prospective responders shall direct inquiries/questions ***in writing only*** to:

Project Manager: Robert Friddle, Director, Facilities Design & Construction
Property Services Division
Department of Finance & Property Services
350 S. 5th St., Rm 223
Minneapolis, MN 55415
Bob.friddle@minneapolismn.gov

All questions are due no later than 4 pm August 2, 2016. Responses to the Questions will be posted by August 5, 2016, on the City's RFP website
at: http://www.minneapolismn.gov/finance/procurement/rfp

The Project Manager is the only individual who can be contacted regarding the Project before proposals are submitted. Consultants are prohibited from interviewing City staff or other partners in any effort to obtain information relating to this RFP. All requests for clarification should be submitted in writing as outlined in this RFP. Failure to follow this prohibition could result in the rejection of the proposal.

X. REJECTION OF PROPOSALS: The City reserves the right to reject any or all proposals or any Consultant on the basis of the proposal submitted.

XI. ADDENDA TO THE RFP: If any addendum is issued for this RFP, it will be posted on the City of Minneapolis web site at: http://www.minneapolismn.gov/finance/procurement/rfp
The City reserves the right to cancel or amend the RFP at any time.

XII. SITE VISITS Consultants may not visit the site property except during the tour that follows the pre-proposal conference.

ATTACHMENT A

General Conditions for Request For Proposals (RFP)

(Revised: Dec, 2015)

The General Conditions are terms and conditions that the City expects all of its Consultants to meet. The Consultant agrees to be bound by these requirements unless otherwise noted in the Proposal. The Consultant may suggest alternative language to any section at the time it submits its response to this RFP. The City will consider modifying up to three of the sections for which alterations in language has been agreed upon, but only if the Consultant submits alternative language to be approved by the City. Some negotiation is possible to accommodate the Consultant's suggestions.

1. **City's Rights**

   The City reserves the right to reject any or all proposals or parts of proposals, to accept part or all of proposals on the basis of considerations other than lowest cost, and to create a project of lesser or greater expense and reimbursement than described in the Request for Proposal, or the respondent's reply based on the component prices submitted.

2. **Equal Opportunity Statement**

   The Consultant agrees to comply with applicable provisions of applicable federal, state and city regulations, statutes and ordinances pertaining to the civil rights and non-discrimination in the application for and employment of applicants, employees, subcontractors and suppliers of the Consultant. Among the federal, state and city statutes and ordinances to which the Consultant shall be subject under the terms of this Contract include, without limitation, Minnesota Statutes, section 181.59 and Chapter 363A, Minneapolis Code of Ordinances Chapter 139, 42 U.S.C Section 2000e, et. seq. (Title VII of the Civil Rights Act of 1964), 29 U.S.C Sections 621-624 (the Age Discrimination in Employment Act), 42 U.S.C Sections 12101-12213 (the Americans with Disability Act or ADA), 29 U.S.C Section 206(d) (the Equal Pay Act), 8 U.S.C Section 1324 (the Immigration Reform and Control Act of 1986) and all regulations and policies promulgated to enforce these laws. The Consultant shall have submitted and had an "affirmative action plan" approved by the City prior to entering into a Contract.

3. **Insurance**

   Insurance secured by the Consultant shall be issued by insurance companies acceptable to the City and admitted in Minnesota. The insurance specified may be in a policy or policies of insurance, primary or excess. Such insurance shall be in force on the date of execution of the Contract and shall remain continuously in force for the duration of the Contract.

   Acceptance of the insurance by the City shall not relieve, limit or decrease the liability of the Consultant. Any policy deductibles or retention shall be the responsibility of the Consultant. The Consultant shall control any special or unusual hazards and be responsible for any damages that result from those hazards. The City does not represent that the insurance

requirements are sufficient to protect the Consultant's interest or provide adequate coverage. Evidence of coverage is to be provided on a current ACORD Form. A thirty (30) day written notice is required if the policy is canceled, not renewed or materially changed. The Consultant shall require any of its subcontractors, if sub-contracting is allowable under this Contract, to comply with these provisions, or the Consultant will assume full liability of the subcontractors.

The Consultant and its subcontractors shall secure and maintain the following insurance:

a) **Workers Compensation** insurance that meets the statutory obligations with Coverage B- Employers Liability limits of at least $100,000 each accident, $500,000 disease - policy limit and $100,000 disease each employee.
b) **Commercial General Liability** insurance with limits of at least $2,000,000 general aggregate, $2,000,000 products - completed operations $2,000,000 personal and advertising injury, $100,000 each occurrence fire damage and $10,000 medical expense any one person. The policy shall be on an "occurrence" basis, shall include contractual liability coverage and the City shall be named an additional insured. The amount of coverage will be automatically increased if the project amount is expected to exceed $2,000,000 or involves potentially high risk activity.
c) **Commercial Automobile Liability** insurance covering all owned, non-owned and hired automobiles with limits of at least $1,000,000 per accident.
d) **Professional Liability** Insurance or Errors & Omissions Insurance providing coverage for 1) the claims that arise from the errors or omissions of the Consultant or its subcontractors and 2) the negligence or failure to render a professional service by the Consultant or its subcontractors. The insurance policy should provide coverage in the amount of $2,000,000 each claim and $2,000,000 annual aggregate. The insurance policy must provide the protection stated for two years after completion of the work.

4. Hold Harmless

The Consultant will defend, indemnify and hold harmless the City and its officers and employees from all liabilities, claims, damages, costs, judgments, lawsuits and expenses, including court costs and reasonable attorney's fees regardless of the Consultant's insurance coverage, arising directly from any negligent act or omission of the Consultant, its employees, agents, by any sub-contractor or sub-consultant, and by any employees of the sub-contractors and sub-consultants of the Consultant, in the performance of work and delivery of services provided by or through this Contract or by reason of the failure of the Consultant to perform, in any respect, any of its obligations under this Contract.

The City will defend, indemnify and hold harmless the Consultant and its employees from all liabilities, claims, damages, costs, judgments, lawsuits and expenses including court costs and reasonable attorney's fees arising directly from the negligent acts and omissions of the City by reason of the failure of the City to perform its obligations under this Contract. The provisions of the Minnesota Statues, Chapter 466 shall apply to any tort claims brought against the City as a result of this Contract.

Except as provided in the section titled Data Practices, neither party will be responsible for or be required to defend any consequential, indirect or punitive damage claims brought against the other party.

5. Subcontracting

The Consultant shall provide written notice to the City and obtain the City's authorization to sub-contract any work or services to be provided to the City pursuant to this Contract. As required by Minnesota Statutes, Section 471.425, the Consultant shall pay all subcontractors for subcontractor's undisputed, completed work, within ten (10) days after the Consultant has received payment from the City.

6. Assignment or Transfer of Interest

The Consultant shall not assign any interest in the Contract, and shall not transfer any interest in the same either by assignment or novation without the prior written approval of the City. The Consultant shall not subcontract any services under this Contract without prior written approval of the City Department Contract Manager designated herein.

7. General Compliance

The Consultant agrees to comply with all applicable Federal, State and local laws and regulations governing funds provided under the Contract.

8. Performance Monitoring

The City will monitor the performance of the Consultant against goals and performance standards required herein. Substandard performance as determined by the City will constitute non-compliance with this Contract. If action to correct such substandard performance is not taken by the Consultant within a reasonable period of time to cure such substantial performance after being notified by the City, Contract termination procedures will be initiated. All work submitted by Consultant shall be subject to the approval and acceptance by the City Department Contract Manager designated herein. The City Department Contract Manager designated herein shall review each portion of the work when certified as complete and submitted by the Consultant and shall inform the Consultant of any apparent deficiencies, defects, or incomplete work, at any stage of the project.

9. Prior Uncured Defaults

Pursuant to Section 18.115 of the City's Code of Ordinances, the City may not contract with persons or entities that have defaulted under a previous contract or agreement with the City and have failed to cure the default.

10. Independent Consultant

Nothing contained in this Contract is intended to, or shall be construed in any manner, as creating or establishing the relationship of employer/employee between the parties. The Consultant shall at all times remain an independent Consultant with respect to the work

and/or services to be performed under this Contract. Any and all employees of Consultant or other persons engaged in the performance of any work or services required by Consultant under this Contract shall be considered employees or subcontractors of the Consultant only and not of the City; and any and all claims that might arise, including Worker's Compensation claims under the Worker's Compensation Act of the State of Minnesota or any other state, on behalf of said employees or other persons while so engaged in any of the work or services to be rendered or provided herein, shall be the sole obligation and responsibility of the Consultant.

11. <u>Accounting Standards</u>

The Consultant agrees to maintain the necessary source documentation and enforce sufficient internal controls as dictated by generally accepted accounting practices (GAAP) to properly account for expenses incurred under this Contract.

12. <u>Retention of Records</u>

The Consultant shall retain all records pertinent to expenditures incurred under this Contract in a legible form for a period of six years commencing after the later of contract close-out or resolution of all audit findings. Records for non-expendable property acquired with funds under this Contract shall be retained for six years after final disposition of such property.

13. <u>Data Practices</u>

The Consultant agrees to comply with the Minnesota Government Data Practices Act (Minnesota Statutes, Chapter 13) and all other applicable state and federal laws relating to data privacy or confidentiality. The Consultant and any of the Consultant's sub-consultants or sub-contractors retained to provide services under this Contract shall comply with the Act and be subject to penalties for non-compliance as though they were a "governmental entity." The Consultant must immediately report to the City any requests from third parties for information relating to this Contract. The City agrees to promptly respond to inquiries from the Consultant concerning data requests. The Consultant agrees to hold the City, its officers, and employees harmless from any claims resulting from the Consultant's unlawful disclosure or use of data protected under state and federal laws.

All Proposals shall be treated as non-public information until the Proposals are opened for review by the City. At that time, the names of the responders become public data. All other data is private or non-public until the City has completed negotiating the Contract with the selected Consultant(s). At that time, the proposals and their contents become public data under the provisions of the Minnesota Government Data Practices Act, Minnesota Statutes, Chapter 13 and as such are open for public review.

14. <u>Inspection of Records</u>

Pursuant to Minnesota Statutes, Section 16C.05, all Consultant payroll and expense records with respect to any matters covered by this Contract shall be made available to the City and the State of Minnesota, Office of the State Auditor, or their designees upon notice, at any time during normal business hours, as often as the City deems necessary, to audit, examine,

and make excerpts or transcripts of all relevant data.

15. Living Wage Ordinance

The Consultant may be required to comply with the "Minneapolis Living Wage and Responsible Public Spending Ordinance" (http://www.minneapolismn.gov/www/groups/public/@finance/documents/webcontent/convert_255695.pdf), Chapter 38 of the City's Code of Ordinances (the "Ordinance"). Unless otherwise exempt from the ordinance as provided in Section 38.40 (c), any City contract for services valued at $100,000 or more or any City financial assistance or subsidy valued at $100,000 or more will be subject to the Ordinance's requirement that the Consultant and its subcontractors pay their employees a "living wage" as defined and provided for in the Ordinance.

16. Applicable Law

The laws of the State of Minnesota shall govern all interpretations of this Contract, and the appropriate venue and jurisdiction for any litigation which may arise hereunder will be in those courts located within the County of Hennepin, State of Minnesota, regardless of the place of business, residence or incorporation of the Consultant.

17. Conflict and Priority

In the event that a conflict is found between provisions in this Contract, the Consultant's Proposal or the City's Request for Proposals, the provisions in the following rank order shall take precedence: 1) Contract; 2) Proposal; and last 3) Request for Proposals (only for Contracts awarded using RFP).

18. Travel

If travel by the Consultant is allowable and approved for this Contract, then Consultant travel expenses shall be reimbursed in accordance with the City's Consultant Travel Reimbursement Conditions (http://www.minneapolismn.gov/www/groups/public/@finance/documents/webcontent/wcms1p-096175.pdf).

19. Billboard Advertising

City Code of Ordinance 544.120, prohibits the use of City and City-derived funds to pay for billboard advertising as a part of a City project or undertaking.

20. Conflict of Interest/Code of Ethics

Pursuant to Section 15.250 of the City's Code of Ordinances, both the City and the Consultant are required to comply with the City's Code of Ethics. Chapter 15 of the Code of Ordinances requires City officials and the Consultant to avoid any situation that may give rise to a "conflict of interest." A "conflict of interest" will arise if Consultant represents any other party or other client whose interests are adverse to the interests of the City.

As it applies to the Consultant, the City's Code of Ethics will also apply to the Consultant in its role as an "interested person" since Consultant has a direct financial interest in this Agreement. The City's Code of Ethics prevents "interested persons" from giving certain gifts to employees and elected officials.

21. <u>Termination, Default and Remedies</u>

The City may cancel this Contract for any reason without cause upon thirty (30) days' written notice. Both the City and the Consultant may terminate this Contract upon sixty (60) days' written notice if either party fails to fulfill its obligations under the Contract in a proper and timely manner, or otherwise violates the terms of this Contract. The non-defaulting party shall have the right to terminate this Contract, if the default has not been cured after ten (10) days' written notice or such other reasonable time period to cure the default has been provided. If termination shall be without cause, the City shall pay Consultant all compensation earned to the date of termination. If the termination shall be for breach of this Contract by Consultant, the City shall pay Consultant all compensation earned prior to the date of termination minus any damages and costs incurred by the City as a result of the breach. If the Contract is canceled or terminated, all finished or unfinished documents, data, studies, surveys, maps, models, photographs, reports or other materials prepared by the Consultant under this Contract shall, at the option of the City, become the property of the City, and the Consultant shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents or materials prior to the termination.

Notwithstanding the above, the Consultant shall not be relieved of liability to the City for damages sustained by the City as a result of any breach of this Contract by the Consultant. The City may, in such event, withhold payments due to the Consultant for the purpose of set-off until such time as the exact amount of damages due to the City is determined. The rights or remedies provided for herein shall not limit the City, in case of any default by the Consultant, from asserting any other right or remedy allowed by law, equity, or by statute. The Consultant has not waived any rights or defenses in seeking any amounts withheld by the City or any damages due the Consultant.

22. <u>Ownership of Materials</u>

All finished or unfinished documents, data, studies, surveys, maps, models, photographs, reports or other materials resulting from this Contract shall become the property of the City upon the City's payment for and final approval of the final report or upon payment and request by the City at any time before then. The City at its own risk, may use, extend, or enlarge any document produced under this Contract without the consent, permission of, or further compensation to the Consultant.

23. <u>Intellectual Property</u>

All Work produced by the Consultant under this Contract is classified as "work for hire" and upon payment by the City to the Consultant will be the exclusive property of the City and will be surrendered to the City immediately upon completion, expiration, or cancellation of this Contract. "Work" covered includes all reports, notes, studies, photographs, designs,

drawings, specifications, materials, tapes or other media and any databases established to store or retain the Work. The Consultant may retain a copy of the work for its files in order to engage in future consultation with the City and to satisfy professional records retention standards. The Consultant represents and warrants that the Work does not and will not infringe upon any intellectual property rights of other persons or entities.

Each party acknowledges and agrees that each party is the sole and exclusive owner of all right, title, and interest in and to its services, products, software, source and object code, specifications, designs, techniques, concepts, improvements, discoveries and inventions including all intellectual property rights thereto, including without limitations any modifications, improvements, or derivative works thereof, created prior to, or independently, during the terms of this Contract. This Contract does not affect the ownership of each party's pre-existing, intellectual property. Each party further acknowledges that it acquires no rights under this Contract to the other party's pre-existing intellectual property, other than any limited right explicitly granted in this Contract.

24. <u>Equal Benefits Ordinance</u>

Minneapolis Code of Ordinances, Section 18.200, relating to equal benefits for domestic partners, applies to each Consultant and subcontractor with 21 or more employees that enters into a "contract", as defined by the ordinance that exceeds $100,000. The categories to which the ordinance applies are personal services; the sale or purchase of supplies, materials, equipment or the rental thereof; and the construction, alteration, repair or maintenance of personal property. The categories to which the ordinance does not apply include real property and development contracts.

Please be aware that if a "contract", as defined by the ordinance, initially does not exceed $100,000, but is later modified so the Contract does exceed $100,000, the ordinance will then apply to the Contract. A complete text of the ordinance is available at: http://www.minneapolismn.gov/www/groups/public/@finance/documents/webcontent/convert_261694.pdf
It is the Consultant's and subcontractor's responsibility to review and understand the requirements and applicability of this ordinance.

25. <u>City Ownership and Use of Data</u>

The City has adopted an Open Data Policy ("Policy"). The City owns all Data Sets as part of its compliance with this Policy. Data Sets means statistical or factual information: (a) contained in structural data sets; and (b) regularly created or maintained by or on behalf of the City or a City department which supports or contributes to the delivery of services, programs, and functions. The City shall not only retain ownership of all City Data Sets, but also all information or data created through the City's use of the software and /or software applications licensed by the Consultant (or any subcontractor of sub-consultant of the Consultant) to the City.

The City shall also retain the right to publish all data, information and Data Sets independently of this Contract with the Consultant and any of Consultant's subcontractors or sub-consultants involved in providing the Services, using whatever means the City deems

appropriate.

The City shall have the right to access all data, regardless of which party created the content and for whatever purpose it was created. The Consultant shall provide bulk extracts that meet the public release criteria for use in and within an open data solution. The Consultant shall permit and allow free access to City information and Data Sets by using a method that is automatic and repeatable. The Data Sets shall permit classification at the field level in order to exclude certain data.

26. Audit Requirements for Cloud-Based Storage of City Data

If the Consultant's services include the storage of City data using a cloud based solution, then the Consultant agrees to secure the data as though it were "private data" as defined in Minnesota Statutes, Chapter 13. The Consultant shall provide the City with the annual copy of the Federal Standards for the Statement on Standards for Attestation Engagements (SSAE) No. 16 or the International Standard on Assurance Engagements (ISAE) No. 3402. The Consultant agrees to provide a .pdf copy to the City's Contract Manager, upon the Consultant's receipt of the audit results.

27. Small & Underutilized Business Program (SUBP) Requirements

I. Overview

The City of Minneapolis policy is to provide equal opportunities to all businesses, with an effort to redress discrimination in the City's marketplace and in public contracting against Minority-owned business enterprises (MBEs) and Women-owned business enterprises (WBEs). Therefore, the City has set SUBP goals to facilitate participation of qualified and available MBEs and WBEs (MBEs/WBEs) on this contract.

The goals on this contract will be 7% MBE and 10% WBE.

A list of qualified and available MBEs/WBEs[i] within the scope of services is attached. However, this list is updated periodically and may not be exhaustive. Please visit the Minnesota Uniform Certification Program (MnUCP) directory for more information (http://mnucp.metc.state.mn.us/).[ii] This is the only certification accepted by the program.

Consultants must make a Good Faith Effort to meet the SUBP goals prior to submitting their proposal. This means that Consultants must make *every necessary and reasonable effort* to subcontract with MBEs/WBEs1 prior to submitting their proposal. **Commitment to use MBEs/WBEs, Good Faith Efforts to include MBEs/WBEs participation, and compliance with SUBP will be a factor in the selection of proposal(s).**

II. GOOD FAITH EFFORTS EVALUATION

If a Consultant does not meet the project SUBP goals, the Consultant shall demonstrate its good faith efforts to do so. To determine if the Consultant solicited MBEs/WBEs in good faith, following list of actions may be considered:

1. Soliciting through all reasonable and available means (attendance at pre-proposal meetings, advertising and/or written notices) the interest of all MBEs/WBEs certified in the scopes of work of the contract. The Consultant must solicit MBEs/WBEs in sufficient time prior to proposal submission or to allow MBEs/WBEs to respond to solicitations. The Consultant must determine with reasonable certainty if the MBEs/WBEs are interested by taking appropriate steps to follow up on initial solicitations.
2. Selecting portions of the work to be performed by MBEs/WBEs in order to increase the likelihood that the project goals will be achieved. This includes, where appropriate, breaking out contract work into smaller units to facilitate MBE/WBE participation, even when a contractor might otherwise prefer to perform these work items with its own forces.
3. Providing interested MBEs/WBEs with adequate information about the scope, specifications, design criteria, and technical requirements of the contract in a timely manner to assist them in responding to a solicitation.

4. The Consultant must negotiate in good faith with interested MBEs/WBEs and provide written documentation of such negotiation with each such business. In determining whether the Consultant negotiated in good faith, the Evaluation Panel may consider a number of factors including price, scheduling and capabilities as well as the contract goal.
5. The fact that there may be some additional costs involved in finding and using MBEs/WBEs is not itself sufficient reason for a Consultant's failure to meet the project goals as long as such costs are reasonable.
6. If requested by a solicited MBE/WBE, the Consultant must make reasonable efforts to assist such MBEs/WBEs in obtaining bonding, lines of credit or insurance as required by the city or by the Consultant, provided that the Consultant need not provide financial assistance toward this effort.
7. Effectively using the services of minority/woman community organizations; local, state and federal business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the solicitation and placement of MBEs/WBEs. A list of organizations can be found here: http://www.ci.minneapolis.mn.us/civilrights/contractcompliance/subp/subp_minbusres or http://www.ci.minneapolis.mn.us/civilrights/contractcompliance/subp/subp_wmnbusres.

Consultants must thoroughly document their efforts to solicit to and include MBEs/WBEs participation. Please completely and accurately fill out the attached forms. The City will monitor compliance of SUBP throughout the contract. Compliance with the MBE/WBE goal and other SUBP requirements will be a material condition of the contract and failure to comply may be deemed a breach of contract.

Please review Minneapolis Code of Ordinances Chapter 423 for more information or the contact the City of Minneapolis Civil Rights Department (612.673.2086).

[i] The MBE/WBE must be located within the Minnesota counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.

[ii] If a Consultant identifies a business that is not yet certified, but may qualify for certification as MBE/WBE, the Consultant should encourage the business to immediately begin the application process for certification with the MNUCP. The Consultant should include this in their Good Faith Efforts.

[3] The MBE/WBE must be certified within in the scope of work and must perform a commercially useful function.

ATTACHMENT B
SCOPE OF SERVICES
HIAWATHA MAINTENANCE FACILITY PHASE II CAMPUS EXPANSION

PROJECT DESCRIPTION:

The Hiawatha Maintenance Facility Campus Expansion Project is intended to improve and expand the existing City of Minneapolis south campus for additional City equipment maintenance and repair, vehicle storage and maintenance, warehousing and stores, related staff support, offices and conferencing. This co-location will increase the City's operational efficiencies and improve coordination of work activities, and will be consistent with the strategic real estate planning guidelines of the *Siting for Public Facilities* document (Attachment G).

PROJECT OBJECTIVES:

The City's current Water Distribution Maintenance (a service line in the Department of Public Works) facilities are not large enough to meet the City's needs, and do not provide adequate or efficient use of space. By co-locating this operation with other Public Works functions the City will be able to cross train and cross utilize staff (and equipment) to be more efficient and effective in delivering services and better plan work activities throughout the year. Design objectives for this Project are:

- Expansion of a multi-agency municipal operations campus, consistent with the City's Comprehensive Plan, through provision of a facility that meets the current operational needs of the City's functions, within the available funding, designed and constructed in such a way as to easily accommodate potential future additions.
- Design for density and flexibility; provide consideration for present or future programmatic needs of additional departments, including others as may be appropriate.
- Provide for efficiency and improved flow and function of operations in the facility and on the site.
- Provide for shared use of common areas and amenities spaces, such as conferencing, toilets, showers, lockers and break rooms.
- Provide a facility that has a positive impact on the working environment, including, but not limited to: indoor air quality, thermal control, lighting, and acoustics.
- Explore private development opportunities for areas of the site that may not be needed for municipal uses.
- Engage community early to identify community goals , and provide a facility that has a positive impact on the surrounding neighborhood and is considered to be a 'good neighbor'.

COMPREHENSIVE BUILDING PROGRAM and CONCEPT PLAN:

The Consultant will be required to deliver a Comprehensive Building Program and develop multiple Concept Plans to meet the current needs (Base Project – Water Distribution Maintenance as well accommodating future phases or additions as envisioned by the City (Future Phases – Additional Options) and the potential for private development (based on input from the community and potential private developers).The goal will be to develop a multi-purpose facility and site with the initial Base Project construction that could easily accept future additions if additional funding

becomes available from the City. The site and building will be LEED Gold v2.2 Certified, and provide for buffering from the adjacent residential neighborhood.**BASE PROJECT:**
The Base Project will include the Water Distribution Maintenance service line, to include but not limited to parking for 100 staff; offices, indoor vehicle storage for 60 – 70 large/heavy vehicles, several wash and maintenance bays, and vehicle and construction material storage. Yard requirements will include covered salt and sand storage and loading/staging area. **See Preliminary Space Needs Program attachment E.**

The Base Project is estimated to be an approximately 100,000 sf building.

FUTURE PHASES – ADDITIONAL OPTIONS:
Additional City Programs will be evaluated in the Project Scope/Definition and Master Planning Phase (see Scope of Work section that follows) for highest and best use of the site (see Space Needs Program, attached). Potential departments include Traffic Maintenance Facility (currently located at 300 Border Ave. - approximately 60,000 sf with similar office/support for a staff of approximately 65, large/heavy indoor vehicle storage, sign and equipment storage, repair and paint shops), Ramp Maintenance, a Conferencing Center, and additional warehouse storage for Police,Emergency Management and/or Elections.

Use of shared spaces for site circulation, staging and drive lanes, vehicle maintenance, truck wash, officing, conference/break, toilet/showers, etc. shall be considered as a part of the Scope Definition and Master Planning Process. Depending on the scope of Programs determined to be accommodated, an elevated staff parking structure may be required.

PRIVATE DEVELOPMENT OPTIONS:
If it is determined that space is available for private development, the Consultant team will study development opportunities and meet with local developers to explore, review and refine potential development design options. If the City chooses to an option that includes private development, the City reserves the right to have that portion of the project be completed by a separate design consultant under a separate contract.

At the end of the Scope Definition and Master Planning Phase, the Project Scope will be defined, and Consultant fee will be revised accordingly if Project Scope is to go beyond the Base Project.

PROJECT BUDGET:
The City has committed capital funding for the initial planning work. Additional funding has been requested and planned for 2016 and 2017. The total Base Project cost, including environmental cleanup, site work, building, design fees, overhead, FF&E, contingency and all other 'soft' costs, should be assumed not to exceed $25,000,000 (twenty five million dollars).

The total Base Project budget is approximately broken down as follows:

- Site Demolition and Remediation
- Site Work
- Building Construction
- General Conditions, Permits, Design Fees, Contingency
- City of Minneapolis Project Management and oversight, FF&E

The goal of the project is to provide the City with the highest value for its available budget. Progressive Cost Estimating and Scope Management will be utilized, and Add and/or Deduct Alternatives will be identified to assist in achieving this goal.

Design fees should be based upon the Base Project scope of work, and Proposals should include a framework for basis of additional fees, based upon square footage of site and building that is determined to be added, if any.

EXISTING SITE:

The existing City-owned Roof Depot office and warehouse at 1860 E. 28th St. may be re-purposed in whole or in part, or may be demolished as a part of this scope for development of this site.

- **Environmental**
  The City has previously contracted with an independent environmental consultant to perform environmental assessments (Phase I & II) for the Roof Depot site (see Attachment F). These reports indicate existing building hazardous materials and soil contamination on the site. Independent environmental abatement of building and soils will be required as part of the Project (scope to be confirmed based on need), but not in the scope of this RFP, except for collaboration. There is an existing arsenic plume in the groundwater, and site and building storm water solutions will need to be designed to keep from infiltrating into this plume. These reports are available for review; they are being updated and copies will be made available to the Consultant during the design process.
- **Geotechnical**
  The City will contract with an independent geotechnical consultant to perform geotechnical assessments for the site. For purposes of this proposal, Consultant should assume that any proposed building can be supported on conventional spread footings. No examination has been performed specific to the ability of the soils to infiltrate storm water. This report will be made available to the Consultant during the design process.
- **Site Survey**
  The City has contracted for a site survey; see Attachment D. This will be made available to the Consultant during the design process.

DESIGN TEAM:

The Consultant for this Project shall consist of, but not be limited to, the following: the City's Project Manager, the Consultant (and sub-consultants), Department representatives from the Public Works Department and various other representatives of the Department of Finance Property Services and the City of Minneapolis. The Consultant shall be expected to coordinate and cooperate with all Design Team members throughout the Project.

SCOPE OF WORK:

The general scope of the entire Project is the complete planning, design, selective or entire demolition, site preparation, and construction of a new or re-purposed Water Distribution Maintenance and Vehicle Storage & Maintenance Facility for the Public Works Department fleet, as well as for additional City Department fleet and storage needs, as determined.

The selected A/E will be responsible for complete planning, design, and contract documents for publicly bidding the construction work, and for construction administration of the Hiawatha

Maintenance Facility Phase II to meet the operational needs of the Minneapolis Public Works Water and Meter Departments, and other City departmental needs as identified.

The Scope of Work for the Consultant shall include, but is not limited to, the following major items:

- The Consultant shall assist the City in attaining its Project Objectives and Sustainable (Green) Objectives, as stated herein.
- Scope Definition & Master Planning
- Development of a Final Building Program (including program options for the base Project) based upon the "Conceptual Design", the OPR, and the BOD.
- Schematic Design, Design Development, Contract Documents, Bidding Support and Construction Administration, Warranty, and Project Close-out that provides for demolition, site preparation, and construction of a facility that provides for a LEED® Gold Level (Certified) Project under the LEED® - NC v2009 Rating System. The project will be submitted to the USGBC and consultants will be expected to use their tracking and scoring format, and provide energy modeling services. Consultants will be responsible for collecting and submitting required data from General Contractor for completion of the LEED submission.
- Schematic Design, Final Design, Contract Documents, Construction Administration, Warranty, and Project Close-out that provides for the inclusion of the commissioning process per the requirements of ASHRAE Guideline "0" 2005.
- Progressively detailed, professional Cost Estimating at the end of each phase.
- Bi-weekly design coordination and construction administration meetings.
- Participation in Community Engagement presentations during the Scope Definition/Master Planning, Programming and Schematic Design phases.
- Participation in Private Commercial Development workshops with local developers and Community Planning and Economic Development (CPED) representatives during the Scope Definition/Master Planning Phase
- Collaboration with independent Building Envelope and Systems Commissioning Agents, IT consultants, A/V, Security and office FF&E.
- Design and Specification for installation of lifts, truck wash, storage systems and shop equipment.
- Consultant shall identify anticipated special inspections for this project type and include in their scope specification of Special Inspections and coordination of and collaboration with independent Testing and Inspections consultants.
- Verify all site conditions, existing elevations, utilities, and systems. Verify existing building interior and exterior dimensions for re-use planning.
- The final design and specifications shall be in accordance with Minneapolis Standards for design and construction.

Commissioning: The City intends to contract, independent of the Consultant Agreement, a Commissioning Agent. The Consultant shall coordinate with, cooperate with, and assist the City's Commissioning Agent in the full commissioning process and its implementation of a Building Commissioning Plan. That plan shall result in full compliance with the LEED® standard for full

documentation of building commissioning. In particular it will structure and document the full initiation, testing, operational instruction, and record documentation of all building systems.

Traffic: The City intends to hire a Traffic Engineer to study traffic counts and make recommendations to mitigate traffic impacts to the neighborhood.

Owners Project Requirements (OPR) and Basis of Design (BOD): The Consultant shall assist the City and the Commissioning Agent in the development of "Owners Project Requirements (OPR)" and "Basis of Design (BOD)" documents, which includes the City of Minneapolis, Property Services Building Standards, and the LEED®-NC v2009 Registered Project Checklist.

Scope does not include design and selection of office area Furnishings, Fixtures and Equipment (FF&E), IT, A/V or Security, but does include collaboration and coordination for provision of rough-ins for these disciplines. The City will provide its own move management services.

The City reserves the right to put on hold or stop the Project at each phase.

Consultant shall notify the City Project Manager as soon as possible for any change in scope that affects fees. Design fees are to be reviewed and resolved, if needed, at the end of each phase.

There are no Federal funds or related standards involved in this project. There are no special purchasing programs required.

Project Requirements/Phases/Deliverables: The intent of this section is to identify project specific requirements and deliverable services that will be incorporated into the overall contract for Consultant design services. In general, at each phase of the design process the Consultant will provide, for review and acceptance, adequate written information as to size, scope, cost, and nature of all proposed work.

A. **LEED® Plan:** The Consultant shall assign its LEED® Accredited Professional (AP) to act as LEED® Team Leader who will be responsible to, supervise, manage, document, and direct the process as required to attain LEED® - NC v2009 Gold Certified requirements.

The Consultant shall conduct a sustainable design workshop to consider sustainable design alternatives and their costs, and assist the City in determination of LEED and sustainable design priorities consistent with the OPR and BOD documents. The Consultant shall re-visit and update this priority list at each design phase.

Daylighting and Solar Energy Collection: Where feasible, accommodation should be made for natural daylighting of interior spaces, and the roof structure and systems should be designed to accept solar collector panels as a part of this project or at some point in the future.

Energy Modeling: Consultant team will provide building energy modeling to evaluate and establish LEED points, and will collaborate with Excel Energy Design Assistance to identify design options and rebates.

B. **Budget & Cost Estimates:** The Consultant firm shall consider the Project Budget as a **"not to exceed budget"**, and to design the Project needs based upon this amount. Cost control shall be considered throughout the Project. The Consultant shall prepare an estimate of probable construction cost for comparison with the Project Budget. The Consultant will continually provide cost related information to the City for decision-making purposes. Value engineering concepts are expected. The intent is to work within the defined budget.

If at any point during the Project it is determined that the proposed budget has or will be exceeded, the Consultant and the City shall only proceed based upon the provisions of the Consultant Agreement and per the provisions of AIA B141, Article 2.1, Section 2.1.7 "Evaluation of Budget and Cost of the Work".

C. **Project Scoping/Definition and Master Planning Phase:** The Consultant shall review City present and future potential Programmatic needs, an independently - commissioned traffic study, independently – commissioned survey and environmental studies, characteristics of the available site, landscaping and snow storage requirements, staff traffic, vehicle staging and circulation, and neighborhood concerns to determine highest and best use of the site.

The Consultant shall prepare a Conceptual Program and Master Plan studies considering present and future needs, combining resources such as lockers/toilets/showers, break and conference rooms, truck wash and vehicle and equipment repair, central stores, etc., and illustrating the best potential for site development as a service node promoting density, energy savings and staffing efficiencies.

The Consultant shall meet with the Project Manager and the department contact(s) of the Public Works Department, Parks and other City Departments and Committees to review this work and prepare alternatives and/or make revisions as directed by the Project Manager.

The Consultant shall attend one evening neighborhood project definition and goals discussion, and develop and present conceptual design alternatives for two evening neighborhood meetings as a part of this phase. **All final public presentation material shall be reviewed and approved in advance by the Project Manager.**

The Consultant shall attend one Community Planning & Economic Development (CPED)/private development project definition and goals discussion, and develop and present conceptual design alternatives for two CPED/developer meetings as a part of this phase. **All final public presentation material shall be reviewed and approved in advance by the Project Manager.**

This Phase will end with City Council/Mayor formal direction to proceed with a selected conceptual scope and budget. Fees will be adjusted accordingly, if appropriate. Additional fees will require Council approval and may delay the design schedule. Such delay, if needed, shall not increase the fee.

D. **Program Development:** The Consultant shall review, verify, and update the owner provided "Preliminary Building Program" **This verification shall include a review of existing space utilizations and determine any changes for future space allocation in the facility.**

The Consultant will complete a Functional Needs Assessment of all spaces in the Preliminary Building Program as part of developing the Final Building Program. The Consultant shall address efficiency of space use, operational flow & function, shared use of space, and parking & equipment storage in order to develop a "Final Building Program" based upon the "Preliminary Building Program", the OPR, the BOD, and the LEED® Certification Plan. The Consultant shall lead a Workflow Analysis workshop with the existing and new Departmental/Divisional leadership to identify work order and dispatching flow, and identify process improvements that new space planning and building design can help support.

In addition, the Consultant shall provide program development for potential optional/future functions such as Regulatory Services Housing Inspection offices, Property & Evidence secure warehouse storage, Traffic Maintenance and others as deemed appropriate.

The Consultant will adjust the space allocations of the Base Building Program as needed to account for circulation, hallways, etc. The owner will participate in prioritizing what space program may be reduced or eliminated to stay within budget.

This phase will end with the acceptance of the "Final Building Program" and preliminary construction cost estimate by the City's Project Manager and the departments involved.

E. **Concept Design:** The Consultant shall prepare conceptual designs in conjunction with and based upon the development of the "Final Building Program", including consideration of potential options and possible future phases and functions. At a minimum, the Consultant shall be expected to submit two (2) alternatives of the conceptual design for approval.

The approved final Conceptual Design shall consist of architectural renderings, electronic 3D representations, and drawings, which indicate the relationship and scale of interior spaces, exterior spaces, pedestrian circulation and vehicular circulation. The concept design indicates how these elements from the "Final Building Program" relate to each other and the requirements of the site.

This phase will end with the acceptance of the "Final Building Program" and construction cost estimate by the City's Project Manager and the department contact(s) of the Departments involved.

F. **Schematic Design Phase:** The Consultant shall prepare a schematic design that incorporates the requirements of the "Final Building Program", the LEED® requirements, and the accepted concept design. Emphasis shall be given to the operational business needs, flow, and function. The proposed layout shall be in compliance with City office standards

for space allocation. The Project Manager shall provide to the Consultant a list of current Property Services Building Standards for such items as: hardware, plumbing fixtures, electrical, fire alarm, HVAC, HVAC digital controls (DDC), finishes, window treatments, door operators, and others as deemed necessary.

Schematic design shall consist of drawings, outline specifications, and other documents illustrating the scale, nature and relationship of all Project components and systems.

The Consultant shall meet with the Project Manager and the department contact(s) of the Public Works Department and other Departments to review this work and prepare alternatives and/or make revisions as directed by the Project Manager.

The Consultant shall develop and present schematic design concepts for up to three evening neighborhood meetings. All final public presentation material shall be reviewed and approved in advance by the Project Manager.

This phase will end with the acceptance of the "Final Building Program", Schematic Design and construction cost estimate by the City's Project Manager and the client department contact(s).

G. **Design Development Phase**: Based on the accepted schematic design the Consultant shall prepare Design Development Documents consisting of drawings, detailed outline specifications and other documents sufficient to fix and describe the size and character of the Project as to architectural, structural, mechanical and electrical systems, materials, finish and such other elements as may be appropriate.

The Consultant will be required to meet with local code officials, planning and zoning departments, local fire officials, and others as per the City's direction, in order to identify and resolve issues that will impact the intended use of the space. These issues shall include, but not be limited to the following:

1. Code Review: Consultant will meet with local building code and fire officials to verify exiting building code, ADA, fire, and other related issues.

2. Planning and Zoning Review: The Consultant shall meet with the Minneapolis Planning and Zoning Departments to arrange for Site Plan Review, Planning Commission Approval, and other related approvals as deemed necessary.

The Consultant shall meet with the Project Manager and the department contact(s) of the client Departments to review this work and prepare alternatives and/or make revisions as directed by the Project Manager.

This phase will end with the acceptance of the design development documents and construction cost estimate by the City's Project Manager and the client department contact(s).

H. **Construction Documents Phase:** Based on the accepted Design Development Documents, and any further adjustments in the scope or quality of the Project necessary to maintain the Construction Budget, the Consultant shall prepare, for review and acceptance by the City, documents consisting of Drawings and Specifications and other Bidding Documents, the Conditions of the Contract, and the forms of the agreements between the City and the Contractor for the Project, setting forth in detail the requirements for the construction of the Project.

The Consultant shall meet with the Property Services Project Manager and the client department contact(s) to review this work at 25, 50, 75 and 95% completion, and prepare alternatives and/or make revisions as directed by the Project Manager.

The Consultant shall keep the department contact informed of any changes in requirements or in construction materials, systems or equipment as the Drawings and Specifications are developed, and adjust the Estimate of Construction Cost.

The Consultant shall act as the agent of the City of Minneapolis, on behalf of the Finance and Property Services Department, Property Services Division in regards to all aspects of Design, and Construction as specified within the scope of services including coordination with various other City of Minneapolis Departments including: Planning, Zoning and Building Inspections.

The Consultant shall perform the filing of all design-related documents required for the approvals of governmental authorities having jurisdiction over the Project including Planning, Zoning and Building Inspections. All permits will be obtained by the Consultant in coordination with the department contact.

The Consultant shall provide complete engineering and design services as described in the Proposal and the RFP.

This phase will end with the acceptance of the construction documents and construction cost estimate by the City of Minneapolis Project team.

I. **Bidding Phase:** The City intends to competitively bid the Project as a single prime general contract. The City, at its own discretion, may complete portions of the Project utilizing its own work forces. The Consultant will be required to provide complete drawings and specifications, similar to if the Project were bid out in its entirety. The Consultant shall assist the City in obtaining bids. This shall include rendering multiple interpretations and clarifications of the Drawings and Specifications in written form, participating with the City in pre-bid conferences, preparation of any required addenda, and assisting in the evaluation of bids and pre award conferences.

Note to the Consultant: No additional compensation shall be due to the Consultant for services related to the volume of Bidders, or the number of requests for interpretations or clarifications related to the Project.

J. **Construction Phase:** Existing site and building demolition and site environmental clean-up will be handled under separate City Contract. The Construction Phase will commence with the award of the contract for construction. The Consultant shall advise and consult with the City during the Construction Phase. The Consultant shall have authority to act on behalf of the City only to extent provided in the Contract Documents.

The Consultant shall provide that level of regular on-site inspections that the Consultant determines will provide a reasonable assurance that the Work is being performed in a manner indicating that, when completed, it will be in accordance with the Contract Documents. Architects and engineers that the Consultant deems to be of appropriate discipline will perform such regular on-site inspections. The Consultant represents that the level of staffing will be adequate to perform the Consultant's responsibilities.

On the basis of the regular on-site observations, the Consultant shall keep the City informed of the progress and quality of the Work, and the results of the Consultant's on-site observations. The Consultant shall endeavor to guard the City against defects and deficiencies in the work of the contractors. Although nothing shall render the Consultant responsible for the errors or omissions of any contractor, or any agent or employee of a contractor, or any other persons performing any of the Work, or for the failure of such person to carry out the Work in accordance with the Contract Documents, the Consultant shall be responsible for reporting any errors or omissions of which it becomes aware, or reasonably should have become aware, to the City.

The Consultant shall coordinate with the Contractor to arrange for, and attend regular on-site construction meetings as deemed necessary. The Consultant shall at all times have access to the Work wherever it is in preparation or progress.

The Consultant shall not be responsible for, nor have control, or charge of, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Project. The Contractor shall have control, or charge of, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Project.

The Consultant is responsible for dimensional consistency in the Plans and Specifications. Further, the Consultant is responsible to coordinate the physical organization of the Work shown on the Plans and Specifications. The Consultant is responsible for review and approval of the Shop Drawings for the dimensional consistency and the physical organization of the work shown on the Plans and Specifications.

Upon request of the Contractor or City the Consultant shall render interpretations, with respect to the requirements of the Contract Documents, necessary for the proper execution or progress of Work with reasonable promptness and in accordance with agreed upon time limits. All interpretations and decisions of the Consultant shall be consistent with the intent of, and reasonably inferable from, the Contract Documents, and shall be in writing or in graphic form.

The Consultant shall have authority to reject work which does not conform to the Contract Documents and whenever, in the Consultant's reasonable opinion, it is necessary or advisable for the implementation of the intent of the Contract Documents, the Consultant shall have authority to require special inspection or testing of work in accordance with the provisions of the Contract Documents, whether or not such work be then fabricated, installed or completed; but, the Consultant shall take this action only after written authorization from the City.

The Consultant shall receive Contractors' submittals such as Shop Drawings, product data and samples from the Contractors, suppliers and vendors and shall review or take other appropriate action upon them. Such action shall be taken with reasonable promptness so as to cause no delay and in accordance with the Project Schedule requirements.

The Consultant shall formulate and make recommendation to the City or take other appropriate action on Change Orders for the City's acceptance in accordance with the Contract Documents.

The Consultant shall recommend to the Contractor appropriate minor changes in Work not involving an adjustment in the contract sum or an extension of the contract time and which are not inconsistent with the intent of the Contract Documents. Only a written Change Order shall effect such changes.

Upon notification by, and in conjunction with, the Contractor, the Consultant shall make Substantial Completion inspections and prepare and issue Punchlists and, in conjunction with the contractors, perform two (2) follow-up inspections to verify completion of Punchlist items. The Consultant shall conduct inspections to determine the Date of Substantial Completion and Final Completion and shall execute appropriate Project Certificates for Payment.

K. Project Close-Out Phase: The Consultant shall receive, review and forward to the City for the City's acceptance written warranties, equipment manuals and related documents assembled by the contractors.

The City shall, if reasonably requested by the Consultant, require shop drawings provided by the applicable Contractor to be certified for conformity with all applicable laws and codes by a professional engineer who is licensed in Minnesota.

It shall be considered part of the Consultant 's Basic Services to perform the required warranty checks one (1) year following the Date of Substantial Completion of the Project.

The Consultant shall at all times maintain an accurate, up-to-date set of field drawings and Specifications readily available for the City's use. These Drawings will not, however, be Record Drawings.

L. Proposed Design Schedule:

- Review Proposals/Interview/Award/Contract – late August - September 2016

- Project Team Initiation/ Project Scoping/Definition and Master Planning & Programming – October - November 2016
- Schematic Design —December 2016 - January 2017
- Design Development – February - April 2017
- Construction Documentation/Cost Estimating/Plan Review – May - August 2017
- Bidding/Contract – August - September 2017
- Demo/Environmental/Construction September 2017 – November 2018
- Close out – November 2019

City of Minneapolis Small and Underutilized Business Program (SUBP)

Roof Depot/Hiawatha Maintenance Facility Phase II Expansion - Design

This report lists MBEs and WBEs that have been certified by the Minnesota Uniform Certification Program (MnUCP) in scopes of services relevant to this project. If additional scopes of services are identified, the MnUCP online directory (http://mnucp.metc.state.mn.us/) should be utilized to find additional certified MBEs and WBEs in those scopes. Note that if a firm is certified as both MBE and WBE, that firm's participation in the project will only count toward the MBE goal.

The scopes of services are categorized using the North American Industry Classification System (NAICS). For definitions and more information about NAICS Codes visit the U.S. Census Bureau (http://www.census.gov/eos/www/naics/).

NAICS CODE: 541310 Architectural Services

Company	Contact	Email	Phone	Fax	MBE	WBE
4RMULA	ERICK GOODLOW	info@4rmula.com	651-292-0106	651-925-0632	Yes	No
BENTZ/THOMPSON/RIETOW INC	ANN VODA	annv@btr-architects.com	612-332-1234	612-332-1813	No	Yes
C3 DESIGN INC	CARLETON CRAWFORD	carleton@c3DesignINC.com	612-384-0356	612-724-1729	Yes	No
CERMAK RHOADES ARCHITECTS	TERRI CERMAK	tcermak@cermakrhoades.com	651-556-8631	651-225-8720	No	Yes
CLEVER ARCHITECTURE LLC	MARCIA STEMWEDEL	MARCIA@SM-ARCH.COM	651-302-0420		No	Yes
DOMAIN ARCHITECTURE & DESIGN INC	DEBORAH EVERSON	deb@domainarch.com	612-870-7507		No	Yes
DUAN CORPORATION	FRANK DUAN	fduan@duancorp.com	612-326-3000	612-677-3727	Yes	No
IMO CONSULTING GROUP	ISMAEL MARTINEZ-ORTIZ	IMARTINEZ@IMOCONSULTINGGROUP.COM	952-446-7898		Yes	No
LADOUCEUR ARCHITECTURE & DESIGN LLC	JANIS LADOUCEUR	janis@LAandD.com	612-760-1643		No	Yes
LAWAL SCOTT ERICKSON ARCHITECTS INC (AKA LSE ARCHITECTS)	MOHAMMED LAWAL	mlawal@lse-architects.com	612-343-1010	612-338-2280	Yes	No
LUKEN ARCHITECTURE PA	ELLEN LUKEN	Eluken@lukenarch.com	612-630-0074	612-630-0075	No	Yes
MOBILIZE DESIGN & ARCHITECTURE LLC	JAMIL FORD	JAMIL@MOBILIZEDESIGN.NET	612-208-0504	612-465-6542	Yes	No
PAMOZI (DBA SPECIFICATIONS & GREEN BUILDING CONSULTANTS NETWORK)	SUNNY ONADIPE	sgbcn@specsandgreenconsultants.com	612-703-1365		Yes	No
PRESERVATION DESIGN WORKS LLC (DBA PVN)	MEGHAN ELLIOTT	elliott@pvnworks.com	612-843-4140		No	Yes
PROFESSIONAL DESIGN INTERNATIONAL LTD (PDI DESIGN GROUP LTD)	STEPHEN HUH	shuh@pdidg.com	612-333-1140	612-333-1190	Yes	No
SNOW KREILICH ARCHITECTS	ALITA BERGAN	mail@snowkreilich.com	612-359-9430		No	Yes

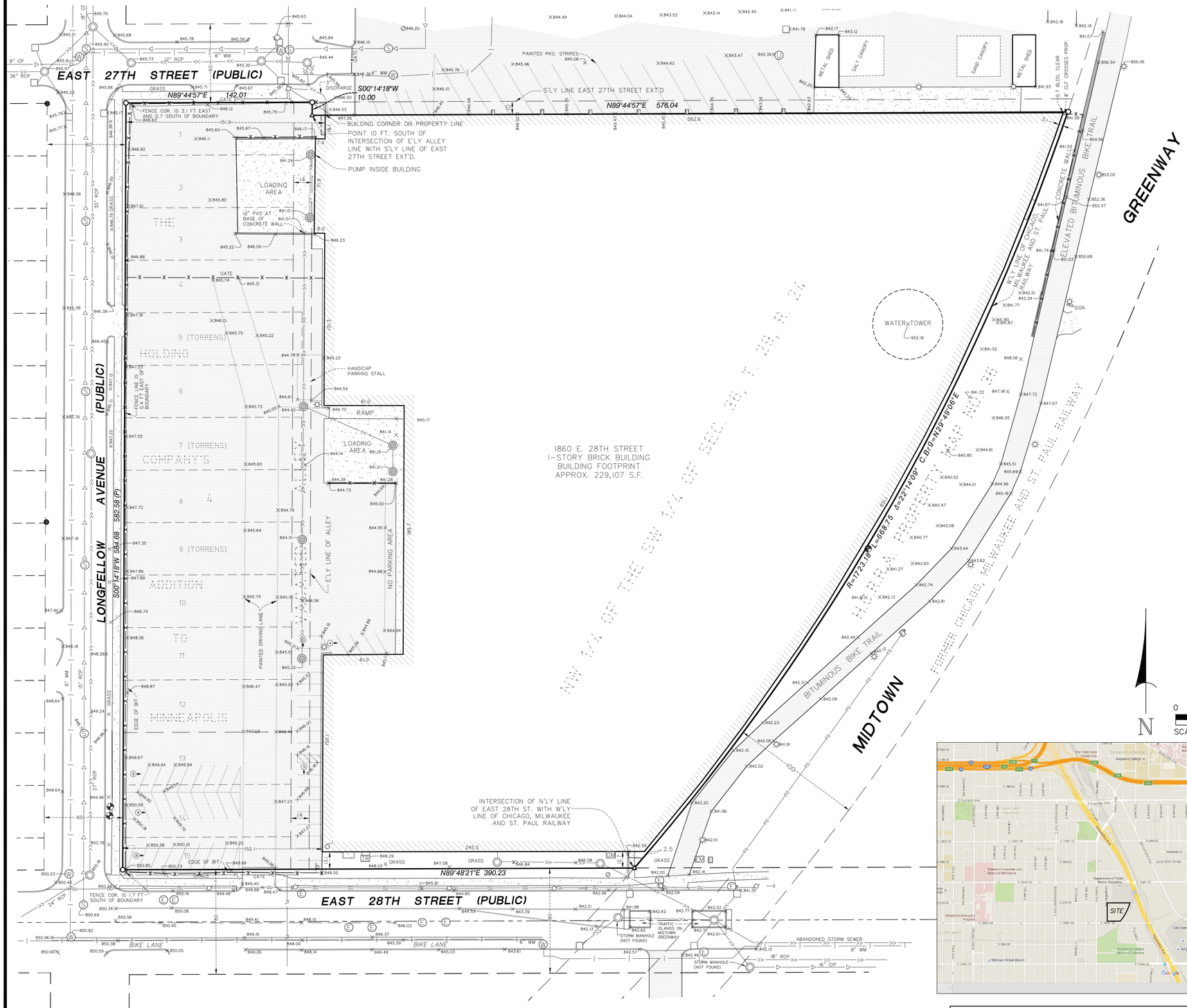
NAICS CODE: 541320 Landscape Architectural Services

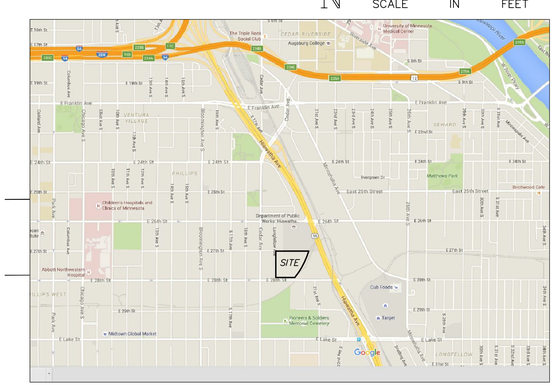
Company	Contact	Email	Phone	Fax	MBE	WBE
C3 DESIGN INC	CARLETON CRAWFORD	carleton@c3DesignINC.com	612-384-0356	612-724-1729	Yes	No
COMMUNITY DESIGN GROUP	ANTONIO ROSELL	arosell@c-d-g.org	612-354-2901		Yes	No
CORNEJO CONSULTING COMMUNITY PLANNING + DESIGN	DANIEL CORNEJO	dancornejo@comcast.net	651-699-1927	651-698-0212	Yes	No
FLOODPLAIN COLLECTIVE	ANNA BIERBRAUER	anna@floodplaincollective.com	612-385-1480		No	Yes
HANSEN THORP PELLINEN OLSON INC	LAURIE JOHNSON	ljohnson@htpo.com	952-829-0700	952-829-7806	No	Yes
KARI HAUG PLANNING AND DESIGN INC	KARI HAUG	kari@karihaug.com	612-272-3432		No	Yes
KATHE FLYNN LANDSCAPE ARCHITECTURE LLC	KATHE FLYNN	kflynnland@gmail.com	952-491-1154		No	Yes
LAC ENTERPRISES (DBA WINDSOR COMPANIES)	TERRY CHILDERS	terry@windsorcompanies.com	651-482-0205	651-482-0607	Yes	No
MOBILIZE DESIGN & ARCHITECTURE LLC	JAMIL FORD	JAMIL@MOBILIZEDESIGN.NET	612-208-0504	612-465-6542	Yes	No
PLATFORM - 3D LLC	KATHRYN RYAN	kathryn@platform-3d.com	612-382-4565		No	Yes
URBAN OASIS LLC	STEPHEN KUNG	urbanoasisllc@gmail.com	612-799-3934	612-377-4025	Yes	No
WETLAND HABITAT RESTORATIONS, LLC (DBA WHR ECOLOGICAL AND HEADWATERS DESIGN GROUP, LLC)	CARRIE CHRISTENSEN	carrie@whr.mn	612-385-9105		No	Yes

NAICS CODE: 541330 Engineering Services

Company	Contact	Email	Phone	Fax	MBE	WBE
3HM LLC	HECTOR NANKA BRUCE	HECTORNANKABRUCE@3HMLLC.COM	952-846-4340		Yes	No
BUILDINGS CONSULTING GROUP INC	LEWIS NG	LNg@bcgminnesota.com	612-789-6696	612-789-6397	Yes	No
BUSSELL COMPANIES INC	ANGIE BUSSELL	abussell@bussellcompanies.com	952-931-2111	952-931-1222	No	Yes
CHASE ENGINEERING LLC	AMY TRYGESTAD	Amy.Trygestad@chase-eng.com	952-607-1946		No	Yes
COMMUNITY DESIGN GROUP	ANTONIO ROSELL	arosell@c-d-g.org	612-354-2901		Yes	No
DEBRA S. HAUGEN LLC	DEBRA HAUGEN	DHaugen1@me.com	612-220-7322	952-929-9038	No	Yes
ELAN DESIGN LAB INC	MARCELLE WESLOCK	MWESLOCK@ELANLAB.COM	612-260-7981	612-260-7990	No	Yes
ELFERING & ASSOCIATES PLC	KRISTINA ELFERING	kelfering@elferingeng.com	763-780-0450	763-780-0452	No	Yes
ENGINEERING DESIGN & SURVEYING (EDS INC)	VLADIMIR SIVRIVER	vsivriver@edsmn.com	763-545-2800	763-545-2801	Yes	No
EVS INC	K. DENNIS KIM	dkim@evs-eng.com	952-646-0236	952-646-0290	Yes	No
FOURTH FACTOR ENGINEERING LLC	ELIZABETH BECKER	liz.becker@fourth-factor-engineering.com	612-708-2562		No	Yes

HALLBERG ENGINEERING	RICHARD LUCIO	rlucio@hallbergengineering.com	651-748-4386	651-748-9370	Yes	No
HANSEN THORP PELLINEN OLSON INC	LAURIE JOHNSON	ljohnson@htpo.com	952-829-0700	952-829-7806	No	Yes
HZ UNITED LLC	HUGH ZENG	hughzeng@hzunited.com	763-551-3699	763-390-9270	Yes	No
IMO CONSULTING GROUP	ISMAEL MARTINEZ-ORTIZ	IMARTINEZ@IMOCONSULTINGGROUP.COM	952-446-7898		Yes	No
INGENSA INC	JACQUELINE COLEMAN	jcoleman@InGensaInc.com	952-222-3550	952-222-9980	Yes	Yes
ISTHMUS ENGINEERING INC	KATHERINE TOGHRAMADJIAN	katie@isthmusengineering.com	612-306-5774		No	Yes
JPMI CONSTRUCTION CO.	JAVEED HADI	jay@jpmiconstruction.com	651-636-1499	651-363-1699	Yes	No
LIGHTING MATTERS INC	DEB EDWARDS	debe@lighting-matters.com	612-341-2100	612-341-2101	No	Yes
LV ENGINEERING LLC	TRACY LAVERE	lv_engineering@comcast.net	651-797-3885	612-353-4398	No	Yes
MARTINEZ GEOSPATIAL INC	GIL MARTINEZ	steve@mtzgeo.com	651-686-8424	651-686-8389	Yes	No
MN BEST	HYON KIM	htkim@mnbestinc.com	612-270-6128		Yes	Yes
MOBILIZE DESIGN & ARCHITECTURE LLC	JAMIL FORD	JAMIL@MOBILIZEDESIGN.NET	612-208-0504	612-465-6542	Yes	No
MOULI ENGINEERING INC.	SHOBHA MURTHY	mouli@mouliengg.com	612-424-5176		Yes	Yes
M-P CONSULTANTS PC	BEATRIZ MENDEZ-LORA	bmendez@mpcons.com	612-567-2667		Yes	Yes
PIERCE PINI AND ASSOCIATES INC	RHONDA PIERCE	rhonda@piercepini.com	763-537-1311	763-537-1354	No	Yes
PRESERVATION DESIGN WORKS LLC (DBA PVN)	MEGHAN ELLIOTT	elliott@pvnworks.com	612-843-4140		No	Yes
PROFESSIONAL ENGINEERING SERVICES LTD	ANNA JOHNSON	johns421@umn.edu	612-275-8190		No	Yes
PROGRESSIVE CONSULTING ENGINEERS INC	NUZHAT QURESHI	pce@pce.com	763-560-9133	763-560-0333	Yes	Yes
QUESTIONS & SOLUTIONS ENGINEERING INC	CRAIG ELLIS	craig.ellis@qseng.com	612-308-4716	952-361-9343	No	Yes
RANI ENGINEERING INC	LINA NAZARETH	susan.rani@ranieng.com	612-455-3322	612-455-3321	Yes	Yes
SAMBATEK INC.	SIRISH SAMBA	SSamba@sambatek.com	763-476-6010	763-476-8532	Yes	No
STANDARD CONTRACTING INC	REBECCA SEIDENKRANZ	becky@stanconinc.com	651-463-2510	651-463-2525	No	Yes
STONEBROOKE ENGINEERING INC	BRENDA ARVIDSON	brenda@stonebrookeengineering.com	952-402-9202	952-403-6803	No	Yes
SYSTEMS TECHNICAL SERVICES INC	MONA DZWONKOWSKI	mdz@systechservices.org	763-757-0350		No	Yes
VEDI ASSOCIATES INC	P.S. VEDI	ps@vediassociates.com	612-333-4670	612-333-6797	Yes	No
WALKER ENGINEERING INC	SHIRLEY WALKER STINSON	swalker@popp.net	763-422-8696	763-422-8696	No	Yes
WILLIAMS ENGINEERING LTD	DAVID WILLIAMS	dgw@williamseng.com	651-631-3121	651-631-3175	Yes	No





VICINITY MAP

PROPERTY DESCRIPTION

Parcel 1:
Lots 1, 2, 3, 4, 6, 8, 10, 11, 12, 13, 14 and 15, Block 4, The Holding Company's Addition to Minneapolis, together with that part of the NW 1/4 of the SW 1/4 of Section 36, Township 29, Range 24, described as follows: Commencing at the intersection of the Northerly line of East 28th Street with the Westerly line of Chicago, Milwaukee and St. Paul Railway Company's right of way; thence Westerly along said northerly line of East 28th Street to its Intersection with the Easterly line of an alley in Block 4, of the Holding Company's Addition to Minneapolis; thence North along said Easterly alley line to a point 10 feet South of the intersection of said Easterly alley line with the Southerly line of East 27th Street, if extended; thence Easterly along a line 10 feet South of the Southerly line of East 27th Street extended to the Westerly line of the right of way line of the Chicago, Milwaukee and St. Paul Railway; thence in a Southwesterly direction along said Westerly line of said right of way to the place of beginning according to the United States Government survey thereof, and situate in Hennepin County Minnesota, together with the vacated alley adjoining the Easterly line of Block 4, Holding Company's Addition. (Abstract Property)

Parcel 2:
Lots 5, 7 and 9, The Holding Company's Addition to Minneapolis, according to the plat thereof on file or of record in the office of the Register of Deeds In and for Hennepin County, together with those portions of vacated alley dedicated to the public in Block 4, The Holding Company's Addition to Minneapolis which lie between the Easterly extensions of the North and South lines of said Lot 5; and the North and South lines of said Lot 7 and the North and South lines of said Lot 9.
Being Registered land as is evidenced by Certificate of Title No. 1002641.

CERTIFICATION

To The City of Minneapolis and Old Republic National Title Insurance Company:

This is to Certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 7(a)(b), 8, 9, 11 and 16 of Table A thereof. The fieldwork was completed on April 29, 2016.

Date of Plat or Map: JUNE 9, 2016

Dennis B. Olmstead, Professional Land Surveyor
Minnesota License No. 18425

NOTES

1. This survey and the property description shown here on are based upon information found in the commitment for title insurance prepared by Old Republic National Title Insurance Company, file no. 60604, Supplemental No. 1, dated January 26, 2016.
2. The locations of underground utilities are depicted based on Gopher State One Call, available city maps, records and field locations and may not be exact. Verify critical utilities prior to construction or design.
3. The basis of bearings is assumed.
4. All distances are in feet.
5. The area of the above described property is 334,297 square feet or 7.674 acres.
6. There are 47 regular striped parking stalls and 1 handicapped parking stalls.
7. The property lies within Zone X (unshaded - areas determined to be outside the 0.2% annual chance floodplain) of Federal Emergency Management Agency (FEMA) Flood Insurance Community Panel No. 27053C0378E, effective September 2, 2004.
8. There was no observed evidence of earth moving work or building construction at the time of our field work.
9. Benchmark: MPLS MON 409 MNDOT survey monument disk located in the intersection of East 26th Street and Cedar Avenue South has an elevation of 846.00 feet NGVD 29.
10. Survey related exceptions set forth in Schedule B, Section Two of the Title Commitment:

    Item 6 references minerals and mineral rights by the State of Minnesota, as shown on the Certificate of Title.

LEGEND

- SET CAP IRON MONUMENT 18425
- FOUND IRON MONUMENT
- SET NAIL
- HYDRANT
- WATER VALVE
- TELEPHONE BOX
- SANITARY MANHOLE
- SIGN
- CATCH BASIN
- ELECTRIC BOX
- LIGHT HOLE
- STORM MANHOLE
- WATER MANHOLE
- POWER POLE
- HAND HOLE
- MONITORING WELL
- GAS METER
- UNKNOWN MANHOLE
- FLAG POLE
- ELECTRIC MANHOLE
- (P) PLAT DIMENSION
- (M) MEASURED DIMENSION
- E — UNDERGROUND ELECTRIC
- PL — GAS PIPELINE
- G — GAS MAIN
- SANITARY SEWER
- STORM SEWER
- WATERMAIN
- E — UNDERGROUND ELECTRIC
- OT — OVERHEAD TELEPHONE
- OU — OVERHEAD UTILITY
- FENCE
- CONCRETE
- BITUMINOUS

ALLIANT ENGINEERING
233 Park Ave S, Ste 300
Minneapolis, MN 55415
612.758.3080 MAIN
612.758.3099 FAX
www.alliant-inc.com

ALTA/NSPS LAND TITLE SURVEY

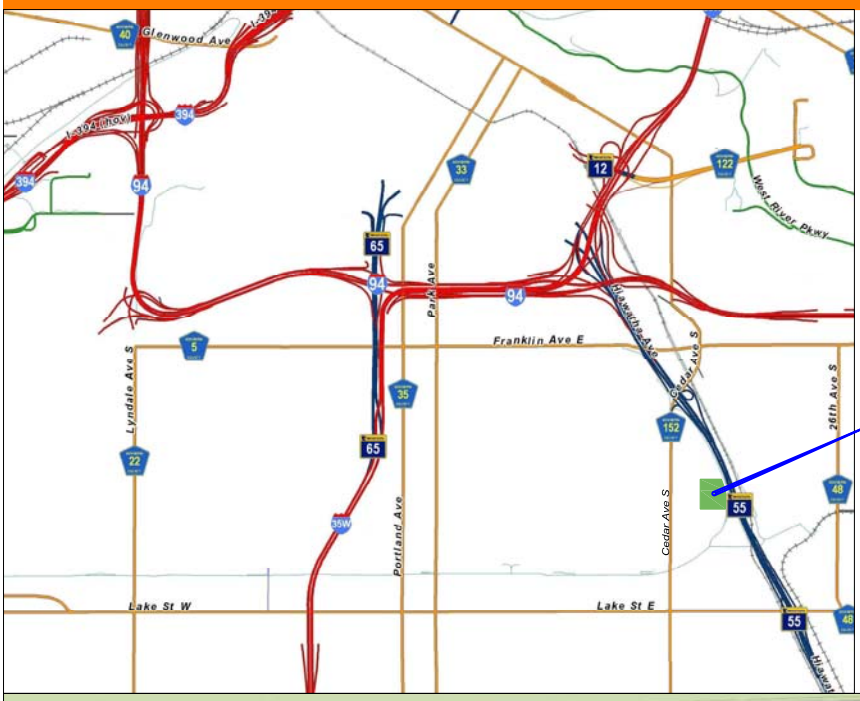
ROOF DEPOT
1860 E. 28TH STREET
MINNEAPOLIS, MN 55407

DRAWN BY	PLF,GJB
CHECKED BY	DBO
DATE ISSUED	05/06/16
SCALE	1"=40'
JOB NO.	160043
BOOK	1

Drawing name: X:\2016\160043\survey\alta\160043alta.dwg Jun 09, 2016 - 9:14am

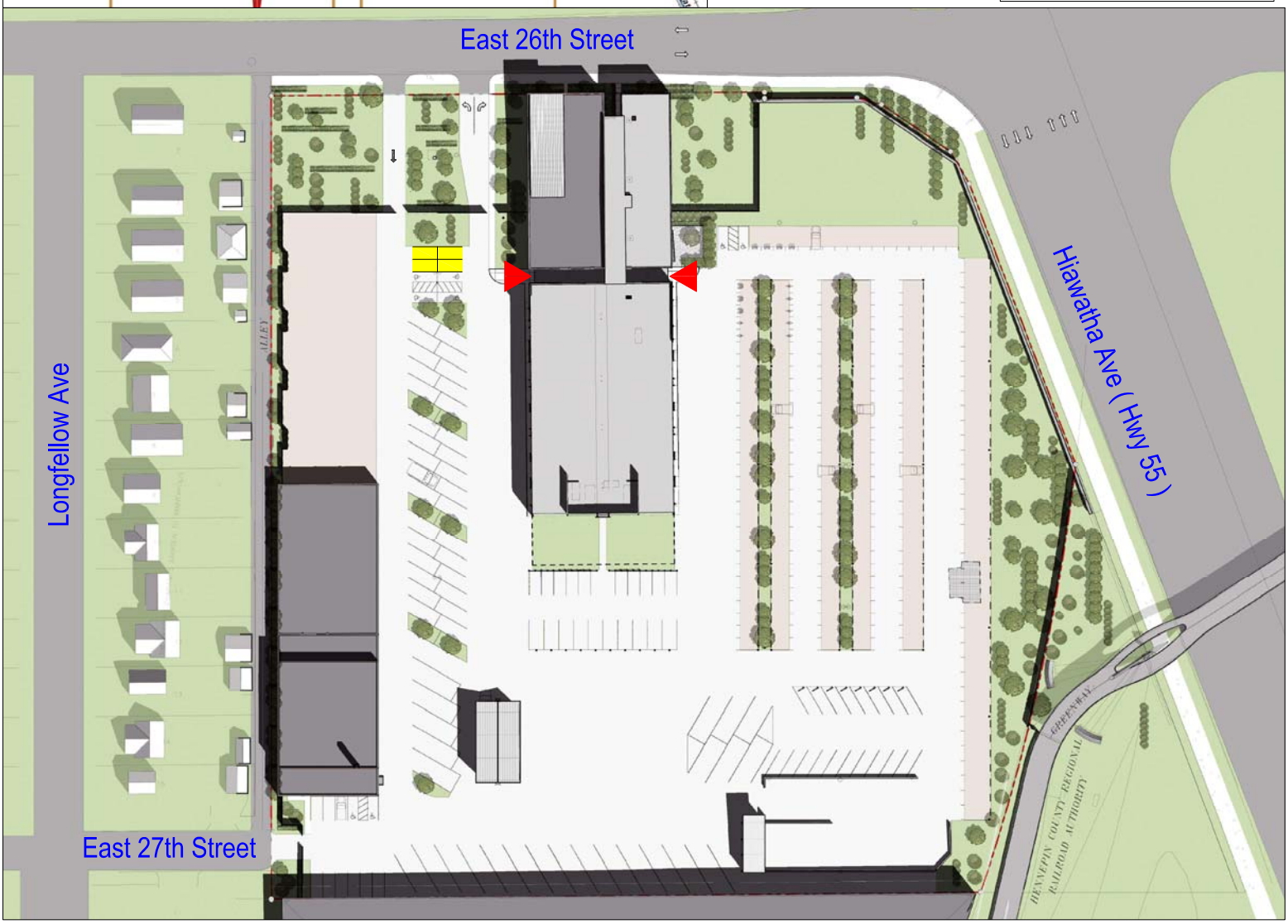
Hiawatha Maintenance Facility

1901 East 26th Street



Legend

- Visitor Entrance
- Visitor Parking
- Overflow Visitor Parking



Hiawatha Facility Roof Depot Expansion Preliminary Space Needs Program

Attachment E

last updat 6/9/2016 **Program/Fund**

Priority	Description	Program Spaces	Growth	Water: Base Project - Water Distribution & Maintenance/Meter Consolidation			Surface Water & Sewer: SW&S Engineering - Relocate from COL to Hiawatha 2nd			Parking: Ramp Maintenance - Relocate from 300 Border to Hiawatha			General: Conference Center			Gene: Combine Centr Water/	
				Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF
DEPARTMENTAL SPACES																	
1	**Water Works - East Yards Building Shell**			97,491		$ -											
	Office Space	3,672		0		$ -											
	Support Spaces (Lunchroom/Locker/Toilet)	2,142		0		$ -											
	Maintenance Bays	1,400		0		$ -											
	Hydrant Shop	1,500		0		$ -											
	Blacksmith Shop	1,500		0		$ -											
	Meter Shop	2,000		0		$ -											
	Meter Storage	2,500		0		$ -											
	Supply Storage	6,700		0		$ -											
	Stores, Evidence, Paper, Corrosives	830		0		$ -											
	Wash Bay	1,152		0		$ -											
	Interior Vehicle Storage	31,400		31,400		$ -											
	Cold Storage	12,906		12,906		$ -											
	sub-total	**67,702**															
	net to gross @ 1.2 - M & E, Interior walls	81,242															
	gross to building @1.2 - Columns, Ext walls	**97,491**															
	Propane Caged Area, Dumpsters			0		$ -											
	Total Site Requirements	**97,491**	**0**	**97,491**		**$ -**											
1	**Meter Shop - Fridley - Included above**																
	Office Space		0														
	Interior Vehicle Storage																
	Exterior Vehicle Storage																
	Total Site Requirements	**0**	**0**														
3	**Surface Water and Sewers - Engineering**																
	Office Space - includes all soft costs	5,290	265				5,555		$ -								
	Total Site Requirements	**0**					**5,555**		**$ -**								
4	**Ramp Maintenance**									2,736		$ -					
	Office Space	300	15							300		$ -					
	Enlarged Support Spaces (Lunchroom/Locker/Toilet)	400								400		$ -					
	Interior Vehicle Storage	1,200								1,200		$ -					
	sub-total	1,900															
	net to gross	2,280															
	gross to building	**2,736**															
	Total Site Requirements	**3,336**	**15**							**4,636**		**$ -**					
5	**Conference center**												10,000		$ -		
	Meeting rooms, toilets, break	9,000											9,000		$ -		
	Total Site Requirements	**10,000**	**0**										10,000		**$ -**		
6	**Central Stores Relocation/consolidation in new building**															17,000	
	Office Space	500														500	
	Interior Storage Whse.	16,500														16,500	
	Interior Vehicle Storage																
	Total Site Requirements	**17,000**	**0**													17,000	
OPT	**Central Stores building Renovation**																
	Office Space	500															
	Interior Storage Whse.	16,500															
	Interior Vehicle Storage																
	Total Site Requirements	**17,000**	**0**														
OPT	**Central Stores CONVERSION to Conf Center**																
	Partial Demolition north addition	9,000															
	Conference	6,000															
	Break/tlts	2,000															
	Total Site Requirements	**17,000**	**0**				0		$ -				0		$ -	0	
OPT	**Elections**																
	Office/conf/break		0														
	Warehouse storage																
	Total Site Requirements	**0**	**0**			**$ -**			**$ -**						**$ -**		
OPT	**300 Border - 2 stories**																
	Office/conf/break																
	Warehouse storage/repair shops																
	Vehicle storage																
	Total Site Requirements	**0**	**0**			**$ -**			**$ -**						**$ -**		
OPT	**Property & Evidence - in existing warehouse**																
	Office/conf/break	3,000															
	Warehouse storage/vaults	25,000															
	Auction/Processing	3,000															
	Total Site Requirements	**31,000**	**0**			**$ -**			**$ -**						**$ -**		
SITE SPACES																	
	Shared Exterior Functions																
	Employee Parking (Base Program - 90 spaces)	27,000		0	$ -	$ -											
	Ramp Maintenance Exterior Vehicle Storage - CONFIRM	600								600		$ -					
	Exterior Vehicle Storage	6,500		0	$ -	$ -											
	Yard Storage	19,000		0	$ -	$ -											
	Dumpsters/Material Bins	5,240		0	$ -	$ -											
	Visitor/ADA Parking - 15 spaces	4,500		4,500		$ -											
	Salt Shed???																
	Circulation	30,000		0		$ -											
	Employee Parking (Ramp Maint Program - 10 spaces)	3,000								0	$ -	$ -					
	Employee Parking (SW&S Program - 40 spaces)	12,000					0	$ -	$ -								
	Outdoor Vehicle Storage 300 Border Program - 100 spaces	30,000															
	Employee Parking (Vehicle Storage bay Program - 8 spaces)																
	Employee Parking (300 Border Program - 100 spaces)	30,000															
	Employee Parking (Elections Program - 25 spaces)	7,500															
	Employee Parking (Elevated structure - 110 spaces)	33,000															
	Employee Parking (Property & Evidence - 10 spaces)	3,000															
	Total Site Requirements	**211,340**	**0**	**4,500**		**0**	**0**		**0**	**5,236**		**0**	**10,000**		**0**	**0**	
	Site Preparation																
	Environmental Design, fees etc		TBD														
	Environmental (Soils)		$ 1,840,951														
	Environmental (Building Hazardous Materials)		$ 765,424														
	Building Demolition @ $4/SF	230,000	$ 920,000														
	Site Preparation, storm water		$ 100,000														
	Landscaping	32000	$ 350,000														
	Total Site Requirements		**$3,976,375**														
	Sub-totals			**#REF!**		**#REF!**	**#REF!**		**#REF!**	**#REF!**		**#REF!**	**10,000**		**#REF!**	**#REF!**	
	Project Costs																
	A & E Design																
	LEED Gold Premium																
	Neighborhood Premium																
	Design Contingency																
	Construction Contingency							10%	INCL		10%	#REF!		10%	#REF!		10%
	Soft costs - Testing, Data, Security, WAC/SAC, Approvals, survey, soil tests														$ 20,000		
	FF&E											$ 20,000			`		
	General Fund Overhead							5%	INCL		5%	#REF!		5%	#REF!		5%
	Property Services Management							2%	INCL		2%	#REF!		2%	#REF!		2%
	Total								**$ -**			**#REF!**			**#REF!**		
	Site Area/Total Project Costs	**324,715**		**#REF!**		**#REF!**	**0**		**#REF!**	**#REF!**		**#REF!**	**10,000**		**#REF!**	**#REF!**	
	Remaining Site Area for development			**#REF!**			**#REF!**			**#REF!**			**#REF!**			**#REF!**	

NOTES:

1. All spaces are new construction except:
   Property & Evidence is in existing Roof Depot Warehouse

2. Site envioronmental clean up cost is based upon full demo and clean-up

Optional

eral	General			General			General			General			General			General		
al Stores with Meter	Renovate Stores Building			Central Stores Conversion to Conference Center			Elections Offices/Warehouse - in Roof Depot Warehouse			300 Border/Private Developer Option			Parking Structure			Property & Evidence - in Roof Depot Warehouse		
Cost	Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF	Cost	Area	$ per SF	Cost
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Hazardous Building Materials Inspection Report

Commercial Building – Roof Depot Site
1860 28th Street
Minneapolis, Minnesota

Prepared for

City of Minneapolis

Project B1500394
April 7, 2015

Braun Intertec Corporation

BRAUN INTERTEC
The Science You Build On.

Braun Intertec Corporation
11001 Hampshire Avenue S
Minneapolis, MN 55438

Phone: 952.995.2000
Fax: 952.995.2020
Web: braunintertec.com

April 7, 2015

Project B1500394

Mr. Chris Backes
City of Minneapolis
309 2nd Avenue South, Suite 300
Minneapolis, MN 55401

Re: Hazardous Building Materials Inspection Report
Commercial Building – Roof Depot Site
1860 28th Street
Minneapolis, Minnesota

Dear Mr. Backes:

The enclosed report provides the results of the hazardous building materials inspection conducted on March 25-26, 2015 at the commercial building located 1860 28th Street in Minneapolis, Minnesota (site). Braun Intertec Corporation was authorized to provide a hazardous building material inspection in accordance with our Proposal QTB013985 dated December 11, 2014.

The following outline provides the structure of the report.

- Scope of Services
- Site Description
- Results
- Discussion
- Limitations

If you have any questions or need further assistance, please call Jerry Wallerius at 952.995.2478 or Robert Nordby at 952.995.2424.

Sincerely,

BRAUN INTERTEC CORPORATION

for Gerald J. Wallerius, CHMM
Project Scientist

Robert E. Nordby
Associate Principal – Senior Scientist

Attachment:
Hazardous Building Materials Inspection Report

AA/EOE

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A. Scope of Services

The scope of our services was limited to:

- Visually examine accessible areas and identify the locations of suspect asbestos-containing materials (ACM), lead, poly-chlorinated biphenyls (PCBs), mercury, and other miscellaneous hazardous materials.

- Collect and analyze representative bulk samples of materials suspected of containing asbestos.

- Conduct limited lead-based paint testing of painted surfaces suspected of containing lead. Testing will be accomplished using a Niton X-ray fluorescence (XRF) spectrum analyzer.

- Assign a hazard rating based on asbestos content with respect to the materials condition, friability, accessibility, and hazard potential.

- Document the various materials current conditions and quantities of ACM.

- Generate a final report, documenting the sample locations, analysis results, conditions, and ACM quantities.

B. Site Description

The subject Site included the commercial building (Roof Depot Site) located at 1860 28th Street in Minneapolis, Minnesota. The building is a one story with a basement boiler room has an approximate footprint of 201,000 square feet and was built in 1947. The typical interior finishes included sheetrock/joint compound, plaster, lay-in ceiling panels, floor tile, and carpeting. The typical exterior finish was brick with metal fascia and soffits and newer metal framed windows. The roofing material was rubber membrane with stone. The property was occupied at the time of this inspection.

C. Results

C.1. Asbestos

A total of 66 bulk samples were collected on March 25-26, 2015 and submitted to Pace Analytical, Inc. for Polarized Light Microscopy (PLM) analysis.

C.1.a. Asbestos-Containing Materials

The following is a summary of materials found or assumed to contain greater than one percent asbestos (ACMs by regulatory definition).

- Exterior boiler insulation contains 60 percent chrysotile (asbestos).
- Boiler breeching insulation contains 60 percent chrysotile and 10 percent amosite (asbestos).
- Silver exterior boiler brick insulation contains 5 percent chrysotile.
- 1” – 6” felt with tar paper and fibrous layer pipe insulation contains 40 percent chrysotile in the tar paper layer and 60 percent chrysotile in the fibrous layer.
- 1” – 6” pipe fitting insulation on felt with tar paper and fibrous layer insulated piping contains 15 percent chrysotile and 10 percent amosite.
- 1” – 6” air cell pipe insulation contains 60 percent chrysotile.
- 1” – 6” pipe fitting insulation on air cell insulated piping contains 5 percent chrysotile and 10 percent amosite.
- 7” – 12” air cell pipe insulation contains 70 percent chrysotile.
- 7” – 12” pipe fitting insulation on air cell insulated piping contains 20 percent chrysotile and 10 percent amosite.
- 13” – 20” air cell pipe insulation (including header and main steam lines) contains 70 percent chrysotile.
- 13” – 20” pipe fitting insulation on air cell insulated piping (including header and main steam lines) contains 20 percent chrysotile and 10 percent amosite.
- 13” – 20” boiler header pipe insulation contains 5 percent chrysotile and 10 percent amosite.
- 24” heat exchanger tank insulation contains 70 percent chrysotile.
- 9” x 9” brown floor tile contains 7 percent chrysotile.
- 12” x 12” red floor tile cross-contaminated by the associated black mastic contains 7 percent chrysotile.
- Transite panels/pieces contain 12 percent chrysotile.
- Interior boiler lining – assumed due to sampling constraints.
- Boiler gasket material – assumed due to sampling constraints.
- Roofing materials - assumed due to sampling constraints.

C.1.b. Non-Asbestos-Containing Materials

The following is a summary of building materials found to contain no asbestos or materials that contain one percent or less asbestos (non-ACMs by regulatory definition).

- Interior boiler refractory
- Boiler brick
- Sheetrock/joint compound
- Plaster
- Tan ceramic floor tile with grout
- White ceramic wall tile with grout
- Gray ceramic floor tile with grout
- 2’ x 4’ ceiling panels pitted
- 12” x 12” tan floor tile with adhesive
- 12” x 12” gray floor tile with adhesive
- 12” x 12” gray with white floor tile with adhesive
- Tan vinyl base with adhesive
- Gray vinyl base with adhesive
- Gray duct seam sealer
- Tan brown carpet adhesive
- White sink undercoating
- Interior and exterior gray and brown rubbery window frame caulking
- Exterior gray door frame caulking

Refer to Table I in Appendix A, which lists individual functional spaces of the building, the suspect materials identified in that functional space, whether the suspect material was identified by analysis to be an ACM, an estimated amount of each suspect material for the functional space, and includes condition, assessment categories and hazard ratings based on subjective observations made by our representatives.

Bulk asbestos analysis was conducted in accordance with the Environmental Protection Agency's (EPA) Method 40 CFR, Chapter 1, Part 763, Subpart F, and Appendix A (7/1/87 Edition). Refer to Appendix B for Table II, which lists the homogenous material sample numbers, sample locations, suspect material descriptions, and the analysis results for each sample. This table summarizes the results from the Bulk Asbestos Laboratory Report, which is attached in Appendix D.

Bulk asbestos analysis was conducted in accordance with the EPA Method 40 CFR, Chapter 1, Part 763, Subpart F, and Appendix A (7/1/87 Edition). Bulk samples are retained at the laboratory for 60 days and then disposed of, unless instructed otherwise. Detailed quality-control information is available upon request.

C.2. Lead-Based Paint

Braun Intertec Corporation performed limited lead-based paint testing on March 25, 2015. A total of 50 XRF tests were performed on painted surfaces. The EPA and Minnesota Department of Health (MDH) define "lead-based paint" as equal to or greater than 1.0 milligram per square centimeter (mg/cm^2) via XRF analysis. The following painted surface had lead-based paint.

- Red water tower metal framing
- Gray metal fire door
- Gray metal fire door frame
- Blue metal stair railing
- Gray wood door frame
- Tan steel beams
- Red steel beams
- Tan metal ceiling decking
- Blue steel columns
- White steel columns
- Yellow steel columns
- Red steel columns
- White large metal garage door
- Red exterior metal corner guard
- Red exterior steel beam

The U.S. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard 29 CFR 1926.62 applies to all situations where employees are engaged in the disturbance of lead-containing coatings, regardless of the quantity of lead involved. Therefore, any XRF result above 0.0 mg/cm^2 is considered "lead-containing coatings" in order to be in compliance with the OSHA standard. The following painted surfaces had lead-containing paint.

- Red concrete floor
- Green concrete block wall
- White concrete block wall

- Silver boiler insulation
- Silver steel ladder
- Blue concrete wall
- Gray concrete floor
- Gray wood door
- White brick wall
- Yellow striped concrete floor
- Gray wall plaster
- Tan wall plaster
- Red exterior steel overhang

Refer to Table III. Lead-Based Paint Testing Results in Appendix C, which lists the sample numbers (1 through 53), sample locations, component descriptions, XRF field results, and the paint condition for each sample.

Field screening for lead-based paint was accomplished utilizing a XRF field portable analyzer, Model No. XLP703 (Serial No. 26139) equipped with a 40-milocurie CD-109 Source Model #XFB-3 installed on November 1, 2014.

C.3. Miscellaneous Regulated Waste

A visual inspection for miscellaneous regulated waste materials that require separate handling and disposal prior to disturbance during building renovation/demolition was also performed as part of this assessment. The following is a list of items documented at the Site:

- Emergency lighting systems
- Exit signs
- Security systems and alarms
- Fluorescent lights
- High intensity discharge lamps
- Boilers with controls
- Firestats
- Manometers
- Gauges
- Space heater controls
- Mercury thermostats
- Microwave oven
- Television sets
- Water heater
- Door closers
- Fuel oil tanks
- Grease
- Motors
- Motor oil
- Lubricating oil
- Gasket remover
- Chain lube
- Air compressor

- Lead acid batteries
- Exit signs
- Security Systems
- Fire extinguishers
- Roof top air conditioners
- In wall air conditioner units
- Water fountains
- Refrigerator/freezers
- Vending machines
- Food display cases
- Light ballasts
- Transformers
- Electrical panels
- Fuses
- Switch gear
- Pumps and motors
- Used oil
- Bio hazard storage container
- Automotive parts/chemicals
- Computer equipment
- Gasoline containers
- Meters
- Miscellaneous cleaning supplies
- Overhead garage door openers
- Paint
- Paint thinner
- Polyurethane
- Solvents
- Spray paint
- Stains
- Tires
- Boiler chemicals
- Propane tanks
- Diesel fuel container
- Snow blower
- Parts degreaser

D. Discussion

D.1. Asbestos-Containing Materials

D.1.a. Friable ACM

The following ACMs are classified as friable materials according to EPA 40 CFR Part 61 National Emission Standard for Hazardous Air Pollutants (NESHAPs):

- Exterior boiler insulation
- Boiler breeching insulation
- Silver exterior boiler brick insulation
- 1” – 6” felt with tar paper and fibrous layer pipe insulation
- 1” – 6” pipe fitting insulation on felt with tar paper and fibrous layer insulated piping
- 1” – 6” air cell pipe insulation
- 1” – 6” pipe fitting insulation on air cell insulated piping

- 7” – 12” air cell pipe insulation
- 7” – 12” pipe fitting insulation on air cell insulated piping
- 13” – 20” air cell pipe insulation (including header and main steam lines)
- 13” – 20” pipe fitting insulation on air cell insulated piping (including header and main steam lines)
- 13” – 20” boiler header pipe insulation
- 24” heat exchanger tank insulation
- Interior boiler lining – assumed due to sampling constraints.

Approximately 8-feet of damaged 1” – 6” felt with tar paper and fibrous layer pipe insulation was observed on the boiler room floor at the time of our assessment. In addition, approximately 10-feet of damaged 13” – 20” air cell pipe insulation was observed north warehouse area. These materials should be repaired and maintained in good condition to prevent potential exposure to asbestos. The remaining friable ACM’s were observed to be in good condition at the time of our assessment. Friable ACMs are to be removed prior to disturbance by renovation/demolition in accordance with applicable state and federal regulations.

D.1.b. Category I Non-Friable ACM

The following ACMs are classified as Category I non-friable materials according to EPA 40 CFR Part 61 National Emission Standard for Hazardous Air Pollutants (NESHAPs):

- 9” x 9” brown floor tile
- 12” x 12” red floor tile cross-contaminated by the associated black mastic
- Boiler gasket material – assumed due to sampling constraints.
- Roofing materials – assumed due to sampling constraints.

The above Category I non-friable ACMs were observed to be in good condition at the time of our assessment. These materials should be maintained in good condition to prevent potential exposure to asbestos. Category I non-friable ACMs are not considered a hazard unless cut, drilled, sanded, or otherwise abraded. However, any Category I material that may become friable during demolition must be removed prior to that activity. Category I materials in good condition may be left in place for demolition. However, if left in place, the crushing or recycling of demolition debris is strictly prohibited. In addition, all demolition debris containing Category I materials must be disposed of at a landfill specifically permitted to accept this type of waste.

D.1.c. Category II Non-Friable ACM

The following ACM is classified as a Category II non-friable material according to EPA NESHAPs:

- Transite panels and pieces

The above Category II non-friable ACM was observed to be in fair condition at the time of our assessment. These materials should be maintained in good condition to prevent potential exposure to asbestos. Category II non-friable ACMs are not considered a hazard unless cut, drilled, sanded, or otherwise abraded. However, Category II non-friable ACMs are to be removed prior to disturbance by demolition in accordance with applicable state and federal regulations.

D.2. Lead-Based Paint

The U.S. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard 29 CFR 1926.62 applies to all situations where employees are engaged in the disturbance of lead-containing coatings, regardless of the quantity of lead involved. Therefore, any XRF result above 0.0 mg/cm^2 is considered "lead-containing coatings" in order to be in compliance with the OSHA standard. Renovation/demolition of the building may involve disturbing lead-containing coatings. Contractors should be informed of the presence of lead coatings and that they will be required to comply with the OSHA lead standard.

D.3. Miscellaneous Regulated Waste

In the case of building renovation/demolition, any of the miscellaneous regulated waste items listed in Section C.3 that will be disturbed, must be removed prior to disturbance and must be recycled or disposed of in accordance with state and federal guidelines. In addition, all solid waste must be disposed of accordingly.

E. Limitations

In any building, the potential exists for hazardous building materials to be located inside walls, above ceilings, under floors, and other inaccessible areas. This inspection was limited to areas available for observation via non-destructive means. Therefore, Braun Intertec cannot be held responsible for the presence of any such hidden materials. In the case of building renovation or demolition, a more thorough destructive investigation should be completed prior to any disturbance.

Note: The rubber membrane roofing materials and associated sub layers were not sampled for asbestos content as part of this evaluation in order to maintain the integrity of the roof seal. The assumed ACM roofing materials should be sampled for asbestos content prior to building renovation/demolition.

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

F. Asbestos Building Inspector Certification

I, the undersigned, do hereby certify that I am an accredited Asbestos Building Inspector in the State of Minnesota. A photocopy of my current asbestos building inspector certificate is attached in Appendix E.

Signature: _____ Date: 4/8/15

for Gerald J. Wallerius, CHMM
Project Scientist
Minnesota Department of Health Asbestos Inspector No: AI2305

Appendix A

Table I. Asbestos Building Inspection Results

Table I. Asbestos Building Inspection Results

Client: City of Minneapolis
Location: 1860 28th Street; Minneapolis, Minnesota
Date of Inspection: March 25-26, 2015
Project: B1500394

Functional Space	Homogeneous Material Description	Contains Asbestos (Yes/No)	Ref. Client Sample No. (See Table II)	Estimated Quantity Units	Material Condition[1]	Hazard Category[2]
Boiler Room (3 Boilers)	**Exterior boiler insulation**	**Yes**	**1A-C**	**5,200 ft.²**	**ND**	**2**
Boiler Room (3 Boilers)	**Boiler breeching insulation**	**Yes**	**2A-C**	**2,200 ft.²**	**ND**	**2**
Boiler Room (3 Boilers)	Interior boiler refractory	No	3A-C	1,200 ft.²	ND	0
Boiler Room (3 Boilers) Under Refractory	**Interior boiler lining**	**Assume**	**No Sample Taken**	**1,200 ft.²**	**ND**	**2**
Boiler Room (3 Boilers)	**Boiler gasket material**	**Assume**	**No Sample Taken**	**120 lin. ft.**	**ND**	**2**
Boiler Room (3 Boilers)	Boiler brick	No	4	1,500 ft.²	ND	0
Boiler Room (3 Boilers)	**Exterior boiler brick insulation (silver)**	**Yes**	**5A-C**	**1,500 ft.²**	**ND**	**2**
Boiler Room	**1"-6" pipe insulation - felt with tar paper & fibrous layer**	**Yes**	**6A-C**	**200 lin. ft.**	**ND**	**2**
Boiler Room	**1"-6" pipe-fitting insulation on felt with tar paper pipe insulation**	**Yes**	**7A-C**	**30 fittings**	**ND**	**2**
Boiler Room - On Floor	**1"-6" pipe insulation - felt with tar paper & fibrous layer**	**Yes**	**6A-C**	**8 lin. ft.**	**D**	**4**
Boiler Room	**1"-6" pipe insulation - air cell**	**Yes**	**8A-C**	**500 lin. ft.**	**ND**	**2**
Boiler Room	**1"-6" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**9A-C**	**180 fittings**	**ND**	**2**
Boiler Room	**7"-12" Pipe insulation - air cell**	**Yes**	**10A-C**	**200 lin. ft.**	**ND**	**2**
Boiler Room	**7"-12" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**11A-C**	**40 fittings**	**ND**	**2**
Boiler Room - Including Header and Main Steam Line	**13"-20" Pipe insulation - air cell**	**Yes**	**12A-C**	**120 lin. ft.**	**ND**	**2**

Functional Space	Homogeneous Material Description	Contains Asbestos (Yes/No)	Ref. Client Sample No. (See Table II)	Estimated Quantity Units	Material Condition[1]	Hazard Category[2]
Boiler Room - Including Header and Main Steam Line	**13"-20" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**13A-C**	**20 fittings**	**ND**	**2**
Fuel Oil Tank Room	**7"-12" Pipe insulation - air cell**	**Yes**	**10A-C**	**230 lin. ft.**	**ND**	**2**
Fuel Oil Tank Room	**7"-12" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**11A-C**	**50 fittings**	**ND**	**2**
Boiler Room & Fuel Tank Room	Metal/wood core fire doors	No	---	3 doors	ND	0
Hazardous Materials Office/Storage Area	Sheetrock/Joint compound	No	14	800 ft.^{2}	ND	0
Hazardous Materials Storage Restroom	Ceramic floor tile (tan) with grout	No	15	75 ft.^{2}	ND	0
Hazardous Materials Storage Restroom	Ceramic (white) wall tile with grout	No	16	200 ft.^{2}	ND	0
Hazardous Materials Storage Area	Metal/wood core fire doors	No	---	100 lin. ft.	ND	0
Hazardous Materials Storage Area	**1"-6" pipe insulation - air cell**	**Yes**	**8A-C**	**100 lin. ft.**	**ND**	**2**
Hazardous Materials Storage Area	**1"-6" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**9A-C**	**4 fittings**	**ND**	**2**
South Warehouse Area, Offices & Showroom (Plus Above Ceilings)	**1"-6" pipe insulation - felt with tar paper & fibrous layer**	**Yes**	**6A-C**	**850 lin. ft.**	**ND**	**2**
South Warehouse Area, Offices & Showroom (Plus Above Ceilings)	**1"-6" pipe-fitting insulation on felt with tar paper pipe insulation**	**Yes**	**7A-C**	**120 fittings**	**ND**	**2**
South Warehouse Area, Offices & Showroom (Plus Above Ceilings)	**1"-6" pipe insulation - air cell**	**Yes**	**8A-C**	**2,110 lin. ft.**	**ND**	**2**
South Warehouse Area, Offices & Showroom (Plus Above Ceilings)	**1"-6" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**9A-C**	**300 fittings**	**ND**	**2**
South Warehouse Area, Offices & Showroom (Plus Above Ceilings)	**13"-20" Pipe insulation - air cell**	**Yes**	**12A-C**	**400 lin. ft.**	**ND**	**2**

Functional Space	Homogeneous Material Description	Contains Asbestos (Yes/No)	Ref. Client Sample No. (See Table II)	Estimated Quantity Units	Material Condition[1]	Hazard Category[2]
South Warehouse Area, Offices & Showroom (Plus Above Ceilings)	**13"-20" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**13A-C**	**12 fittings**	**ND**	**2**
South Warehouse Area, Offices	**13"-20" Pipe insulation - air cell**	**Yes**	**12A-C**	**200 ft.²**	**ND**	**2**
South Warehouse Area, Offices	**9"x 9" floor tile (brown) with black mastic**	**Yes (Floor Tile)**	**18**	**500 ft.²**	**ND**	**1**
South Warehouse Area, Offices & Storage	Sheetrock/joint compound	No	14	2,000 ft.²	ND	0
South Warehouse Area Northwest Locker Room	2' x 4' ceiling panels - pitted	No	17	144 ft.²	ND	0
South Warehouse Area Northwest Locker Room	Sheetrock/joint compound	No	14	300 ft.²	ND	0
South Warehouse Area - Above and Below Beams & Transformer Area	**Transite panels & pieces**	**Yes**	**19**	**1,200 scattered**	**ND**	**2**
North Warehouse Area and Offices (Plus Above Ceilings)	**1"-6" pipe insulation - felt with tar paper & fibrous layer**	**Yes**	**6A-C**	**1,150 lin. ft.**	**ND**	**2**
North Warehouse Area and Offices (Plus Above Ceilings)	**1"-6" pipe-fitting insulation on felt with tar paper pipe insulation**	**Yes**	**7A-C**	**160 fittings**	**ND**	**2**
North Warehouse Area and Offices (Plus Above Ceilings)	**1"-6" pipe insulation - air cell**	**Yes**	**8A-C**	**2,600 lin. ft.**	**ND**	**2**
North Warehouse Area and Offices (Plus Above Ceilings)	**1"-6" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**9A-C**	**340 fittings**	**ND**	**2**
North Warehouse Area and Offices (Plus Above Ceilings)	**13"-20" Pipe insulation - air cell**	**Yes**	**12A-C**	**500 lin. ft.**	**D (limited)**	**4**
North Warehouse Area and Offices (Plus Above Ceilings)	**13"-20" pipe-fitting insulation on air cell pipe insulation**	**Yes**	**13A-C**	**15 fittings**	**ND**	**2**
North Warehouse Area and Offices (Above and Below Beams/ Transformer Area)	**Transite panels & pieces**	**Yes**	**19**	**2,000 ft.²**	**ND**	**2**
North Warehouse Shipping/Receiving Restroom	12" x 12" tan floor tile with adhesive	No	20	100 ft.²	ND	0

Functional Space	Homogeneous Material Description	Contains Asbestos (Yes/No)	Ref. Client Sample No. (See Table II)	Estimated Quantity Units	Material Condition[1]	Hazard Category[2]
North Warehouse Shipping/Receiving Restroom	Vinyl base (tan) with adhesive	No	21	40 lin. ft.	ND	0
North Warehouse Shipping/Receiving Restroom	Sheetrock/joint compound	No	22	300 $ft.^2$	ND	0
Shipping/Receiving Office and Storage	Sheetrock/joint compound	No	22	1,600 $ft.^2$	ND	0
Shipping/Receiving Office and Storage	12"x 12" floor tile (gray) with adhesive	No	23	400 $ft.^2$	ND	0
Shipping/Receiving Office and Storage	Vinyl base (gray) with adhesive	No	24	50 lin. ft.	ND	0
North Office Warehouse and Office Windows	Interior gray silicon caulking	No	25	2,680 lin. ft.	ND	0
North Warehouse Southwest Office Area	2' x 4' ceiling panels - pitted	No	26	2,000 $ft.^2$	ND	0
North Warehouse Southwest Office Area	12"x 12" floor tile (gray) with adhesive	No	23	2,000 $ft.^2$	ND	0
North Warehouse Southwest Office Area	Vinyl case (gray) with adhesive	No	24	240 lin. ft.	ND	0
North Warehouse Southwest Office Area	Sheetrock/joint compound	No	22	4,000 $ft.^2$	ND	0
North Warehouse Southwest Office Area	Plaster	No	27A	4,000 $ft.^2$	ND	0
North Warehouse South Training Rooms/Restrooms/ Janitor's Closet	2'x4' ceiling panels - pitted	No	26	160 $ft.^2$	ND	0
North Warehouse South Training Rooms/Restrooms/ Janitor's Closet	Vinyl base (gray) with adhesive	No	24	100 lin. ft.	ND	0
North Warehouse South Training Rooms/Restrooms/ Janitor's Closet	Plaster	No	27B-C	8,000 $ft.^2$	ND	0
North Warehouse South Training Rooms/Restrooms/ Janitor's Closet	Metal/wood core fire doors	No	---	No Quantity	---	0
North Warehouse - South Restrooms	Ceramic floor tile (gray) with grout	No	28	160 $ft.^2$	ND	0

Functional Space	Homogeneous Material Description	Contains Asbestos (Yes/No)	Ref. Client Sample No. (See Table II)	Estimated Quantity Units	Material Condition[1]	Hazard Category[2]
North Warehouse - South Restrooms	Ceramic wall tile (white) with grout	No	29	300 ft.²	ND	0
North Warehouse - South Restrooms	Sheetrock/joint compound	No	22	400 ft.²	ND	0
South Warehouse and Office Windows	Interior silicon caulking (gray)	No	30	2,000 lin. ft.	ND	0
South Warehouse Southwest Storage	Sheetrock/joint compound	No	31	2,500 lin. ft.	ND	0
Southwest Main Offices & Showroom Area	2' x 4' ceiling panels pitted	No	32	18,750 lin. ft.	ND	0
Southwest Main Offices & Showroom Area	Sheetrock/joint compound	No	31	22,000 ft.²	ND	0
Southwest Main Offices & Showroom Area	Plaster	No	27A-C	8,000 ft.²	ND	0
Southwest Main Offices & Showroom Area	Duct seam sealer (gray)	No	33	200 lin. ft.	ND	0
Southwest Main Offices & Showroom Area	Carpet adhesive (tan, brown)	No	34	14,000 ft.²	ND	0
Southwest Main Offices & Showroom Area	12" x 12" floor tile (gray) with adhesive	No	35	3,600 ft.²	ND	0
Southwest Main Offices & Showroom Area	**12" x 12" floor tile (red) with adhesive & black mastic**	**Yes**	**36**	**400 ft.²**	**ND**	**1**
Southwest Main Offices & Showroom Area - Break Room	12" x 12" floor tile (gray with white) with adhesive	No	37	400 ft.²	ND	0
Southwest Main Offices & Showroom Area - Break Room	Sink undercoating (white)	No	38	1 sink	ND	0
Exterior - Roof at Ladder Access	**Transite panels**	**Yes**	**19**	**120 ft.²**	**ND**	**2**
Exterior - Roof	**Rubber membrane with stone & sublayers**	**Assume**	**No Sample Taken**	**201,000 ft.²**	**ND**	**1**
Exterior - West at Windows	Silicon caulking (brown)	No	39	No Quantity	ND	0
Exterior - South at Door Frame	Door frame caulking (gray)	No	40	2 doors 50 lin. ft.	ND	0
Exterior - South at Windows	Silicon caulking (brown)	No	39	No Quantity	ND	0

Functional Space	Homogeneous Material Description	Contains Asbestos (Yes/No)	Ref. Client Sample No. (See Table II)	Estimated Quantity Units	Material Condition[1]	Hazard Category[2]
Exterior at East Windows	Silicon caulking (brown)	No	39	No Quantity	ND	0
Exterior at East Lower	Door frame caulking (gray)	No	40	32 lin. ft.	ND	0
Exterior at North Windows	Silicon caulking (brown)	No	39	No Quantity	ND	0

1. Condition of ACM:
   ND = Not Damaged
   D = Damaged
   SD = Significantly Damaged

2. Hazard Category:
   0 = No hazard - material does not contain asbestos
   1 = ACM with potential for damage
   2 = ACM with potential for significant damage
   3 = Damaged or significantly damaged asbestos-containing miscellaneous material
   4 = Damaged or significantly damaged friable asbestos-containing thermal system insulation
   5 = Damaged or significantly damaged friable asbestos-containing surfacing material

Appendix B

Table II. Bulk Asbestos Analytical Results

Table II. Bulk Asbestos Analytical Results

Client: City of Minneapolis
Location: 1860 28th Street; Minneapolis, Minnesota
Date of Inspection: March 25-26, 2015
Project: B1500394

Sample No.	Sample Location		Material	Asbestos Content (%)[1]
1A	**Basement**	**Boiler Room**	**Exterior boiler insulation**	**Chrysotile 60**
1B	Basement	Boiler Room	Exterior boiler insulation	N.A.[2]
1C	Basement	Boiler Room	Exterior boiler insulation	N.A.
2A	**Basement**	**Boiler Room**	**Boiler breeching insulation**	**Chrysotile 60** **Amosite 10**
2B	Basement	Boiler Room	Boiler breeching insulation	N.A.
2C	Basement	Boiler Room	Boiler breeching insulation	N.A.
3A	Basement	Boiler Room	Interior boiler refractory	N.D.[3]
3B	Basement	Boiler Room	Interior boiler refractory	N.D.
3C	Basement	Boiler Room	Interior boiler refractory	N.D.
4	Basement	Boiler Room	Boiler brick	N.D.
5A	**Basement**	**Boiler Room**	**Exterior boiler brick insulation (silver)**	**Chrysotile 5**
5B	Basement	Boiler Room	Exterior boiler brick insulation (silver)	N.A.
5C	Basement	Boiler Room	Exterior boiler brick insulation (silver)	N.A.
6A	**Basement**	**Boiler Room**	**1"-6" pipe insulation - felt with tar paper & fibrous layer**	**Tan Fibrous: Chrysotile 60** **Tar Paper: Chrysotile 40**
6B	Basement	Boiler Room	1"-6" pipe insulation - felt with tar paper & fibrous layer	N.A.
6C	Basement	Boiler Room	1"-6" pipe insulation - felt with tar paper & fibrous layer	N.A.
7A	**Basement**	**Boiler Room**	**1"-6" pipe-fitting insulation on felt with tar paper pipe insulation**	**Chrysotile 15** **Amosite 10**
7B	Basement	Boiler Room	1"-6" pipe-fitting insulation on felt with tar paper pipe insulation	N.A.
7C	Basement	Boiler Room	1"-6" pipe-fitting insulation on felt with tar paper pipe insulation	N.A.
8A	**Basement**	**Boiler Room**	**1"-6" pipe insulation - air cell**	**Chrysotile 60**
8B	Basement	Boiler Room	1"-6" pipe insulation - air cell	N.A.

Sample No.	Sample Location		Material	Asbestos Content (%)[1]
8C	Basement	Boiler Room	1"-6" pipe insulation - air cell	N.A.
9A	**Basement**	**Boiler Room**	**1"-6" pipe-fitting insulation on air cell pipe insulation**	**Chrysotile 5** **Amosite 10**
9B	Basement	Boiler Room	1"-6" pipe-fitting insulation on air cell pipe insulation	N.A.
9C	Basement	Boiler Room	1"-6" pipe-fitting insulation on air cell pipe insulation	N.A.
10A	**Basement**	**Boiler Room**	**7"-12" Pipe insulation - air cell**	**Chrysotile 70**
10B	Basement	Boiler Room	7"-12" Pipe insulation - air cell	N.A.
10C	Basement	Boiler Room	7"-12" Pipe insulation - air cell	N.A.
11A	**Basement**	**Boiler Room**	**7"-12" pipe-fitting insulation on air cell pipe insulation**	**Chrysotile 20** **Amosite 10**
11B	Basement	Boiler Room	7"-12" pipe-fitting insulation on air cell pipe insulation	N.A.
11C	Basement	Boiler Room	7"-12" pipe-fitting insulation on air cell pipe insulation	N.A.
12A	Basement	Boiler Room	13"-20" Pipe insulation - air cell	Chrysotile 70
12B	Basement	Boiler Room	13"-20" Pipe insulation - air cell	N.A.
12C	Basement	Boiler Room	13"-20" Pipe insulation - air cell	N.A.
13A	**Basement**	**Boiler Room**	**13"-20" pipe-fitting insulation on air cell pipe insulation**	**Chrysotile 20** **Amosite 10**
13B	Basement	Boiler Room	13"-20" pipe-fitting insulation on air cell pipe insulation	N.A.
13C	Basement	Boiler Room	13"-20" pipe-fitting insulation on air cell pipe insulation	N.A.
14	Main Level	Hazardous Materials Office	Sheetrock/joint compound	N.D.
15	Main Level	Hazardous Materials Restroom	Ceramic floor tile (tan) with grout	N.D.
16	Main Level	Hazardous Materials Restroom	Ceramic (white) wall tile with grout	N.D.
17	Main Level	South Warehouse Northwest Locker Room	2'x 4' ceiling panels pitted	N.D.
18	**Main Level**	**South Warehouse by North Wall**	**9"x 9" floor tile (brown) with black mastic**	**Floor Tile: Chrysotile 7** **Black Mastic: N.D.**
19	**Main Level**	**South Warehouse Beams & Transformer Area**	**Transite panels**	**Chrysotile 12**
20	Main Level	North Warehouse Shipping/Receiving Restroom	12" x 12" tan floor tile with adhesive	N.D.
21	Main Level	North Warehouse Shipping/Receiving Restroom	Vinyl base (tan) with adhesive	N.D.

Sample No.	Sample Location			Material	Asbestos Content (%)[1]
22	Main Level	North Warehouse Shipping/Receiving Restroom		Sheetrock/joint compound	N.D.
23	Main Level	North Warehouse Shipping/Receiving Office		12"x 12" floor tile (gray) with adhesive	N.D.
24	Main Level	North Warehouse Shipping/Receiving Office		Vinyl case (gray) with adhesive	N.D.
25	Main Level	North Warehouse & Office Windows		Interior silicon caulking (gray)	N.D.
26	Main Level	North Warehouse Southwest Office Area		2'x 4' ceiling panels - pitted	N.D.
27A	Main Level	North Warehouse Southwest Office Area		Plaster	N.D.
27B	Main Level	North Warehouse Southwest Office Area		Plaster	N.D.
27C	Main Level	North Warehouse Southwest Office Area		Plaster	N.D.
28	Main Level	North Warehouse Southwest Office Area Restrooms		Ceramic floor tile (gray) with grout	N.D.
29	Main Level	North Warehouse Southwest Office Area Restrooms		Ceramic wall tile (white) with grout	N.D.
30	Main Level	South Warehouse & Office Windows		Interior silicon caulking (gray)	N.D.
31	Main Level	South Warehouse Southwest Storage Rooms		Sheetrock/joint compound	N.D.
32	Main Level	Southwest Main Offices & Showroom Area		2' x 4' ceiling panels pitted	N.D.
33	Main Level	Southwest Main Offices & Showroom Area		Duct seam sealer (gray)	N.D.
34	Main Level	Southwest Main Offices & Showroom Area		Carpet adhesive (tan, brown)	N.D.
35	Main Level	Southwest Main Offices & Showroom Area		12" x 12" floor tile (gray) with adhesive	N.D.
36	Main Level	Southwest Main Offices & Showroom Area		12" x 12" floor tile (red) with adhesive	**Floor Tile:** **N.D.** **Black Mastic:** **Chrysotile** **7**
37	Main Level	Southwest Main Offices & Showroom Area	Break Rooms	12" x 12" floor tile (gray with white) with adhesive	N.D.
38	Main Level	Southwest Main Offices & Showroom Area	Break Rooms	Sink undercoating (white)	N.D.

Sample No.	Sample Location		Material	Asbestos Content (%)[1]
39	Exterior	West Office Window	Silicon caulking (brown)	N.D.
40	Exterior	South at Door Frame	Door frame caulking (gray)	N.D.

* Materials containing 1 percent of asbestos or less are not considered to be asbestos-containing materials by the U.S.EPA.

1. Asbestos content is indicated as an approximate percent by area.
2. NA = Not Analyzed
3. ND = None Detected

Appendix C

Table III. Lead-Based Paint Testing

Table III. Lead-Based Paint Testing

Client: City of Minneapolis
Location: 1860 28th Street; Minneapolis, Minnesota
Date of Inspection: March 25-26, 2015
Project: B1500394

Sample I.D. No.	Room/Area	Component Description			Results	Paint Condition G = Good P = Peeling
1	---	Calibration			1.00	---
2	---	Calibration			1.10	---
3	---	Calibration			1.00	---
Roof						
4	Water Tower	Framing	Metal	Red	15.90	G
Basement						
5	Boiler Room	Floor	Concrete	Red	0.08	G
6	Boiler Room	Wall	Concrete Block	Green	0.24	G
7	Boiler Room	Wall	Concrete Block	White	0.05	G
8	Boiler Room	Boiler	Insulation	Silver	0.03	G
9	Boiler Room	Column	Steel	Silver	0.00	G
10	Boiler Room	Ladder	Steel	Silver	0.02	G
11	Boiler Room	Wall	Concrete	Blue	0.23	G
12	Boiler Room	Fire Door	Metal	Gray	4.30	G
13	Boiler Room	Door Frame	Metal	Gray	1.60	G
14	Stairwell to Main Level	Railing	Metal	Blue	2.20	G
Main Level						
15	Hazardous Materials Storage	Floor	Concrete	Gray	0.01	G
16	Hazardous Materials Storage	Wall	Sheetrock	White	0.00	G
17	Hazardous Materials Storage	Door	Wood	Grey	0.07	G

Sample I.D. No.	Room/Area	Component Description			Results	Paint Condition G = Good P = Peeling
18	Hazardous Materials Storage	Door Frame	Wood	Grey	3.00	G
19	Hazardous Materials Storage	Wall	Concrete Block	White	0.22	G
20	Hazardous Materials Storage	Beam	Steel	Tan	3.30	G
21	Hazardous Materials Storage	Ceiling Deck	Metal	Tan	3.20	G
22	South Warehouse	Wall	Brick	White	0.06	G
23	South Warehouse	Column	Steel	Blue	4.60	G
24	South Warehouse	Column	Steel	White	4.20	G
25	South Warehouse	Wall	Concrete Block	White	0.28	G
26	South Warehouse	Large Garage Door	Metal	White	1.50	G
27	South Warehouse	Floor	Concrete	Yellow Stripe	0.50	G
28	South Warehouse	Window Frame	Metal	Brown	0.00	G
29	South Warehouse	Wall	Sheetrock	White	0.00	G
30	Southwest Showroom Office	Wall	Sheetrock	White	0.00	G
31	Southwest Showroom Office	Door	Wood	Tan	0.00	G
32	Southwest Showroom Office	Door Frame	Metal	White	0.00	G
33	Southwest Showroom Office	Wall	Plaster	Gray	0.03	G
34	Southwest Showroom Office	Wall	Plaster	Tan	0.05	G
35	Southwest Showroom Office	Window Frame	Metal	Gray	0.00	G
36	Southwest Showroom Office	Door	Metal	Black	0.00	G
37	Southwest Showroom Office	Door Frame	Metal	Black	0.00	G
38	North Warehouse	Wall	Concrete Block	White	0.23	G

Sample I.D. No.	Room/Area	Component Description			Results	Paint Condition G = Good P = Peeling
39	North Warehouse	Wall	Brick	White	0.06	G
40	North Warehouse	Wall	Sheetrock	White	0.00	G
41	North Warehouse	Door	Wood	Tan	0.00	G
42	North Warehouse	Door Frame	Metal	Gray	0.00	G
43	North Warehouse	Door	Wood	Gray	0.03	G
44	North Warehouse	Door Frame	Wood	Gray	3.30	G
45	North Warehouse	Column	Steel	Yellow	3.40	G
46	North Warehouse	Column	Steel	White	4.90	G
47	North Warehouse	Column	Steel	Red	4.00	G
Exterior West						
48	Loading Dock	Overhang	Steel	Red	0.50	P
49	Loading Dock	Beam	Steel	Red	1.70	P
50	Loading Dock	New Soffit	Metal	Red	0.00	G
51	Loading Dock	New Fascia	Metal	Red	0.00	G
52	Loading Dock	Corner Guard	Metal	Red	4.10	G
53	Loading Dock	Window Frame	Metal	Brown	0.00	G

mg/cm^2 = milligrams of lead per square centimeter of paint

Appendix D

Bulk Asbestos Analysis Report

Pace Analytical Services, Inc.
1800 Elm St. SE - Suite 1830
Minneapolis, MN 55414
(612) 607-6457

Mr. Jerry Wallerius
Braun Intertec-Bloomington
11001 Hampshire Ave. South
Bloomington, MN 55438

April 03, 2015

Work Order #: 1500620

RE: 1860 28th Street, MPLS

B15-00394

Dear Jerry Wallerius:

Bulk Asbestos Analysis Report

The microscopy department of Pace Analytical Services, Inc. received your analytical request on March 30, 2015. The sample(s) were analyzed in the Pace Industrial Hygiene laboratory unless otherwise noted. The objective of this analysis was to determine the presence of asbestos using polarized light microscopy (PLM) and to determine the percent of asbestos and non-asbestos fibrous components by calibrated visual area estimation. Analytical results are summarized on the following laboratory report.

Discussion

None-detected floor tile results obtained by PLM analysis may contain thin asbestos fibers below the limits of resolution of the polarized light microscope. The EPA Method EPA/600/R-93/116 recommends the use of transmission electron microscopy to confirm the absence of asbestos.

Methodology

Bulk asbestos analysis is conducted in accordance with the Environmental Protection Agency's (EPA) methods 40 CFR, Part 763, Ch. 1, Subpart F, Appendix A (7-1-87 Edition) and EPA/600/R-93/116. All analyses are in compliance with the quality control procedures specified by the methods. All samples are examined for homogeneity. If a sample contains more than one layer, each layer is analyzed individually. Total fibrous content is calculated for joint compound/wallboard systems by combining layer results according to their percentages of the total sample. All routine quality assurance procedures were followed, unless otherwise noted.

Pace Analytical Services, Inc.
1800 Elm St. SE - Suite 1830
Minneapolis, MN 55414
(612) 607-6457

April 03, 2015

Work Order #: 1500620

Remarks

This test report relates only to the items submitted for analysis.

Samples are retained at our laboratory for a period of 30 days and will be disposed of unless otherwise instructed by the client.

This report can not be copied, except in its entirety, without prior written permission from Pace Analytical Services, Inc.

We appreciate your decision to use Pace Analytical Services, Inc. for this project. We are committed to being your vendor of choice to meet your analytical needs.

If you have any questions please contact me at 612-607-6457.

Sincerely,

Kevin R. Osborn

Project Manager

Sample No: 1500620-01 Client ID: 1A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/30/15
Tan woven fibers	(A)	15	3,11	Cellulose 90		None Detected		
Gray fibrous	(B)	85	1,2,3	None Detected		Chrysotile 60		

Sample No: 1500620-02 Client ID: 1B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-03 Client ID: 1C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-04 Client ID: 2A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/30/15
Tan woven fibers	(A)	50	3,11	Cellulose 90		None Detected		
White/gray fibrous	(B)	50	1,2,3	None Detected		Chrysotile 10 Amosite 10		

Sample No: 1500620-05 Client ID: 2B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-06 Client ID: 2C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-07 Client ID: 3A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Tan/gray granular	1	100	1,3	None Detected		None Detected		03/30/15

Sample No: 1500620-08 Client ID: 3B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Tan/gray granular	1	100	1,3	None Detected		None Detected		03/30/15

Sample No: 1500620-09 Client ID: 3C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Tan/gray granular	1	100	1,3	None Detected		None Detected		03/30/15

Sample No: 1500620-10 Client ID: 4

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Tan cementitious	1	100	1,3	None Detected		None Detected		03/31/15

Sample No: 1500620-11 Client ID: 5A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Silver/gray fibrous	1	100	1,3,11	Cellulose <1 Glass Fibers 30		Chrysotile 5		03/31/15

Sample No: 1500620-12 Client ID: 5B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-13 Client ID: 5C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-14 Client ID: 6A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	4	100	-	-		-		03/31/15
Tan woven fibers	(A)	15	3,11	Cellulose 85		Chrysotile 1		
Tan fibrous	(B)	25	3,4	Cellulose 80		Chrysotile <1		
Tan fibrous	(C)	25	3,4	Cellulose <1		Chrysotile 60		
Black tar paper	(D)	35	1,8	Cellulose <1 Hair <1		Chrysotile 40		

Sample No: 1500620-15 Client ID: 6B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-16 Client ID: 6C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-17 Client ID: 7A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/31/15
Brown fibrous	(A)	70	None Detected	Hair 100		None Detected		
White fribrous micaceous	(B)	30	1,2,3	None Detected		Chrysotile 15 Amosite 10		

Sample No: 1500620-18 Client ID: 7B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-19 Client ID: 7C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-20 Client ID: 8A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/31/15
Tan woven fibers	(A)	20	3	Cellulose 90		None Detected		
White fibrous	(B)	80	3,4	None Detected		Chrysotile 60		

Sample No: 1500620-21 Client ID: 8B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-22 Client ID: 8C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-23 Client ID: 9A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White fibrous	1	100	1,3	Cellulose 5		Chrysotile 5 Amosite 10		03/31/15

Sample No: 1500620-24 Client ID: 9B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-25 Client ID: 9C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-26 Client ID: 10A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/31/15
Tan woven fibers	(A)	10	3,11	Cellulose 80		None Detected		
White fibrous	(B)	90	3,4	Cellulose <1		Chrysotile 70		

Sample No: 1500620-27 Client ID: 10B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-28 Client ID: 10C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-29 Client ID: 11A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White/gray fibrous	1	100	3,4,11	Cellulose 2		Chrysotile 20 Amosite 10		03/31/15

Sample No: 1500620-30 Client ID: 11B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-31 Client ID: 11C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-32 Client ID: 12A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/31/15
Tan woven fibers	(A)	10	3,11	Cellulose 80		None Detected		
White fibrous	(B)	90	3,4	None Detected		Chrysotile 70		

Sample No: 1500620-33 Client ID: 12B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-34 Client ID: 12C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-35 Client ID: 13A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Insulation	2	100	-	-		-		03/31/15
White woven fibers	(A)	15	3,11	Cellulose 80		None Detected		
White/gray fibrous	(B)	85	1,2,3	None Detected		Chrysotile 20 Amosite 10		

Sample No: 1500620-36 Client ID: 13B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-37 Client ID: 13C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date

NO ANALYSIS PERFORMED ON THIS SAMPLE

Sample No: 1500620-38 Client ID: 14

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Sheetrock	3	100	1,3,6,11	Cellulose 9 Glass Fibers <1		None Detected		03/31/15
White powdery compound with paint	(A)	2	1,3,6,11	None Detected		None Detected		
Brown paper	(B)	10	3,11	Cellulose 90		None Detected		
White chalky	(C)	88	1,3	Glass Fibers <1		None Detected		

Sample No: 1500620-39 Client ID: 15

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Tile with grout	2	100	-	-		-		03/31/15
Tan cementitious tile	(A)	80	1,3	None Detected		None Detected		
Tan granular	(B)	20	1,3	Cellulose <1		None Detected		

Sample No: 1500620-40 Client ID: 16

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White cementitious	1	100	1,3	None Detected		None Detected		03/31/15

Sample No: 1500620-41 Client ID: 17

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Gray fibrous ceiling tile with paint	1	100	3,6,11	Cellulose 40 Glass Fibers 25		None Detected		03/31/15

Sample No: 1500620-42 Client ID: 18

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Floor tile with mastic	2	100	-	-		-		03/31/15
Brown floor tile	(A)	99	1,3,9	None Detected		Chrysotile 7		
Black mastic	(B)	1	1,7	None Detected		None Detected		

Sample No: 1500620-43 Client ID: 19

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Gray fibrous cementitious	1	100	1,3,11	None Detected		Chrysotile 12		03/31/15

Sample No: 1500620-44 Client ID: 20

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Floor tile with adhesive	2	100	-	-		-		03/31/15
Tan floor tile	(A)	99	1,3,9	None Detected		None Detected		
Yellow adhesive	(B)	1	1,7	None Detected		None Detected		

Sample No: 1500620-45 Client ID: 21

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Baseboard with adhesive	2	100	-	-		-		03/31/15
Tan vinyl	(A)	95	1,3,9	None Detected		None Detected		
Yellow adhesive	(B)	5	1,7	None Detected		None Detected		

Sample No: 1500620-46 Client ID: 22

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Sheetrock	3	100	1,2,3,11	Cellulose 10 Glass Fibers <1		None Detected		03/31/15
White powdery compound with paint	(A)	10	1,2,3,11	None Detected		None Detected		
Brown/white paper	(B)	10	3	Cellulose 95		None Detected		
White chalky	(C)	80	1,3	Cellulose <1 Glass Fibers <1		None Detected		

Sample No: 1500620-47 Client ID: 23

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Floor tile with adhesive	2	100	-	-		-		03/31/15
Gray floor tile	(A)	99	1,3,9	None Detected		None Detected		
Yellow adhesive	(B)	1	1,7	None Detected		None Detected		

Sample No: 1500620-48 Client ID: 24

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Baseboard with adhesive	2	100	-	-		-		03/31/15
Gray vinyl	(A)	>99	1,3,9	None Detected		None Detected		
Yellow adhesive	(B)	<1	1,3,7	None Detected		None Detected		

Sample No: 1500620-49 Client ID: 25

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Brown rubbery	1	100	1,3	None Detected		None Detected		03/31/15

Sample No: 1500620-50 Client ID: 26

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Gray fibrous ceiling tile with paint	1	100	3,6,11	Cellulose 50 Glass Fibers 20		None Detected		03/31/15

Sample No: 1500620-51 Client ID: 27A

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White/gray granular	1	100	1,3,11	Cellulose <1		None Detected		03/31/15

Sample No: 1500620-52 Client ID: 27B

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White/gray granular	1	100	1,3,11	None Detected		None Detected		03/31/15

Sample No: 1500620-53 Client ID: 27C

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White/gray granular	1	100	1,3,11	None Detected		None Detected		03/31/15

Sample No: 1500620-54 Client ID: 28

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Tile with grout	2	100	-	-		-		03/31/15
Gray/brown cementitious	(A)	75	1,3	None Detected		None Detected		
Gray granular cementitious	(B)	25	1,3	Cellulose <1		None Detected		

Sample No: 1500620-55 Client ID: 29

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White cementitious	1	100	1,3	Cellulose <1		None Detected		04/01/15

Sample No: 1500620-56 Client ID: 30

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Dark brown rubbery	1	100	1,3	None Detected		None Detected		04/01/15

Sample No: 1500620-57 Client ID: 31

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Sheetrock	2	100	1,3	Cellulose 10 Glass Fibers <1		None Detected		04/01/15
Brown/purple paper	(A)	10	3	Cellulose 95		None Detected		
White chalky	(B)	90	1,3	Cellulose <1 Glass Fibers <1		None Detected		

Sample No: 1500620-58 Client ID: 32

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Gray fibrous ceiling tile with paint	1	100	3,6,11	Cellulose 60 Glass Fibers 10		None Detected		04/01/15

Sample No: 1500620-59 Client ID: 33

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Gray compound	1	100	1,3	None Detected		None Detected		04/01/15

Sample No: 1500620-60 Client ID: 34

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Yellow adhesive	1	100	1,3,7,11	None Detected		None Detected		04/01/15

Sample No: 1500620-61 Client ID: 35

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Floor tile with adhesive	2	100	-	-		-		04/01/15
Gray floor tile	(A)	99	1,3,9	None Detected		None Detected		
Yellow adhesive	(B)	1	1,7	None Detected		None Detected		

Sample No: 1500620-62 Client ID: 36

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Floor tile with adhesive and mastic	2	100	-	-		-		04/01/15
Red floor tile	(A)	99	1,3,9	None Detected		None Detected		
Black mastic/yellow adhesive	(B)	1	1,7	None Detected		Chrysotile 7		

Sample No: 1500620-63 Client ID: 37

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Floor tile with adhesive	2	100	-	-		-		04/01/15
Gray floor tile	(A)	>99	1,3,9	None Detected		None Detected		
Yellow adhesive	(B)	<1	1,7	None Detected		None Detected		

Sample No: 1500620-64 Client ID: 38

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
White compound	1	100	1,3	Cellulose 20		None Detected		04/01/15

Sample No: 1500620-65 Client ID: 39

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Brown tacky compound	1	100	1,3	None Detected		None Detected		04/01/15

Sample No: 1500620-66 Client ID: 40

Macroscopic Description	No. of Layers and Layer Designator	Percent of Total Sample	Non-Fibrous Components*	Other Fibrous Non-Asbestos Content Total or Layer %	Footnotes	Asbestos Content Total or Layer %	Footnotes	Analytical Date
Gray rubbery compound	1	100	1,3	None Detected		None Detected		04/01/15

Footnotes and Definitions

bmya	Black mastic/yellow adhesive
<	Less Than
>	Greater Than

*** Key to Non-Fibrous Components**

1 = Rock/Mineral fragments	5 = Diatoms	9 = Vinyl	13 = Spores/Pollen
2 = Mica/Vermiculite	6 = Perlite	10 = Foam/Rubber	14 = Foil
3 = Binders	7 = Adhesive/Mastic	11 = Paint	
4 = Opaques	8 = Tar	12 = Other	

1500620

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Table II. Bulk Asbestos Analytical Results

Client: CITY OF MINNEAPOLIS
Location: 1860 28th STREET, MPLS, MN
Date of Inspection: 3-25-15 → 3/26/2015
Project No.: B1500394

	Sample No.	Sample Location	Material	Asbestos Content (%)*
01	1A	BASEMENT – BOILER ROOM	EXTERIOR BOILER INSULATION	
02	1B	↓ – ↓	↓	
03	1C	↓ – ↓	↓	
04	2A	↓ – ↓	BOILER BREECHING INSULATION	
05	2B	↓ – ↓	↓	
06	2C	↓ – ↓	↓	
07	3A	↓ – ↓	INTERIOR BOILER REFRACTORY	
08	3B	↓ – ↓	↓	
09	3C	↓ – ↓	↓	
10	4	↓ – ↓	BOILER BRICK	
11	5A	↓ – ↓	SILVER EXTERIOR BOILER BRICK INSULATION	
12	5B	↓ – ↓	↓	
13	5C	↓ – ↓	↓	
14	6A	↓ – ↓	1"-6" PIPE INSULATION – FELT W/ TAR PAPER	
15	6B	↓ – ↓	↓	
16	6C	↓ – ↓	↓	
17	7A	↓ – ↓	1"-6" PFI ON FELT W/ TARPAPER P.I.	
18	7B	↓ – ↓	↓	
19	7C	↓ – ↓	↓	
20	8A	↓ – ↓	1"-6" PIPE INSULATION – AIR CELL	
21	8B	↓ – ↓	↓	
22	8C	↓ – ↓	↓	
23	9A	↓ – ↓	1"-6" PFI ON AIR CELL P.I.	
24	9B	↓ – ↓	↓	
25	9C	↓ – ↓	↓	

* Materials containing 1 percent of asbestos or less are not considered to be Asbestos-Containing-Materials (ACMs) by the US EPA.

1. Asbestos content is indicated as an approximate percent by weight.

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BRAUN INTERTEC

Table II. Bulk Asbestos Analytical Results

Client: CITY OF MINNEAPOLIS
Location: 1860 28th STREET, MPLS, MN
Date of Inspection: 3-25-15 → 3/26/2015
Project No.: B1500394

	Sample No.	Sample Location	Material	Asbestos Content(%)
26	10A	BASEMENT – BOILER ROOM	7"-12" PIPE INSULATION AIR CELL	–
27	10B	↓ – ↓	↓	
28	10C	↓ – ↓	↓	
29	11A	↓ – ↓	7"-12" PFI ON AIR CELL P.I.	
30	11B	↓ – ↓	↓	
31	11C	↓ – ↓	↓	
32	12A	↓ – ↓	13"-20" PIPE INSULATION – AIR CELL	
33	12B	↓ – ↓	↓	
34	12C	↓ – ↓	↓	
35	13A	↓ – ↓	13"-20" PFI ON AIR CELL P.I.	
36	13B	↓ – ↓	↓	
37	13C	↓ – ↓	↓	
38	14	MAIN LEVEL – HAZ MAT OFFICE	SHEETROCK/JOINT COMPOUND	
39	15	↓ – HAZ MAT RESTROOM	TAN CERAMIC FLOOR TILE W/GROUT	
40	16	↓ – ↓	WHITE CERAMIC WALL TILE W/GROUT	
41	17	↓ – SOUTH WAREHOUSE NW LOCKER ROOM	2'x4' CEILING PANELS - PITTED	
42	18	↓ – SOUTH WAREHOUSE BY NORTH WALL	9"x9" BROWN FLOOR TILE W/BLACK MASTIC	
43	19	↓ – SOUTH WAREHOUSE BEAMS & TRANSFORMER AREA	TRANSITE PANELS	
44	20	↓ – NORTH WAREHOUSE SHIPPING/RECEIVING RESTROOM	12"x12" TAN FLOOR TILE W/ADHESIVE	
45	21	↓ – ↓	TAN VINYL BASE W/ADHESIVE	
46	22	↓ – ↓	SHEETROCK/JOINT COMPOUND	
47	23	↓ – NORTH WAREHOUSE SHIPPING/RECEIVING OFFICE	12"x12" GRAY FLOOR TILE W/ADHESIVE	
48	24	↓ – ↓	GRAY VINYL BASE W/ADHESIVE	
49	25	↓ – NORTH WAREHOUSE & OFFICE WINDOWS	INTERIOR GRAY SILICON CAULKING	
50	26	↓ – NORTH WAREHOUSE SW OFFICE AREA	2'x4' CEILING PANELS - PITTED	

* Materials containing 1 percent of asbestos or less are not considered to be Asbestos-Containing-Materials (ACMs) by the US EPA.

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1500620

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Table II. Bulk Asbestos Analytical Results

Client: CITY OF MINNEAPOLIS
Location: 1860 28th STREET, MPLS, MN
Date of Inspection: 3-25-15 → 3/26/2015
Project No.: B1500394

	Sample No.	Sample Location	Material	Asbestos Content (%)
51	27A	MAIN LEVEL - NORTH WAREHOUSE SW OFFICE AREA	PLASTER	
52	27B	↓ - ↓	↓	
53	27C	↓ - ↓	↓	
54	28	↓ - ↓ - RESTROOMS	GRAY CERAMIC FLOOR TILE w/ GROUT	
55	29	↓ - ↓ - ↓	WHITE CERAMIC WALL TILE w/ GROUT	
56	30	↓ - SOUTH WAREHOUSE OFFICE WINDOWS	INTERIOR GRAY SILICON CAULKING	
57	31	↓ - SOUTH WAREHOUSE SW STORAGE ROOM	SHEETROCK JOINT COMPOUND	
58	32	↓ - SW MAIN OFFICES * SHOWROOM AREA	2'x4' CEILING PANEL - PITTED	
59	33	↓ - ↓	DUCT SEAM SEALER - GRAY	
60	34	↓ - ↓	TAN BROWN CARPET ADHESIVE	
61	35	↓ - ↓	12"x12" GRAY FLOOR TILE w/ ADHESIVE	
62	36	↓ - ↓	12"x12" RED FLOOR TILE w/ ADHESIVE	
63	37	↓ - ↓ - BREAK ROOM	12"x12" GRAY w/ WHITE FLOOR TILE w/ ADHESIVE	
64	38	↓ - ↓ - ↓	WHITE SINK UNDERCOATING	
65	39	EXTERIOR WEST OFFICE WINDOW	BROWN SILICON CAULKING	
66	40	EXTERIOR SOUTH AT DOOR FRAME	GRAY DOOR FRAME CAULKING	

* Materials containing 1 percent of asbestos or less are not considered to be Asbestos-Containing-Materials (ACMs) by the US EPA.

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For PASI Lab Use Only
Laboratory Work Order No.
1500620

Pace Analytical®
Pace Analytical Services, Inc.
1800 Elm St. SE – Suite 1830
Minneapolis, MN 55414

MICROSCOPY
REQUEST FOR IH LABORATORY ANALYTICAL SERVICES

Bottle orders and sampling inquires:
Phone: 612.656.1139

IMPORTANT
Date Results Requested: 4-2-2015
Time: 10:00AM
Rush Charges Authorized? Yes (No)
Rush/Quote #:

Page 1 of 1

REPORT RESULTS TO
Contact Name: JERRY WALLERIUS
Company: BRAUN INTERTEC CORPORATION
Mailing Address: 11001 HAMPSHIRE AVENUE SOUTH
City, State, Zip: BLOOMINGTON, MN 55438
Telephone #: 952-995-2478 Fax #: 952-995-2020
E-mail: JWALLERIUS@BRAUNINTERTEC.COM

Project ID/Name: 1860 28th STREET, MPLS
P.O. #/Project #: B15-00394

SEND INVOICE TO
Contact Name: Erin Campbell
Company: Braun Intertec
Address: 11001 Hampshire Ave So
City, State, Zip: Bloomington, MN 55438
Telephone #: 952.995.2000 Fax #: 952.995.2020

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)
$20.00 PLM EACH

Site Location (State): MN

Analysis Requested
(Enter an "X" in the boxes below to indicate request.)

Lab ID#	Client Sample Identification (IDs must be unique)	Date Sampled	Time Sampled	Matrix/ Media	Volume/Area (specify units)	Number of Containers	Metals Field Filtered Y/N	PLM ASBESTOS										FOR LAB USE ONLY
	1A THROUGH 40	3-25 → 3-26-15	–	BULK	–	66		✓										
	"SEE TABLE II"																	

CHAIN OF CUSTODY
Collected by: (Print) JERRY WALLERIUS / DAN CHELSTROM
Collector's Signature:
Relinquished by: Date/Time 3-27-15 1:10 PM
Received by: Pace BC Date/Time: 3/27/15 1:15
Relinquished by: Date/Time:
Received Contents Not Verified: Date/Time:
Received Contents Verified: Date/Time: 3/30/15 9:45
Custody Seal Intact: ☐ Yes ☐ No ☒ N/A ☐ Hand Delivered by Client
On Ice: ☐ Yes ☒ No
Temp Blank: ☐ Yes ☒ No
Temp: — °C
Comments: ALL REPORTS TO JERRY WALLERIUS AT BRAUN BLOOMINGTON 612-360-0733

Form # eCS01.02 F:\Groups\QA-QC\Forms\Client Services\COC-eCS01.02 Effective 10/02/14

Appendix E

Asbestos Building Inspector Certificate

Certificate No: 5LM09031405IR *Expiration Date: September 3, 2015*

This is to certify that

Gerald J. Wallerius

has attended and successfully completed an

ASBESTOS INSPECTOR REFRESHER TRAINING COURSE

permitted by

the State of Minnesota under Minnesota Rules 4620.3702 to 4620.3722

and meets the requirements of

Section 206 of Title II of the Toxic Substances Control Act (TSCA)

conducted by

Lake States Environmental, Ltd.

in

White Bear Lake, MN on September 3, 2014

Examination Date: September 3, 2014

Lake States Environmental, Ltd
P. O. Box 645, Rice Lake, WI 54868
(800) 254-9811

Training Instructor

MDH MINNESOTA DEPARTMENT OF HEALTH ASBESTOS INSPECTOR

Certified by:
State of Minnesota
Department of Health

Expires: 09/03/2015

Gerald J Wallerius
3040 Garland Ln N
Plymouth, MN 55447

Director, Env. Health Div.

No AI2305 Issued: 09/08/2014

Appendix F

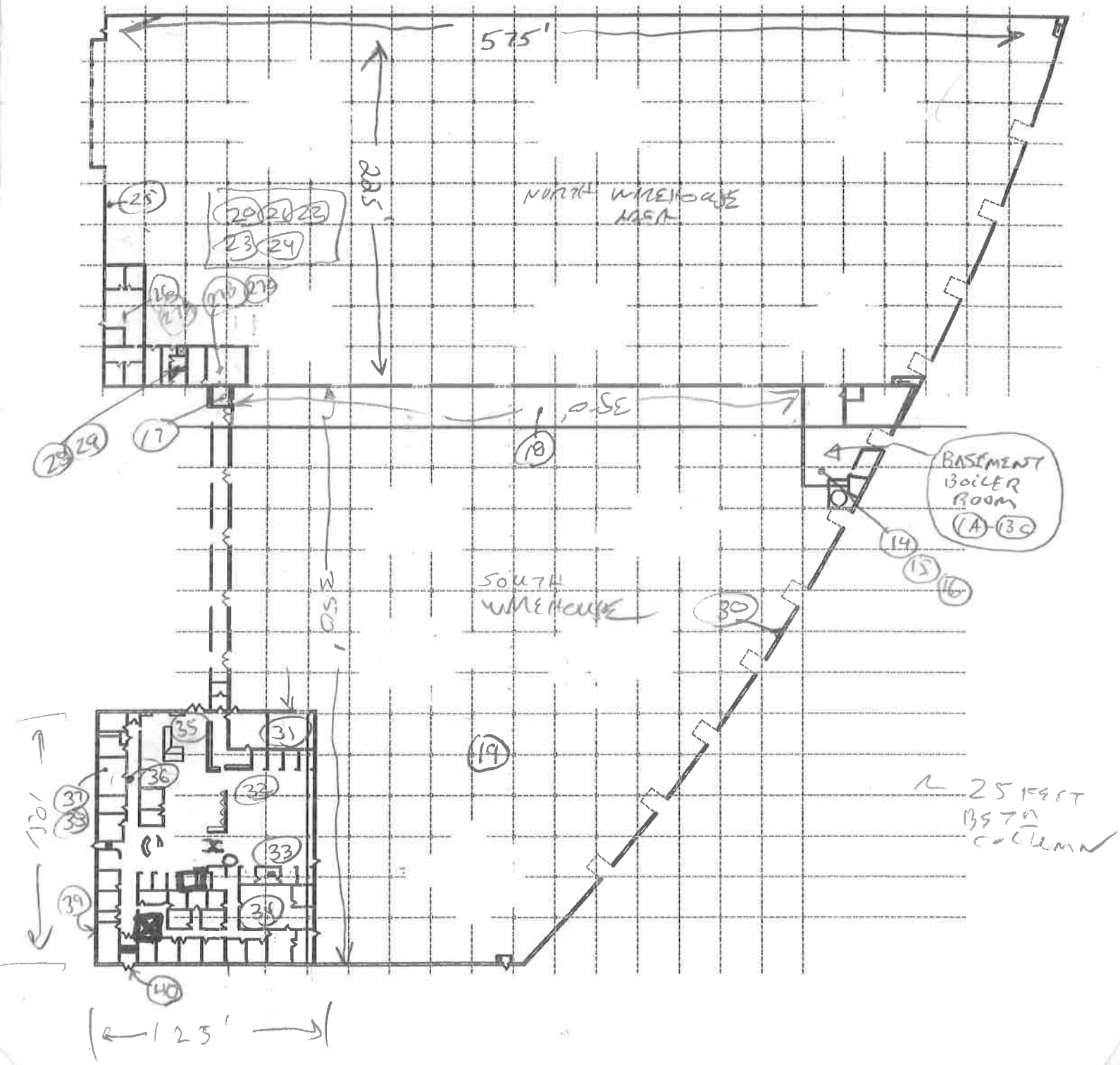
Asbestos Bulk Sample Location Maps
XRF Lead Paint Sample Locations Maps

BRAUN INTERTEC
B1500394

(#) = ASBESTOS BULK SAMPLE LOCATIONS

N

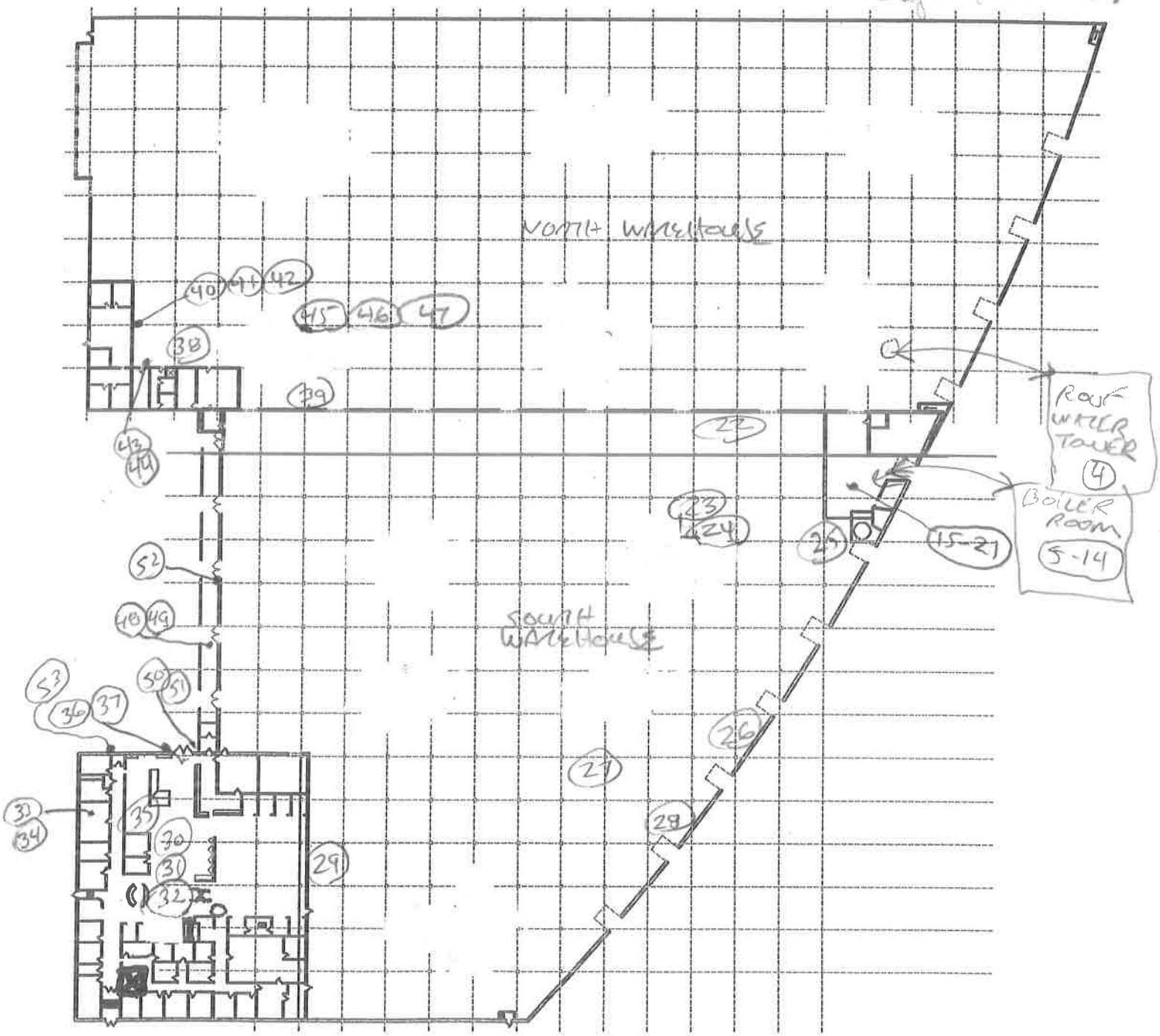
3-25-2015
JW & DW.C.
3-26-2015



BRAUN INTERTEC
B15 00394

3-26-2015

(E) XRF SAMPLE LOCATIONS
JAN & DAN. C.



Phase II Environmental Site Assessment

Roof Depot
1860 East 28th Street and
2717 Longfellow Avenue
Minneapolis, Minnesota

Prepared For

City of Minneapolis

DRAFT

April 21, 2015
Project B1500394

Braun Intertec Corporation

Braun Intertec Corporation
11001 Hampshire Avenue S
Minneapolis, MN 55438

Phone: 952.995.2000
Fax: 952.995.2020
Web: braunintertec.com

April 21, 2015 Project B1500394

Mr. Chris Backes
Department of Public Works
City of Minneapolis
223 City Hall
350 South 5th Street
Minneapolis, MN 55415

Re: Phase II Environmental Site Assessment
Roof Depot
1860 East 28th Street and
2717 Longfellow Avenue
Minneapolis, Minnesota

Dear Mr. Backes:

On behalf of the City of Minneapolis, Braun Intertec Corporation conducted a Phase II Environmental Site Assessment (ESA) at the referenced site in Minneapolis, Minnesota (Site). The purpose of the Phase II ESA was to further evaluate the nature, magnitude, and extent of potential contamination associated with recognized environmental conditions (RECs) identified as part of the Phase I ESA.

If you have any questions or comments regarding this report, please call Jeremy Hansen at 952.995.2464 or Tim Lenway at 952.995.2488.

Sincerely,

BRAUN INTERTEC CORPORATION

Jeremiah R. Hansen
Senior Scientist

Timothy S. Lenway, MPH
Principal – Senior Scientist

Attachment:
Phase II Environmental Site Assessment

DRAFT

AA/EOE

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A. Introduction

On behalf of the City of Minneapolis, Braun Intertec Corporation conducted a Phase II Environmental Site Assessment (ESA) at the property located at 1860 East 28th Street and 2717 Longfellow Avenue in Minneapolis, Minnesota (Site). The purpose of the Phase II ESA was to further evaluate the nature, magnitude, and extent of potential contamination associated with recognized environmental conditions (RECs) identified as part of the Phase I ESA.

The investigation was prepared on behalf of, and for the use by the City of Minneapolis in accordance with the contract between the City of Minneapolis and Braun Intertec. No other party has a right to rely on the contents of this investigation without written authorization by Braun Intertec.

A.1. Site Location and Description

Address:	1860 28th Street East	2717 Longfellow Avenue
City:	Minneapolis	Minneapolis
County:	Hennepin	Hennepin
Property Identification Number:	36-029-24-32-0003	36-029-24-32-0075
Construction Year:	1946	None Provided
Owner:	1860 East 28th Street, LLC	Longfellow Warehouse Company
Parcel Size:	5.66 acres	1.97 acres
Latitude:	44.952 North	
Longitude:	93.244 West	
Site Section, Township, Range:	S 1/2 of the NW 1/4 of the SW 1/4 of Section 36, Township 29 North, Range 24 West	
Site Size:	7.63 acres	

The Site includes 1860 East 28th Street and 2717 Longfellow Avenue in Minneapolis, Minnesota and consists of a 5.66 acre warehouse and 1.97 acre paved surface parking lot. A Site location map and Site sketch are included as Figure 1 and Figure 2, respectively.

A.2. Previous Environmental Investigations

Braun Intertec conducted a Phase I ESA at the Site titled: *Phase I Environmental Site Assessment; Roof Depot; 1860 28th Street East and 2717 Longfellow Avenue; Minneapolis, Minnesota;* dated April 6, 2015. The following RECs were identified as part of the Phase I ESA:

- From at least 1912 though 1944 the eastern portion of the Site was used as a coal storage yard. The western portion of the Site along Longfellow Avenue had been used largely for residential purposes prior to the construction of the paved parking and outdoor storage area. As part of a Phase II completed in 2001, coal was encountered in four of the six borings advanced on the eastern portion of the Site within the building. In addition, concrete was encountered in one of the soil borings. The potential exists that buried materials which could include demolition debris, urban fill consisting of ash or clinker material, and other wastes are located at the Site.

- The lot on the northeast corner of Longfellow Avenue and East 28th Street had been used for machining and for motor parts sales and auto repair. A previous investigation did not encounter any contamination in the area of the former machining and motor sales and auto repair facility. Considering the proposed redevelopment of the Site, the potential exists to encounter residual or previously unidentified contamination associated with the past use in that area of the Site.

- The former CMC Heartland Site was located on the adjoining property east of the Site. Historically, the site had over 100 years of industrial use, and formerly supported a railroad yard, a lumber storage yard with woodworking and machine shop operations, an agricultural chemical manufacturing business, and two bulk petroleum storage facilities. Based on information obtained from previous environmental investigations, a plume of groundwater contamination extends to the southwest beneath the Site originating from the former CMC Heartland Site property.

The Phase I ESA identified no historical recognized environmental conditions in connection with the Site with the exception of the following:

- In February 1999, expired roofing materials, such as glues, resins, and adhesives, and other hazardous waste were buried in an abandoned sub-grade loading dock at the Site. The waste materials were excavated in February 2000, placed in approximately fifty 55-gallon drums, and shipped to a hazardous waste facility.

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A.3. Scope of Services

To meet the project objective, the following tasks were conducted at the Site as part of the investigation:

- Advanced 10 soil borings, six hand auger borings, two soil vapor probes, and three sub-slab soil vapor sampling points.
- Screened soil samples collected from the soil borings for the presence of organic vapors using a photoionization detector (PID).
- Collected soil, groundwater, and soil vapor samples for chemical analyses.
- Evaluated the data and prepared this report.

B. Investigation Methods and Procedures

The fieldwork relating to the investigation was conducted on March 25 and 26, 2015. The investigation locations are shown on Figure 2.

B.1. Soil Borings

Braun Intertec advanced 10 soil borings designated as PP-1 through PP-10. The soil borings were advanced to depths ranging from 15 feet to 35 feet below ground surface (bgs) using a push probe rig. Upon completion, each soil boring was sealed in accordance with Minnesota Department of Health (MDH) regulations. In addition, six hand auger borings, designated as HAB-1, HAB-2 and PP-11 through PP-14, were advanced within the building to depths between 2 and 4 feet bgs. Hand Auger Borings PP-11 through PP-14 were originally planned to be advanced using the push probe, but due to complications with sub-slab utilities, the push probe soil borings were changed to hand auger soil borings.

B.2. Soil Vapor Probes

Two soil vapor probes (labeled SV-1 and SV-2) were advanced using the push probe rig to drive the sampling rods to a depth of 10 feet bgs. The sampling rods were then retracted 1 foot to allow for sample collection.

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The three sub-slab soil vapor sampling points (labeled SSV-1 through SSV-3) were advanced to a depth of approximately 6 inches below the bottom of the Site building's concrete floor slab using a 1-inch-diameter rotary-hammer drill. A temporary sampling point was constructed using new, polyethylene tubing, well-grade sand, and hydrated bentonite.

B.3. Soil Classification

During advancement of the soil borings, soil samples were collected at 2-foot intervals to the termination depth of each soil boring. The soil encountered in the soil borings were visually and manually classified in the field by an environmental technician using American Society for Testing and Materials (ASTM) D 2487 "Unified Soils Classification System" and ASTM D 2488 "Recommended Practice for Visual and Manual Description of Soils." Additionally, soil was classified at the Braun Intertec soil laboratory by a geotechnical engineer using ASTM D 2487 and ASTM D 2488. Soil boring logs, with descriptions of the various soil strata encountered during the soil borings are included in Appendix A. The depths shown as changes between the soil types are approximate. The actual changes may be transitional, and the transition depths are likely to be horizontally variable.

B.4. Soil Screening

Soil samples retrieved were examined by an environmental technician, who was a licensed asbestos inspector for unusual staining, odors, and other apparent signs of contamination. In addition, the soil samples were screened for the presence of organic vapors using a PID. The PID was equipped with a 10.6-electron-volt lamp and calibrated to an isobutylene standard. The PID was used to perform a headspace method of field-analyses, as recommended by the Minnesota Pollution Control Agency (MPCA) in Petroleum Remediation Program Guidance Document 4-04 (September 2008).

B.5. Sampling and Analytical Testing

B.5.a. Soil Samples

A total of 12 soil samples were collected from the soil borings for chemical analysis. If potentially contaminated fill soil was identified, soil samples were collected for chemical analyses from the interval where potential impacts were identified. If no indications of contamination were encountered in the fill soil, samples for chemical analyses were collected from depths most likely to have been impacted by past land use.

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The soil samples were analyzed for the presence and concentrations for the following chemical parameters:

- Volatile organic compounds (VOCs) using the United States Environmental Protection Agency (EPA) Method 8260.
- Polyaromatic hydrocarbons (PAHs) using EPA Method 8270.
- Diesel range organics (DRO) using the Wisconsin Department of Natural Resources (WDNR) Method.
- Gasoline range organics (GRO) using WDNR Method.
- Priority Pollutant metals using EPA Methods 6020 and 7471.

B.5.b. Groundwater Samples

Temporary monitoring wells were installed within Soil Borings PP-8, PP-10, and HAB-2 in attempt to collect groundwater samples for laboratory chemical analysis. The temporary wells were constructed with new, one-inch diameter polyvinyl chloride (PVC) casing and screen. Dedicated polyethylene tubing fitted with a stainless-steel check valve was used to collect the groundwater samples. Groundwater was encountered and sampled in Soil Boring PP-8 at a depth of 31 feet bgs, in Soil Boring PP-10 at a depth of 26.5 feet bgs, and in HAB-2 at a depth of 4 feet below the boiler room floor slab located in the basement. The sample was placed in clean sample containers, preserved, labeled, and transported to Pace Analytical under refrigerated conditions using chain-of-custody procedures.

The groundwater sample was analyzed for the presence and concentration of VOCs, DRO, and priority pollutant metals.

B.5.c. Soil Vapor Samples

To collect the soil vapor samples (SV-1 and SV-2) from the soil vapor probes outside the building, new polyethylene tubing was attached to the top of the sampler. The sampling point and tubing were purged to remove two volumes of air prior to sample collection. After purging, the tubing was clamped closed, the sample canister was attached and the clamp released. The soil vapor sample was collected as a grab sample using laboratory-supplied negative pressurized air-sample collection canister in accordance with MPCA guidelines.

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Three sub-slab soil vapor samples (SSV-1 through SSV-3) were collected below the facility floor slab. Following construction of the sampling point, the point was purged using an Apex pump and a negative-pressure air-sampling canister was connected to the sample tubing to allow for collection of a grab sample. Following sample collection, the sample tubing and the bentonite were removed and the sample locations were patched with concrete.

The soil vapor samples were analyzed for the VOCs using EPA Method TO-15.

C. Investigation Results

C.1. Geologic Conditions

Two to four inches of bituminous pavement was encountered in each investigation location outside the facility. The bituminous was generally underlain by a sandy gravel aggregate base ranging from 2 to 8 inches thick. Six inches of concrete was observed below the bituminous in Soil Borings PP-2 and PP-9. The fill soil located beneath the pavement sections extended to depths between 2 feet and 6 feet bgs. The fill soil consisted primarily of silty sand with gravel. The underlying native soil consisted of poorly graded sand and poorly graded sand with gravel.

Inside the building the floor slab ranged from 7 inches to 8 inches thick. Fill soil beneath the floor slab consisted of silty sand to depths ranging from 2 feet to 4 feet. Native soil encountered underneath the building consisted of poorly graded sand with gravel. Soil boring logs are included in Appendix A.

C.2. Field Screening

No PID readings were detected above background levels and no evidence of staining or chemical odors were noted. The PID readings are included on the soil boring logs included in Appendix A. Trace clinker and coal was observed in the fill soil in Soil Borings PP-1, PP-11, PP-13 and PP-14; and concrete was observed in the fill soil in Soil Boring PP-7.

C.3. Soil Analytical Testing Results

The soil analytical testing results for samples collected from the soil borings are summarized in Table 1, and the laboratory analytical reports are attached in Appendix B. For comparison purposes, the tables also include MPCA Residential and Industrial Soil Reference Values (SRVs) and Soil Leaching Values (SLVs).

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The SRVs and SLVs are allowable risk-based contaminant concentrations established by the MPCA to guide Site investigation and cleanup actions.

Results of the laboratory analysis indicate that:

- Several VOCs were detected above laboratory Method Reporting Limits (MRLs); however, no concentrations exceeded regulatory criteria with the exception of benzene in Soil Sample PP-11 (1-2). Benzene was detected at a concentration of 0.32 milligrams per kilogram (mg/kg), which exceeded the SLV of 0.017 mg/kg, but did not exceed Residential or Industrial SRVs.

- PAHs were detected above laboratory MRLs in four of the twelve soil samples; however, none of the individual compounds were detected at concentrations above regulatory criteria, where established. The calculated benzo (a) pyrene (BaP) equivalent concentration for Soil Sample PP-2 (2-4) was 10.7 mg/kg, which exceeded the Industrial SRV of 3 mg/kg, and the calculated BaP for Soil Sample PP-6 (3-5) was 2.1 mg/kg, which exceeded the Residential SRV of 2 mg/kg.

- DRO was detected at concentrations between 11.2 mg/kg and 212 mg/kg in nine soil samples collected during the investigation. There are currently no MPCA established SRVs or SLVs for DRO. However, the MPCA considers soil with DRO concentrations greater than 100 mg/kg as restricted fill.

- GRO was detected at concentrations of 14.9 mg/kg in Soil Sample PP-2 (2-4) and 14.4 mg/kg in Soil Sample PP-11 (1-2). There are currently no MPCA established SRVs or SLVs for GRO. However, the MPCA considers soil with GRO concentrations greater than 100 mg/kg as restricted fill.

- Several priority pollutant metals were detected above the laboratory MRLs; however, no concentrations exceeded regulatory criteria.

C.4. Groundwater Analytical Testing Results

The groundwater analytical results are summarized in Table 2, and the laboratory analytical report is attached in Appendix B. For comparison purposes, the table also includes the Minnesota Drinking Water Criteria. The Drinking Water Criteria are allowable risk-based contaminant concentrations established by the MPCA to guide site investigation and cleanup actions.

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The results of the laboratory analysis indicate that:

- No VOCs were detected at concentrations exceeding the laboratory MRLs with the exception of trichloroethene (TCE). TCE was detected at a concentration of 1.0 microgram per liter (ug/L), which is below the Drinking Water Criteria of 5 ug/L.

- No DRO was detected above laboratory MRLs.

- Several priority pollutant metals were detected above the laboratory MRLs but did not exceed the Drinking Water Criteria, with the exception of antimony and arsenic. Antimony was detected in Groundwater Samples PP-8W at a concentration of 13.7 ug/L and HA-W at a concentration of 6.9 ug/L, which exceed the Drinking Water Criteria of 6 ug/L. Arsenic was detected in all three groundwater samples at concentrations ranging from 10.8 ug/L to 737 ug/L, which exceeded the Drinking Water Criteria of 10 mg/L.

C.5. Soil Vapor Analytical Testing Results

The soil vapor analytical testing results are summarized in Table 3, and the laboratory analytical report is attached in Appendix B. The analytical results were compared to the MPCA Industrial Intrusion Screening Values (ISVs). The ISVs were developed by the MPCA to be used as screening values for evaluating risks posed by volatile compounds identified in indoor air when those compounds are present due to vapor intrusion. Per MPCA guidance, soil vapor results are compared to either ten times (10x) or one hundred times (100x) the ISVs. Soil vapor concentrations greater than 10x the ISV indicate a higher potential for risks associated with vapor intrusion, and per MPCA guidance, when vapor concentrations exceed 10x an ISV, sub-slab vapor samples and/or a building survey to identify entry points may need to be conducted. In cases where volatile compounds exceed 100x an ISV, the MPCA guidance indicates sub-slab vapor samples and indoor air samples be collected.

The analytical results indicate that several VOCs exceeded laboratory MRLs; however, none of the detected compounds exceeded their respective 10x Industrial ISVs.

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D. Conclusions and Recommendations

Based on the results of the investigation, fill soil consisting of silty sand is present to depths of up to 6 feet bgs at the Site. Trace concrete, coal, and clinker were observed at four locations. Elevated concentrations of DRO were detected at various locations within the fill soil, benzene was detected at one location and the BaP equivalent exceeded regulatory criteria at two locations. Elevated concentrations of arsenic and antimony were detected above regulatory criteria in the groundwater.

The elevated concentrations of contaminants, combined with the presence of debris will restrict on-site and off-site reuse options, and any fill soil proposed for export will need to meet the MPCA definition of unrestricted fill. If the fill soil proposed for export does not meet this definition, the fill soil will require disposal at a permitted landfill. In order to better quantify and characterize fill soil, consideration should be made to complete test pits within the surface parking lot on the west side of the Site.

We recommend that the Site be entered into the MPCA's Voluntary Investigation and Cleanup Program and that a request for a No Association Determination be made and obtained for the non-petroleum impacts prior to closing. We also recommend that prior to any redevelopment, a site specific response action plan and construction contingency plan (RAP/CCP) be prepared and approved by the MPCA for future redevelopment plans at the Site. The RAP/CCP outlines the provisions for the proper management and/or offsite disposal of contaminated soil, or other materials that might be encountered during the construction activities. The RAP/CCP also will provide contingency procedures in the event an underground storage tank (UST) or other previously unidentified contamination is encountered. The RAP/CCP should be submitted to the MPCA for review and approval prior to the start of construction.

E. Assessment Limitations

The analyses and recommendations submitted in this report are based on our field observations and the results of laboratory chemical analyses of samples collected for this project. It is important to note that our investigation is limited to the diameter or limits of our investigation locations and cannot be assumed to be completely representative of the soil conditions throughout the Site.

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty express or implied, is made.

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Figures

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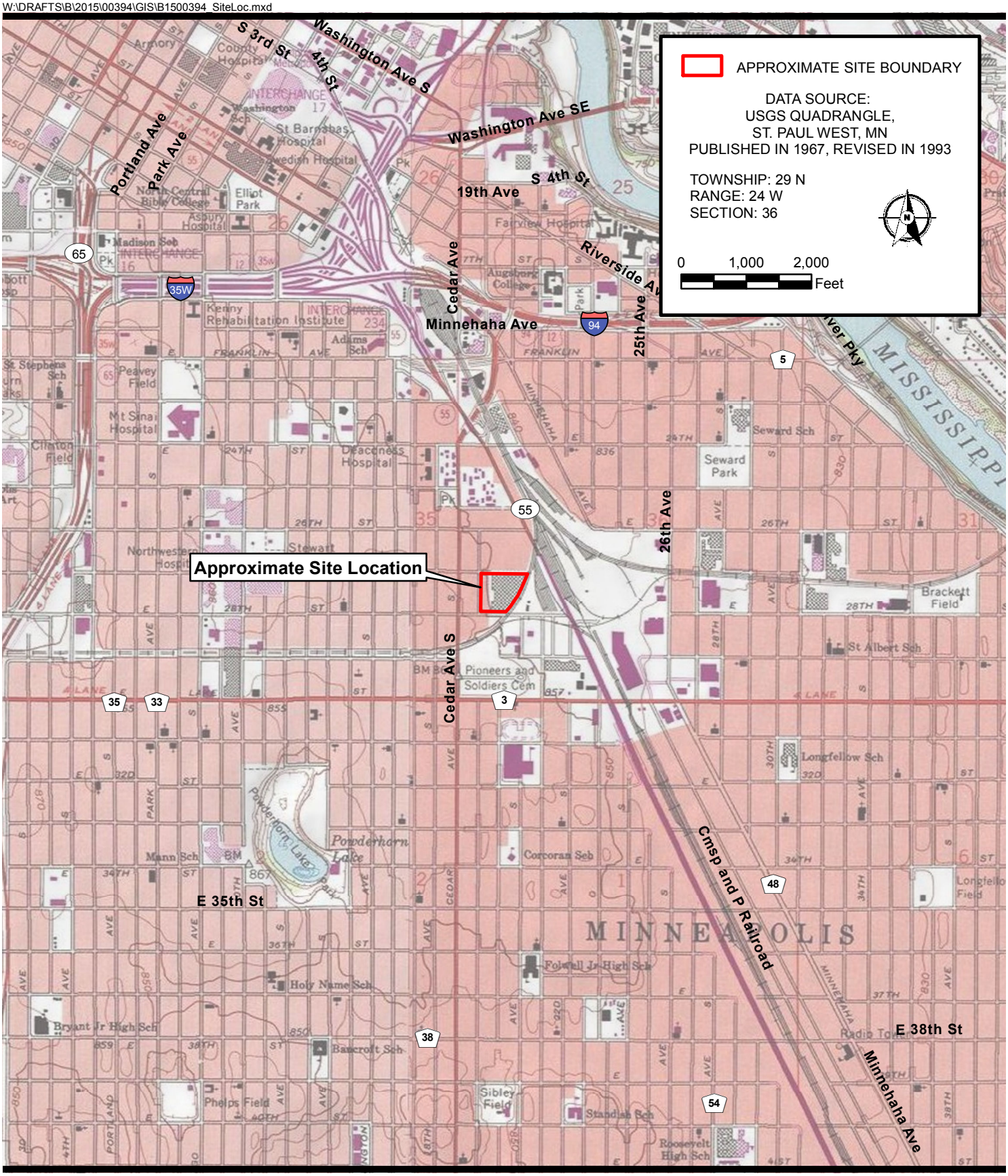

Sheet: 1 of 1

Fig. 1

Project No:	B1500394
Drawing No.	B1500394_SiteLoc
Scale:	1 in = 2,000 ft
Drawn By:	FER
Date Drawn:	1/16/15
Checked By:	KJH
Last Modified:	1/16/15

SITE LOCATION MAP
ROOF DEPOT SITE
1860 28TH STREET
MINNEAPOLIS, MINNESOTA

BRAUN INTERTEC
11001 Hampshire Avenue So.
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

F:\2015\B1500394B.dwg,BLAND,4/16/2015 11:48:15 AM

- PUSH PROBE SOIL BORING
- PUSH PROBE SOIL BORING WITH GROUNDWATER SAMPLE
- HAND AUGER SOIL BORING
- HAND AUGER SOIL BORING WITH GROUNDWATER SAMPLE
- SOIL VAPOR PROBE
- SUB-SLAB SOIL VAPOR SAMPLE

N

40' 0 80'

SCALE: 1" = 80'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

SITE SKETCH
PHASE II ENVIRONMENTAL SITE ASSESSMENT
ROOF DEPOT
1860 28th STREET AND 2717 LONGFELLOW AVENUE
MINNEAPOLIS, MINNESOTA

Project No:	B1500394
Drawing No:	B1500394B
Scale:	1" = 80'
Drawn By:	BJB
Date Drawn:	3/19/15
Checked By:	JEH
Last Modified:	4/16/15
Sheet: of	Fig: 2

Tables

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Table 1
Summary of Soil Analytical Results
Roof Depot
Minneapolis, Minnesota
Project B1500394

Compound/Parameter	CAS No.	Sample Identifier												Residential Soil Reference Value (mg/kg)	Industrial Soil Reference Value (mg/kg)	Tier 1 Soil Leaching Value (mg/kg)
		PP-2 (2-4)	PP-3 (1-2)	PP-5 (2-4)	PP-6 (3-5)	PP-7 (3-5)	PP-8 (2)	PP-10 (2)	PP-11 (1-2)	PP-12 (1-2)	PP-13 (2-4)	PP-14 (2-3)	HA-2 (1-3)			
		3/25/15	3/25/15	3/26/15	3/26/15	3/26/15	3/25/15	3/25/15	3/26/15	3/26/15	3/26/15	3/26/15	3/25/15			
		10300830002	10300830003	10300830005	10300830006	10300830007	10300830008	10300830010	10300830011	10300830012	10300830013	10300830014	10300830016			
Volatile Organic Compounds (mg/kg)																
Benzene	71-43-2	<0.026	<0.022	<0.023	<0.024	<0.021	<0.024	<0.026	**0.032**	<0.021	<0.021	<0.023	<0.025	6	10	0.017
Ethylbenzene	100-41-4	<0.066	<0.054	<0.058	<0.059	<0.052	<0.059	<0.066	**0.062**	<0.053	<0.052	<0.058	<0.062	200	200	1
Naphthalene	91-20-3	<0.26	<0.22	<0.23	**0.40**	<0.21	<0.24	<0.26	**0.40**	**0.28**	<0.21	**0.26**	<0.25	10	28	4.5
Toluene	108-88-3	<0.066	<0.054	**0.069**	**0.069**	<0.052	<0.059	<0.066	**0.27**	**0.17**	**0.079**	**0.21**	<0.062	107	305	2.5
1,2,4-Trimethylbenzene	95-63-6	<0.066	<0.054	<0.058	<0.059	<0.052	<0.059	<0.066	**0.17**	**0.094**	<0.052	**0.10**	<0.062	8	25	2.7
1,3,5-Trimethylbenzene	108-67-8	<0.066	<0.054	<0.058	<0.059	<0.052	<0.059	<0.066	**0.066**	<0.053	<0.052	<0.058	<0.062	3	10	2.7
Xylene (Total)	1330-20-7	<0.20	<0.16	<0.17	<0.18	<0.16	<0.18	<0.20	**0.64**	**0.39**	**0.18**	**0.38**	<0.19	45	130	5.4
All other reported VOCs	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE	NE	NE
Semivolatile Organic Compounds (mg/kg)																
Acenaphthene	83-32-9	**0.86**	**0.19**	<0.011	**0.58**	**0.082**	<0.012	<0.012	<0.011	<0.010	<0.010	<0.010	<0.011	1,200	5,260	81
Acenaphthylene	208-96-8	**0.36**	**0.15**	**0.020**	**0.25**	**0.074**	<0.012	**0.029**	<0.011	<0.010	<0.010	<0.010	<0.011	NE	NE	NE
Anthracene	120-12-7	**3.3**	**0.53**	**0.019**	**1.6**	**0.22**	<0.012	**0.028**	**0.034**	**0.014**	**0.017**	**0.024**	<0.011	7,880	45,400	1,300
Benzo(a)anthracene	56-55-3	**8.3**	**0.47**	**0.046**	**1.8**	**0.62**	<0.012	**0.045**	**0.20**	**0.057**	**0.082**	**0.085**	<0.011	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	**8.1**	**0.52**	**0.063**	**1.6**	**0.94**	<0.012	**0.076**	**0.90**	**0.12**	**0.12**	**0.13**	<0.011	cPAH	cPAH	1.4
Benzo(b)fluoranthene	205-99-2	**9.2**	**0.69**	**0.078**	**1.8**	**1.0**	<0.012	**0.11**	**0.94**	**0.14**	**0.17**	**0.13**	<0.011	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	**4.4**	**0.24**	**0.052**	**0.72**	**0.59**	<0.012	**0.096**	**1.7**	**0.28**	**0.16**	**0.14**	<0.011	NE	NE	NE
Benzo(k)fluoranthene	207-08-9	**3.6**	**0.27**	**0.027**	**0.76**	**0.43**	<0.012	**0.039**	**0.32**	**0.048**	**0.049**	**0.044**	<0.011	cPAH	cPAH	cPAH
Chrysene	218-01-9	**8.4**	**0.59**	**0.057**	**1.8**	**0.71**	<0.012	**0.064**	**0.43**	**0.090**	**0.11**	**0.15**	<0.011	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	**16.2**	**1.2**	**0.062**	**3.7**	**0.94**	<0.012	**0.070**	**0.16**	**0.080**	**0.13**	**0.084**	<0.011	1,080	6,800	670
Fluorene	86-73-7	**0.81**	**0.35**	<0.011	**1.1**	**0.062**	<0.012	<0.012	**0.011**	<0.010	<0.010	<0.010	<0.011	850	4,120	110
Indeno(1,2,3-cd)pyrene	193-39-5	**3.8**	**0.20**	**0.041**	**0.72**	**0.51**	<0.012	**0.065**	**1.1**	**0.16**	**0.11**	**0.064**	<0.011	cPAH	cPAH	cPAH
Naphthalene	91-20-3	**0.10**	**0.056**	<0.011	**0.44**	<0.054	<0.012	<0.012	**0.084**	**0.024**	**0.020**	**0.031**	<0.011	10	28	4.5
Phenanthrene	85-01-8	**11.5**	**1.7**	**0.035**	**4.2**	**0.71**	<0.012	**0.048**	**0.34**	**0.090**	**0.079**	**0.16**	<0.011	NE	NE	NE
Pyrene	129-00-0	**21.4**	**1.3**	**0.082**	**4.2**	**1.2**	<0.012	**0.085**	**0.26**	**0.11**	**0.15**	**0.15**	<0.011	890	5,800	440
BaP Equivalent**	NA	**10.7**	**0.69**	**0.083**	**2.1**	**1.2**	<0.012	**0.10**	**1.2**	**0.16**	**0.17**	**0.16**	<0.011	2	3	NE
Total Petroleum Hydrocarbons (mg/kg)																
Gasoline Range Organics	NA	**14.9**	<11.1	<11.4	<11.2	<11.0	<11.5	<11.3	**14.4**	<12.0	<11.6	<10.7	<12.1	NE	NE	NE
WDRO C10-C28	NA	**68.5** [4]	**212** [4]	<8.6	**169** [4]	**112** [4]	<9.5	**46.1** [4]	**64.0** [4]	**19.2** [4]	**11.2** [4]	**39.1** [4]	<9.0	NE	NE	NE
Metals (mg/kg)																
Antimony	7440-36-0	<0.52 [2]	<0.45	<0.45	<0.44	**0.53**	<0.49	<0.55	<0.49	<0.47	<0.48	<0.47	<0.45	12	100	5.4
Arsenic	7440-38-2	**3.0**	**1.6**	**3.1**	**1.1**	**2.6**	**2.2**	**2.4**	**2.8**	**1.5**	**1.6**	**1.9**	**3.3**	9	20	5.8
Barium	7440-39-3	**65.4** [1]	**26.4**	**25.3**	**31.2**	**58.2**	**94.6**	**43.5**	**25.5**	**18.9**	**26.3**	**23.3**	**7.6**	1,100	18,000	1,700
Beryllium	7440-41-7	**0.36** [3]	<0.18	<0.18	<0.18	<0.20	**0.30**	<0.22	<0.20	<0.19	<0.19	<0.19	<0.18	55	230	2.7
Cadmium	7440-43-9	**0.17**	**0.085**	**0.15**	<0.071	**0.72**	<0.079	**1.3**	**0.096**	<0.076	**0.078**	<0.075	<0.071	25	200	8.8
Chromium	7440-47-3	**8.4** [1]	**4.4**	**4.1**	**3.8**	**7.5**	**7.9**	**12.7**	**4.0**	**2.4**	**3.4**	**4.0**	**1.9**	87 [c]	650 [c]	36 [c]
Copper	7440-50-8	**7.0**	**4.8**	**3.2**	**1.8**	**14.6**	**4.7**	**18.6**	**7.5**	**3.5**	**4.0**	**4.5**	**2.0**	100	9,000	700
Lead	7439-92-1	**16.2** [1]	**11.0**	**16.2**	**2.5**	**99.4**	**5.0**	**24.4**	**8.7**	**3.2**	**3.4**	**3.8**	**0.66**	300	700	2,700
Mercury	7439-97-6	**0.022**	**0.024**	**0.030**	<0.020	**0.069**	<0.023	**0.025**	**0.022**	<0.020	<0.021	<0.021	<0.019	0.5	1.5	3.3
Nickel	7440-02-0	**9.6** [1]	**5.3**	**3.9**	**3.6**	**9.9**	**8.3**	**10.3**	**5.5**	**3.3**	**6.4**	**5.4**	**3.0**	560	2,500	180
Selenium	7782-49-2	<0.52 [3]	<0.45	<0.45	<0.44	<0.51	<0.49	<0.55	<0.49	<0.47	<0.48	<0.47	<0.45	160	1,300	2.6
Silver	7440-22-4	<0.52	<0.45	<0.45	<0.44	<0.51	<0.49	<0.55	<0.49	<0.47	<0.48	<0.47	<0.45	160	1,300	7.9
Thallium	7440-28-0	**0.11**	<0.090	<0.091	<0.088	<0.10	<0.099	<0.11	<0.099	<0.095	<0.096	<0.093	<0.089	3	21	0.89
Zinc	7440-66-6	**60.6** [1]	**27.2**	**40.7**	**13.7**	**90.6**	**27.1**	**84.6**	**21.2**	**9.6**	**12.8**	**14.7**	<4.5	8,700	75,000	3,000
Other Parameters																
Percent Moisture (%)	NA	**13.1**	**5.0**	**10.2**	**12.2**	**7.2**	**14.8**	**13.9**	**5.1**	**4.8**	**4.5**	**4.4**	**9.6**	NE	NE	NE

Notes:

[1] [M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

[2] [M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. - [R1] RPD value was outside control limits.

[3] [R1] RPD value was outside control limits.

[4] [T6] High boiling point hydrocarbons are present in the sample.

mg/kg = Milligrams per kilogram.

< = Less than the reporting limit

---- = Not analyzed or calculated for this parameter

NE = Not Established

ND = Not detected above reporting limit

SRV - Soil Reference Value Established by the Minnesota Pollution Control Agency; 1999, revised 2009

SLV - Soil Leaching Value Established by the Minnesota Pollution Control Agency; 1999, revised 2005

cPAH = Individual criteria not established. Included in BaP equivalent calculation.

** = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs (cPAH); Minnesota Pollution

[c] = Criteria for hexavalent chromium.

BRAUN INTERTEC

Table 2
Summary of Groundwater Analytical Results
Roof Depot
Minneapolis, Minnesota
Project B1500394

Compound/Parameter	CAS No.	Sample Identifier			Drinking Water Criteria (ug/L)
		PP-8W	**PP-10W**	**HA-W**	
		3/25/15 10:20	**3/25/15 12:30**	**3/26/15 11:00**	
		10300830018	**10300830019**	**10300830020**	
Volatile Organic Compounds (ug/L)					
Trichloroethene	79-01-6	<0.40	**1.0**	<0.40	5
All other reported VOCs	NE	ND	ND	ND	NE
Total Petroleum Hydrocarbons (ug/L)					
WDRO C10-C28	NA	<116	<110	<116	NE
Metals (ug/L)					
Antimony, Dissolved	7440-36-0	**13.7**	<0.50	**6.9**	6
Arsenic, Dissolved	7440-38-2	**348**	**10.8**	**737**	10
Barium, Dissolved	7440-39-3	**66.5**	**74.6**	**39.9**	2,000
Beryllium, Dissolved	7440-41-7	<0.20	<0.20	<0.20	0.08
Cadmium, Dissolved	7440-43-9	<0.080	<0.080	<0.080	4
Chromium, Dissolved	7440-47-3	<0.50	<0.50	**0.90**	100 [c]
Copper, Dissolved	7440-50-8	<1.0	<1.0	<1.0	1,000
Lead, Dissolved	7439-92-1	<0.10	<0.10	<0.10	NE
Mercury, Dissolved	7439-97-6	<0.20	<0.20	<0.20	2
Nickel, Dissolved	7440-02-0	**10.8**	**11.0**	**0.50**	NE
Selenium, Dissolved	7782-49-2	**2.5**	**0.62**	**2.7**	30
Silver, Dissolved	7440-22-4	<0.50	<0.50	<0.50	30
Thallium, Dissolved	7440-28-0	<0.10	<0.10	<0.10	0.6
Zinc, Dissolved	7440-66-6	<5.0	<5.0	<5.0	2,000

Notes:

ug/L = Micrograms per liter.

<RL = Less than the reporting limit

---- = Not analyzed or calculated for this parameter

NE = Not Established

ND = Not detected above reporting limit

Drinking Water Criteria from Minnesota Pollution Control Agency Risk Based Site Evaluation Process Groundwater Guidance Document, Revised 08/2010.

Minnesota Drinking Water Criteria based on following hierarchy of MDH recommended values: Health Risk Levels, Health Based Values, Risk Assessment Advise, Maximum Contaminant Level and Unit Risk Level or Lifetime Health Advisory Level.

[c] = Criteria for hexavalent chromium.

BRAUN INTERTEC

Table 3
Summary of Soil Vapor Analytical Results
Roof Depot
Minneapolis, Minnesota
Project B1500394

Compound/Parameter	CAS No.	Sample Identifier					Residential ISV (ug/m^3)	Residential 10X ISV (ug/m^3)	Residential 100X ISV (ug/m^3)	Industrial ISV (ug/m^3)	Industrial 10X ISV (ug/m^3)	Industrial 100X ISV (ug/m^3)
		SV-1	**SV-2**	**SSV-1**	**SSV-2**	**SSV-3**						
		3/25/15	**3/25/15**	**3/25/15**	**3/25/15**	**3/25/15**						
		10300700001	**10300700002**	**10300700003**	**10300700004**	**10300700005**						
Volatile Organic Compounds (ug/m3)												
Acetone	67-64-1	**37.4** [2]	**24.3** [2]	**24.6** [2]	**80.9** [2]	**32.4** [2]	31,000	310,000	3,100,000	87,000	870,000	8,700,000
Benzene	71-43-2	**5.6**	**4.2**	**1.0**	**2.9**	**0.98**	4.5	45	450	13	130	1,300
2-Butanone (MEK)	78-93-3	**12.6**	**10.4**	**8.4**	**22.6**	**10.1**	5,000	50,000	500,000	10,000	100,000	1,000,000
Carbon disulfide	75-15-0	**0.88**	**2.6**	**5.1**	**9.3**	**4.8**	700	7,000	70,000	2,000	20,000	200,000
Chloromethane	74-87-3	**0.90**	<0.56	<0.65	<0.63	<0.53	90	900	9,000	300	3,000	30,000
Cyclohexane	110-82-7	**2.8**	**3.1**	**3.8**	**15.3**	**5.4**	6,000	60,000	600,000	20,000	200,000	2,000,000
Dichlorodifluoromethane	75-71-8	**2.1**	**2.1**	**11.8**	<1.5	**2.5**	200	2,000	20,000	600	6,000	60,000
Ethanol	64-17-5	**14.1**	**6.1**	**9.3**	**20.2**	**6.6**	15,000	150,000	1,500,000	42,000	420,000	4,200,000
Ethylbenzene	100-41-4	**2.3**	**3.2**	<1.4	**2.4**	<1.1	1,000	10,000	100,000	3,000	30,000	300,000
n-Heptane	142-82-5	**9.4**	**10.0**	<1.3	**10.1**	**3.2**	NE	NE	NE	NE	NE	NE
n-Hexane	110-54-3	**10.2**	**10.7**	**1.2**	**35.7**	**5.6**	2,000	20,000	200,000	6,000	60,000	600,000
2-Propanol	67-63-0	<1.7	<1.7	**4.7**	<1.9	**4.0**	7,000	70,000	700,000	20,000	200,000	2,000,000
Propylene	115-07-1	**37.3** [1]	**38.2**	<0.54	**30.5**	<0.44	3,000	30,000	300,000	8,000	80,000	800,000
Tetrachloroethene	127-18-4	<0.92	<0.92	**1.8**	<1.0	<0.87	2	20	200	30	300	3,000
Toluene	108-88-3	**11.2**	**9.8**	**3.7**	**52.0**	**16.8**	5,000	50,000	500,000	10,000	100,000	1,000,000
1,1,1-Trichloroethane	71-55-6	<0.94	**2.0**	**78.2**	**2.9**	<0.88	5,000	50,000	500,000	10,000	100,000	1,000,000
Trichlorofluoromethane	75-69-4	<1.5	**1.7**	**13.9**	**27.3**	<1.4	700	7,000	70,000	2,000	20,000	200,000
1,1,2-Trichlorotrifluoroethane	76-13-1	<2.1	<2.1	**3.7**	**6.4**	<2.0	30,000	300,000	3,000,000	80,000	800,000	8,000,000
1,2,4-Trimethylbenzene	95-63-6	**2.0**	**2.7**	<1.5	**2.1**	<1.3	7	70	700	20	200	2,000
m&p-Xylene	179601-23-1	**5.9**	**7.7**	<2.7	**9.4**	**2.5**	100 [a]	1,000 [a]	10,000 [a]	300 [a]	3,000 [a]	30,000 [a]
o-Xylene	95-47-6	**2.0**	**2.6**	<1.4	**3.2**	<1.1	100 [a]	1,000 [a]	10,000 [a]	300 [a]	3,000 [a]	30,000 [a]
All other reported VOCs	NE	ND	ND	ND	ND	ND	NE	NE	NE	NE	NE	NE

Notes:

[1] [E] Analyte concentration exceeded the calibration range. The reported result is estimated.

[2] [L2] Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.

ug/m3 = Micrograms per cubic meter.

< = Less than the reporting limit

---- = Not analyzed or calculated for this parameter

NE = Not Established

ND = Not detected above reporting limit

Intrusion Screening Values (ISV) from Risk-Based Guidance for the Vapor Intrusion Pathway, Minnesota Pollution Control Agency Superfund, RCRA, and Voluntary Cleanup Section, February 2009.

Intrusion Screening Values (ISVs) for the Minnsota Pollution Control Agency Petroleum Remediation Program, October 2010.

[a] Criteria for mixture of o, m and p-xylenes.

Appendix A

Soil Boring Logs

DRAFT

BRAUN INTERTEC

HAND AUGER BORING

Braun Project B1500394
LIMITED SITE INVESTIGATION
Roof Depot Site
1860 28th Street
Minneapolis, Minnesota

HAND AUGER: **HAB-1**

LOCATION: See attached sketch.

DRILLER: J. Friederichs	METHOD: Hand Auger	DATE: **3/25/15**	SCALE: **1" = 4'**

Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	pid ppm	Tests or Notes
0.0						
0.7	CONC	About 7 inches of concrete.				
	FILL	FILL: Silty Sand, with a little Gravel, dark brown, moist.			0.4	
2.0						
	SP	POORLY GRADED SAND, fine- to medium-grained, with a little Gravel, brown, moist to wet.			0.3	
4.0						
		END OF HAND AUGER BORING @ 4 FEET.			0.1	
		Water not observed in hand auger boring.				
		Borehole filled with soil cuttings.				
		Soil sample collected from 1 to 3 feet for analytical testing.				

(See Descriptive Terminology sheet for explanation of abbreviations)

HAND AUGER BORING N:\GINT\PROJECTS\AX PROJECTS\2015\00394.GPJ BRAUN_VS_GEOTECH_TEMPLATE.GDT 4/17/15 11:39

BRAUN INTERTEC

HAND AUGER BORING

Braun Project B1500394
LIMITED SITE INVESTIGATION
Roof Depot Site
1860 28th Street
Minneapolis, Minnesota

HAND AUGER: **HAB-2**

LOCATION: See attached sketch.

DRILLER: J. Friederichs	METHOD: Hand Auger	DATE: **3/25/15**	SCALE: **1" = 4'**

Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	pid ppm	Tests or Notes
0.0						
0.7	CONC	8 inches of concrete.				
	FILL	FILL: Silty Sand, fine- to medium-grained, trace Gravel, dark brown, moist.			0.1	
					0.2	
3.0						
	SP	POORLY GRADED SAND, fine- to medium-grained, with a little Gravel, brown, wet to waterbearing. (Glacial Outwash)		▼	0.0	
4.0					0.4	
		END OF HAND AUGER @ 4 FEET.				
		Water observed at 4 feet while drilling.				
		Boring then backfilled with soil cuttings.				
		Soil sample collected from 1 to 3 feet for analytical testing.				

(See Descriptive Terminology sheet for explanation of abbreviations)

HAND AUGER BORING N:\GINT\PROJECTS\AX PROJECTS\2015\00394.GPJ BRAUN_VS_GEOTECH_TEMPLATE.GDT 4/17/15 11:39

Appendix B

Laboratory Analytical Reports

DRAFT

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 10, 2015

Jeremy Hansen
Braun Intertec Corp.
11001 Hampshire Ave S
Minneapolis, MN 55438

RE: Project: B1500394 Roof Depot
Pace Project No.: 10300830

Dear Jeremy Hansen:
Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steve Albrecht
steve.albrecht@pacelabs.com
Project Manager

Enclosures

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10300830001	**PP-1 (2-4)**	Solid	03/25/15 15:45	03/27/15 08:20
10300830002	**PP-2 (2-4)**	Solid	03/25/15 16:30	03/27/15 08:20
10300830003	**PP-3 (1-2)**	Solid	03/25/15 17:00	03/27/15 08:20
10300830004	**PP-4 (2-4)**	Solid	03/25/15 15:00	03/27/15 08:20
10300830005	**PP-5 (2-4)**	Solid	03/26/15 08:40	03/27/15 08:20
10300830006	**PP-6 (3-5)**	Solid	03/26/15 09:15	03/27/15 08:20
10300830007	**PP-7 (3-5)**	Solid	03/26/15 09:50	03/27/15 08:20
10300830008	**PP-8 (2)**	Solid	03/25/15 09:45	03/27/15 08:20
10300830009	**PP-9 (1-3)**	Solid	03/26/15 10:30	03/27/15 08:20
10300830010	**PP-10 (2)**	Solid	03/25/15 12:00	03/27/15 08:20
10300830011	**PP-11 (1-2)**	Solid	03/26/15 12:30	03/27/15 08:20
10300830012	**PP-12 (1-2)**	Solid	03/26/15 12:00	03/27/15 08:20
10300830013	**PP-13 (2-4)**	Solid	03/26/15 13:00	03/27/15 08:20
10300830014	**PP-14 (2-3)**	Solid	03/26/15 13:30	03/27/15 08:20
10300830015	**HA-1 (1-3)**	Solid	03/25/15 11:30	03/27/15 08:20
10300830016	**HA-2 (1-3)**	Solid	03/25/15 10:30	03/27/15 08:20
10300830017	**Trip Blank - SL**	Solid	03/25/15 00:00	03/27/15 08:20
10300830018	**PP-8W**	Water	03/25/15 10:20	03/27/15 08:20
10300830019	**PP-10W**	Water	03/25/15 12:30	03/27/15 08:20
10300830020	**HA-W**	Water	03/26/15 11:00	03/27/15 08:20

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SAMPLE ANALYTE COUNT

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10300830002	**PP-2 (2-4)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	SH2	70	PASI-M
10300830003	**PP-3 (1-2)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	SH2	70	PASI-M
10300830005	**PP-5 (2-4)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	SH2	70	PASI-M
10300830006	**PP-6 (3-5)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	SH2	70	PASI-M
10300830007	**PP-7 (3-5)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830008	**PP-8 (2)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M

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SAMPLE ANALYTE COUNT

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830010	**PP-10 (2)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830011	**PP-11 (1-2)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830012	**PP-12 (1-2)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830013	**PP-13 (2-4)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830014	**PP-14 (2-3)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M

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SAMPLE ANALYTE COUNT

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830016	**HA-2 (1-3)**	WI MOD DRO	MT	2	PASI-M
		WI MOD GRO	BMM	2	PASI-M
		EPA 6020A	TT3	13	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	LT	19	PASI-M
		EPA 8260	AMT	70	PASI-M
10300830017	**Trip Blank - SL**	EPA 8260	AMT	70	PASI-M
10300830018	**PP-8W**	WI MOD DRO	MT	2	PASI-M
		EPA 6020A	RJS	13	PASI-M
		EPA 7470	LMW	1	PASI-M
		EPA 8260	AJC	70	PASI-M
10300830019	**PP-10W**	WI MOD DRO	MT	2	PASI-M
		EPA 6020A	RJS	13	PASI-M
		EPA 7470	LMW	1	PASI-M
		EPA 8260	AJC	70	PASI-M
10300830020	**HA-W**	WI MOD DRO	MT	2	PASI-M
		EPA 6020A	RJS	13	PASI-M
		EPA 7470	LMW	1	PASI-M
		EPA 8260	AJC	70	PASI-M

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **WI MOD DRO**
Description: WIDRO GCS
Client: Braun-BLM
Date: April 10, 2015

General Information:
12 samples were analyzed for WI MOD DRO. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with WI MOD DRO with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: OEXT/28694

T6: High boiling point hydrocarbons are present in the sample.

- PP-10 (2) (Lab ID: 10300830010)
  - WDRO C10-C28
- PP-11 (1-2) (Lab ID: 10300830011)
  - WDRO C10-C28
- PP-12 (1-2) (Lab ID: 10300830012)
  - WDRO C10-C28
- PP-13 (2-4) (Lab ID: 10300830013)
  - WDRO C10-C28
- PP-14 (2-3) (Lab ID: 10300830014)
  - WDRO C10-C28

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **WI MOD DRO**
Description: WIDRO GCS
Client: Braun-BLM
Date: April 10, 2015

Analyte Comments:

QC Batch: OEXT/28694

T6: High boiling point hydrocarbons are present in the sample.

- PP-2 (2-4) (Lab ID: 10300830002)
  - WDRO C10-C28
- PP-3 (1-2) (Lab ID: 10300830003)
  - WDRO C10-C28
- PP-6 (3-5) (Lab ID: 10300830006)
  - WDRO C10-C28
- PP-7 (3-5) (Lab ID: 10300830007)
  - WDRO C10-C28

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **WI MOD DRO**
Description: WIDRO GCS
Client: Braun-BLM
Date: April 10, 2015

General Information:
3 samples were analyzed for WI MOD DRO. All samples were received in acceptable condition with any exceptions noted below.

P4: Sample field preservation does not meet EPA or method recommendations for this analysis.
- HA-W (Lab ID: 10300830020)
- PP-8W (Lab ID: 10300830018)

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with WI MOD DRO with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **WI MOD GRO**
Description: WIGRO GCV
Client: Braun-BLM
Date: April 10, 2015

General Information:
12 samples were analyzed for WI MOD GRO. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 5030 Medium Soil with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

QC Batch: GCV/13574

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

- MS (Lab ID: 1932401)
  - Gasoline Range Organics

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: GCV/13574

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10300504004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1932401)
  - Gasoline Range Organics

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **WI MOD GRO**
Description: WIGRO GCV
Client: Braun-BLM
Date: April 10, 2015

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 6020A**
Description: 6020A MET ICPMS
Client: Braun-BLM
Date: April 10, 2015

General Information:
12 samples were analyzed for EPA 6020A. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/53233

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10300830002

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 1927021)
  - Chromium
  - Lead
  - Zinc
- MSD (Lab ID: 1927022)
  - Antimony
  - Barium
  - Chromium
  - Nickel
  - Zinc

R1: RPD value was outside control limits.

- MSD (Lab ID: 1927022)
  - Antimony
  - Beryllium

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 6020A**
Description: 6020A MET ICPMS
Client: Braun-BLM
Date: April 10, 2015

QC Batch: MPRP/53233

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10300830002

R1: RPD value was outside control limits.

- Selenium

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 6020A**
Description: 6020A MET ICPMS, Dissolved
Client: Braun-BLM
Date: April 10, 2015

General Information:
3 samples were analyzed for EPA 6020A. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3020 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 7470**
Description: 7470 Mercury, Dissolved
Client: Braun-BLM
Date: April 10, 2015

General Information:
3 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 7471B**
Description: 7471B Mercury
Client: Braun-BLM
Date: April 10, 2015

General Information:
12 samples were analyzed for EPA 7471B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 8270D by SIM**
Description: 8270D MSSV PAH by SIM
Client: Braun-BLM
Date: April 10, 2015

General Information:
12 samples were analyzed for EPA 8270D by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3550 with any exceptions noted below.

QC Batch: OEXT/28695

P3: Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.

- PP-3 (1-2) (Lab ID: 10300830003)

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: OEXT/28695

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- PP-2 (2-4) (Lab ID: 10300830002)
  - 2-Fluorobiphenyl (S)
- PP-6 (3-5) (Lab ID: 10300830006)
  - 2-Fluorobiphenyl (S)

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 8270D by SIM**
Description: 8270D MSSV PAH by SIM
Client: Braun-BLM
Date: April 10, 2015

Analyte Comments:

QC Batch: OEXT/28695

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- PP-7 (3-5) (Lab ID: 10300830007)
  - 2-Fluorobiphenyl (S)

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 8260**
Description: 8260 MSV 5030 Med Level
Client: Braun-BLM
Date: April 10, 2015

General Information:
13 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 5035/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

QC Batch: MSV/30929

SS: This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

- LCS (Lab ID: 1928307)
  - 1,1,2,2-Tetrachloroethane
- MS (Lab ID: 1928308)
  - 1,1,2,2-Tetrachloroethane

QC Batch: MSV/30935

SS: This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

- LCS (Lab ID: 1928536)
  - 1,1,2,2-Tetrachloroethane
- MS (Lab ID: 1928537)
  - 1,1,2,2-Tetrachloroethane

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

QC Batch: MSV/30929

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

- LCS (Lab ID: 1928307)
  - 1,1,2,2-Tetrachloroethane

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 8260**
Description: 8260 MSV 5030 Med Level
Client: Braun-BLM
Date: April 10, 2015

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MSV/30929

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- LCS (Lab ID: 1928307)
  - 1,1,2,2-Tetrachloroethane
- MS (Lab ID: 1928308)
  - 1,1,2,2-Tetrachloroethane

QC Batch: MSV/30935

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- LCS (Lab ID: 1928536)
  - 1,1,2,2-Tetrachloroethane
- MS (Lab ID: 1928537)
  - 1,1,2,2-Tetrachloroethane

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 8260**
Description: 8260 VOC
Client: Braun-BLM
Date: April 10, 2015

General Information:
3 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/30955

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10300823003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1930696)
  - 1,2,4-Trichlorobenzene
  - 1,2-Dibromoethane (EDB)
  - 1,2-Dichlorobenzene
  - 1,3-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - Hexachloro-1,3-butadiene
  - sec-Butylbenzene

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Method: **EPA 8260**
Description: 8260 VOC
Client: Braun-BLM
Date: April 10, 2015

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-2 (2-4) **Lab ID: 10300830002** Collected: 03/25/15 16:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**68.5**	mg/kg	19.6	2	03/30/15 10:25	04/01/15 10:11		T6
Surrogates								
n-Triacontane (S)	101	%.	50-150	2	03/30/15 10:25	04/01/15 10:11	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**14.9**	mg/kg	12.0	1	04/06/15 09:34	04/08/15 12:48		
Surrogates								
a,a,a-Trifluorotoluene (S)	92	%.	80-150	1	04/06/15 09:34	04/08/15 12:48	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.52	20	03/31/15 13:57	04/01/15 09:04	7440-36-0	M6,R1
Arsenic	**3.0**	mg/kg	0.52	20	03/31/15 13:57	04/01/15 09:04	7440-38-2	
Barium	**65.4**	mg/kg	0.31	20	03/31/15 13:57	04/01/15 09:04	7440-39-3	M6
Beryllium	**0.36**	mg/kg	0.21	20	03/31/15 13:57	04/01/15 09:04	7440-41-7	R1
Cadmium	**0.17**	mg/kg	0.083	20	03/31/15 13:57	04/01/15 09:04	7440-43-9	
Chromium	**8.4**	mg/kg	0.52	20	03/31/15 13:57	04/01/15 09:04	7440-47-3	M6
Copper	**7.0**	mg/kg	1.0	20	03/31/15 13:57	04/01/15 09:04	7440-50-8	
Lead	**16.2**	mg/kg	0.10	20	03/31/15 13:57	04/01/15 09:04	7439-92-1	M6
Nickel	**9.6**	mg/kg	0.52	20	03/31/15 13:57	04/01/15 09:04	7440-02-0	M6
Selenium	ND	mg/kg	0.52	20	03/31/15 13:57	04/01/15 09:04	7782-49-2	R1
Silver	ND	mg/kg	0.52	20	03/31/15 13:57	04/01/15 09:04	7440-22-4	
Thallium	**0.11**	mg/kg	0.10	20	03/31/15 13:57	04/01/15 09:04	7440-28-0	
Zinc	**60.6**	mg/kg	5.2	20	03/31/15 13:57	04/01/15 09:04	7440-66-6	M6
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.022**	mg/kg	0.020	1	03/31/15 15:33	04/01/15 11:17	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**13.1**	%	0.10	1		03/30/15 11:43		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**0.86**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 16:12	83-32-9	
Acenaphthylene	**0.36**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 16:12	208-96-8	
Anthracene	**3.3**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 16:34	120-12-7	
Benzo(a)anthracene	**8.3**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	56-55-3	
Benzo(a)pyrene	**8.1**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	50-32-8	
Benzo(b)fluoranthene	**9.2**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	205-99-2	
Benzo(g,h,i)perylene	**4.4**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 16:34	191-24-2	
Benzo(k)fluoranthene	**3.6**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 16:34	207-08-9	
Chrysene	**8.4**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.057	5	03/30/15 10:46	04/01/15 16:12	53-70-3	
Fluoranthene	**16.2**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	206-44-0	
Fluorene	**0.81**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 16:12	86-73-7	
Indeno(1,2,3-cd)pyrene	**3.8**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 16:34	193-39-5	
Naphthalene	**0.10**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 16:12	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-2 (2-4) **Lab ID: 10300830002** Collected: 03/25/15 16:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**11.5**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	85-01-8	
Pyrene	**21.4**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**10.7**	mg/kg	2.3	200	03/30/15 10:46	04/01/15 16:56		
Surrogates								
2-Fluorobiphenyl (S)	89	%.	55-125	5	03/30/15 10:46	04/01/15 16:12	321-60-8	D3
p-Terphenyl-d14 (S)	56	%.	30-150	5	03/30/15 10:46	04/01/15 16:12	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.3	1	03/31/15 11:46	04/01/15 18:57	67-64-1	
Allyl chloride	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	107-05-1	
Benzene	ND	mg/kg	0.026	1	03/31/15 11:46	04/01/15 18:57	71-43-2	
Bromobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	108-86-1	
Bromochloromethane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	74-97-5	
Bromodichloromethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	75-27-4	
Bromoform	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	75-25-2	
Bromomethane	ND	mg/kg	0.66	1	03/31/15 11:46	04/01/15 18:57	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.33	1	03/31/15 11:46	04/01/15 18:57	78-93-3	
n-Butylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	56-23-5	
Chlorobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	108-90-7	
Chloroethane	ND	mg/kg	0.66	1	03/31/15 11:46	04/01/15 18:57	75-00-3	
Chloroform	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	67-66-3	
Chloromethane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.66	1	03/31/15 11:46	04/01/15 18:57	96-12-8	
Dibromochloromethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	106-93-4	
Dibromomethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.66	1	03/31/15 11:46	04/01/15 18:57	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-2 (2-4) **Lab ID: 10300830002** Collected: 03/25/15 16:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	60-29-7	
Ethylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.33	1	03/31/15 11:46	04/01/15 18:57	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	99-87-6	
Methylene Chloride	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.33	1	03/31/15 11:46	04/01/15 18:57	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	1634-04-4	
Naphthalene	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	91-20-3	
n-Propylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	103-65-1	
Styrene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	79-34-5	
Tetrachloroethene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.6	1	03/31/15 11:46	04/01/15 18:57	109-99-9	
Toluene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	79-00-5	
Trichloroethene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.26	1	03/31/15 11:46	04/01/15 18:57	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.066	1	03/31/15 11:46	04/01/15 18:57	108-67-8	
Vinyl chloride	ND	mg/kg	0.026	1	03/31/15 11:46	04/01/15 18:57	75-01-4	
Xylene (Total)	ND	mg/kg	0.20	1	03/31/15 11:46	04/01/15 18:57	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%.	55-150	1	03/31/15 11:46	04/01/15 18:57	17060-07-0	
Toluene-d8 (S)	101	%.	61-125	1	03/31/15 11:46	04/01/15 18:57	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	54-131	1	03/31/15 11:46	04/01/15 18:57	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-3 (1-2) **Lab ID: 10300830003** Collected: 03/25/15 17:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**212**	mg/kg	85.7	10	03/30/15 10:25	04/01/15 10:18		T6
Surrogates								
n-Triacontane (S)	79	%.	50-150	10	03/30/15 10:25	04/01/15 10:18	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.1	1	04/06/15 09:34	04/08/15 13:11		
Surrogates								
a,a,a-Trifluorotoluene (S)	92	%.	80-150	1	04/06/15 09:34	04/08/15 13:11	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:56	7440-36-0	
Arsenic	**1.6**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:56	7440-38-2	
Barium	**26.4**	mg/kg	0.27	20	03/31/15 13:57	04/01/15 08:56	7440-39-3	
Beryllium	ND	mg/kg	0.18	20	03/31/15 13:57	04/01/15 08:56	7440-41-7	
Cadmium	**0.085**	mg/kg	0.072	20	03/31/15 13:57	04/01/15 08:56	7440-43-9	
Chromium	**4.4**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:56	7440-47-3	
Copper	**4.8**	mg/kg	0.90	20	03/31/15 13:57	04/01/15 08:56	7440-50-8	
Lead	**11.0**	mg/kg	0.090	20	03/31/15 13:57	04/01/15 08:56	7439-92-1	
Nickel	**5.3**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:56	7440-02-0	
Selenium	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:56	7782-49-2	
Silver	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:56	7440-22-4	
Thallium	ND	mg/kg	0.090	20	03/31/15 13:57	04/01/15 08:56	7440-28-0	
Zinc	**27.2**	mg/kg	4.5	20	03/31/15 13:57	04/01/15 08:56	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.024**	mg/kg	0.019	1	03/31/15 15:33	04/01/15 11:23	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**5.0**	%	0.10	1		03/30/15 11:43		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**0.19**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	83-32-9	
Acenaphthylene	**0.15**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	208-96-8	
Anthracene	**0.53**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	120-12-7	
Benzo(a)anthracene	**0.47**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	56-55-3	
Benzo(a)pyrene	**0.52**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	50-32-8	
Benzo(b)fluoranthene	**0.69**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	205-99-2	
Benzo(g,h,i)perylene	**0.24**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	191-24-2	
Benzo(k)fluoranthene	**0.27**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	207-08-9	
Chrysene	**0.59**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	53-70-3	
Fluoranthene	**1.2**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	206-44-0	
Fluorene	**0.35**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.20**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	193-39-5	
Naphthalene	**0.056**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-3 (1-2) **Lab ID: 10300830003** Collected: 03/25/15 17:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**1.7**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	85-01-8	
Pyrene	**1.3**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**0.69**	mg/kg	0.052	1	03/30/15 10:46	04/01/15 19:28		
Surrogates								
2-Fluorobiphenyl (S)	75	%.	55-125	1	03/30/15 10:46	04/01/15 19:28	321-60-8	P3
p-Terphenyl-d14 (S)	63	%.	30-150	1	03/30/15 10:46	04/01/15 19:28	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.1	1	03/31/15 11:46	04/01/15 17:54	67-64-1	
Allyl chloride	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	107-05-1	
Benzene	ND	mg/kg	0.022	1	03/31/15 11:46	04/01/15 17:54	71-43-2	
Bromobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	108-86-1	
Bromochloromethane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	74-97-5	
Bromodichloromethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	75-27-4	
Bromoform	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	75-25-2	
Bromomethane	ND	mg/kg	0.54	1	03/31/15 11:46	04/01/15 17:54	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.27	1	03/31/15 11:46	04/01/15 17:54	78-93-3	
n-Butylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	56-23-5	
Chlorobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	108-90-7	
Chloroethane	ND	mg/kg	0.54	1	03/31/15 11:46	04/01/15 17:54	75-00-3	
Chloroform	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	67-66-3	
Chloromethane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.54	1	03/31/15 11:46	04/01/15 17:54	96-12-8	
Dibromochloromethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	106-93-4	
Dibromomethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.54	1	03/31/15 11:46	04/01/15 17:54	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-3 (1-2) **Lab ID: 10300830003** Collected: 03/25/15 17:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	60-29-7	
Ethylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.27	1	03/31/15 11:46	04/01/15 17:54	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	99-87-6	
Methylene Chloride	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.27	1	03/31/15 11:46	04/01/15 17:54	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	1634-04-4	
Naphthalene	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	91-20-3	
n-Propylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	103-65-1	
Styrene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	79-34-5	
Tetrachloroethene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.2	1	03/31/15 11:46	04/01/15 17:54	109-99-9	
Toluene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	79-00-5	
Trichloroethene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.22	1	03/31/15 11:46	04/01/15 17:54	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.054	1	03/31/15 11:46	04/01/15 17:54	108-67-8	
Vinyl chloride	ND	mg/kg	0.022	1	03/31/15 11:46	04/01/15 17:54	75-01-4	
Xylene (Total)	ND	mg/kg	0.16	1	03/31/15 11:46	04/01/15 17:54	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%.	55-150	1	03/31/15 11:46	04/01/15 17:54	17060-07-0	
Toluene-d8 (S)	98	%.	61-125	1	03/31/15 11:46	04/01/15 17:54	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	54-131	1	03/31/15 11:46	04/01/15 17:54	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-5 (2-4) **Lab ID: 10300830005** Collected: 03/26/15 08:40 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	8.6	1	03/30/15 10:25	03/31/15 15:05		
Surrogates								
n-Triacontane (S)	70	%.	50-150	1	03/30/15 10:25	03/31/15 15:05	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.4	1	04/06/15 09:34	04/06/15 22:34		
Surrogates								
a,a,a-Trifluorotoluene (S)	94	%.	80-150	1	04/06/15 09:34	04/06/15 22:34	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:58	7440-36-0	
Arsenic	**3.1**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:58	7440-38-2	
Barium	**25.3**	mg/kg	0.27	20	03/31/15 13:57	04/01/15 08:58	7440-39-3	
Beryllium	ND	mg/kg	0.18	20	03/31/15 13:57	04/01/15 08:58	7440-41-7	
Cadmium	**0.15**	mg/kg	0.072	20	03/31/15 13:57	04/01/15 08:58	7440-43-9	
Chromium	**4.1**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:58	7440-47-3	
Copper	**3.2**	mg/kg	0.91	20	03/31/15 13:57	04/01/15 08:58	7440-50-8	
Lead	**16.2**	mg/kg	0.091	20	03/31/15 13:57	04/01/15 08:58	7439-92-1	
Nickel	**3.9**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:58	7440-02-0	
Selenium	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:58	7782-49-2	
Silver	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 08:58	7440-22-4	
Thallium	ND	mg/kg	0.091	20	03/31/15 13:57	04/01/15 08:58	7440-28-0	
Zinc	**40.7**	mg/kg	4.5	20	03/31/15 13:57	04/01/15 08:58	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.030**	mg/kg	0.020	1	03/31/15 15:33	04/01/15 11:25	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.2**	%	0.10	1		03/30/15 11:43		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	83-32-9	
Acenaphthylene	**0.020**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	208-96-8	
Anthracene	**0.019**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	120-12-7	
Benzo(a)anthracene	**0.046**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	56-55-3	
Benzo(a)pyrene	**0.063**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	50-32-8	
Benzo(b)fluoranthene	**0.078**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	205-99-2	
Benzo(g,h,i)perylene	**0.052**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	191-24-2	
Benzo(k)fluoranthene	**0.027**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	207-08-9	
Chrysene	**0.057**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	53-70-3	
Fluoranthene	**0.062**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	206-44-0	
Fluorene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.041**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	193-39-5	
Naphthalene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-5 (2-4) **Lab ID: 10300830005** Collected: 03/26/15 08:40 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.035**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	85-01-8	
Pyrene	**0.082**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**0.083**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 13:41		
Surrogates								
2-Fluorobiphenyl (S)	76	%.	55-125	1	03/30/15 10:46	04/01/15 13:41	321-60-8	
p-Terphenyl-d14 (S)	69	%.	30-150	1	03/30/15 10:46	04/01/15 13:41	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.2	1	03/31/15 11:46	04/01/15 18:15	67-64-1	
Allyl chloride	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	107-05-1	
Benzene	ND	mg/kg	0.023	1	03/31/15 11:46	04/01/15 18:15	71-43-2	
Bromobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	108-86-1	
Bromochloromethane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	74-97-5	
Bromodichloromethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	75-27-4	
Bromoform	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	75-25-2	
Bromomethane	ND	mg/kg	0.58	1	03/31/15 11:46	04/01/15 18:15	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.29	1	03/31/15 11:46	04/01/15 18:15	78-93-3	
n-Butylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	56-23-5	
Chlorobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	108-90-7	
Chloroethane	ND	mg/kg	0.58	1	03/31/15 11:46	04/01/15 18:15	75-00-3	
Chloroform	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	67-66-3	
Chloromethane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.58	1	03/31/15 11:46	04/01/15 18:15	96-12-8	
Dibromochloromethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	106-93-4	
Dibromomethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.58	1	03/31/15 11:46	04/01/15 18:15	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-5 (2-4) **Lab ID: 10300830005** Collected: 03/26/15 08:40 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	60-29-7	
Ethylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.29	1	03/31/15 11:46	04/01/15 18:15	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	99-87-6	
Methylene Chloride	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.29	1	03/31/15 11:46	04/01/15 18:15	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	1634-04-4	
Naphthalene	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	91-20-3	
n-Propylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	103-65-1	
Styrene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	79-34-5	
Tetrachloroethene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.3	1	03/31/15 11:46	04/01/15 18:15	109-99-9	
Toluene	**0.069**	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	79-00-5	
Trichloroethene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.23	1	03/31/15 11:46	04/01/15 18:15	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.058	1	03/31/15 11:46	04/01/15 18:15	108-67-8	
Vinyl chloride	ND	mg/kg	0.023	1	03/31/15 11:46	04/01/15 18:15	75-01-4	
Xylene (Total)	ND	mg/kg	0.17	1	03/31/15 11:46	04/01/15 18:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%.	55-150	1	03/31/15 11:46	04/01/15 18:15	17060-07-0	
Toluene-d8 (S)	98	%.	61-125	1	03/31/15 11:46	04/01/15 18:15	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	54-131	1	03/31/15 11:46	04/01/15 18:15	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-6 (3-5) **Lab ID: 10300830006** Collected: 03/26/15 09:15 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**169**	mg/kg	46.8	5	03/30/15 10:25	04/01/15 10:32		T6
Surrogates								
n-Triacontane (S)	94	%.	50-150	5	03/30/15 10:25	04/01/15 10:32	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.2	1	04/06/15 09:34	04/06/15 22:56		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/06/15 09:34	04/06/15 22:56	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.44	20	03/31/15 13:57	04/01/15 09:01	7440-36-0	
Arsenic	**1.1**	mg/kg	0.44	20	03/31/15 13:57	04/01/15 09:01	7440-38-2	
Barium	**31.2**	mg/kg	0.26	20	03/31/15 13:57	04/01/15 09:01	7440-39-3	
Beryllium	ND	mg/kg	0.18	20	03/31/15 13:57	04/01/15 09:01	7440-41-7	
Cadmium	ND	mg/kg	0.071	20	03/31/15 13:57	04/01/15 09:01	7440-43-9	
Chromium	**3.8**	mg/kg	0.44	20	03/31/15 13:57	04/01/15 09:01	7440-47-3	
Copper	**1.8**	mg/kg	0.88	20	03/31/15 13:57	04/01/15 09:01	7440-50-8	
Lead	**2.5**	mg/kg	0.088	20	03/31/15 13:57	04/01/15 09:01	7439-92-1	
Nickel	**3.6**	mg/kg	0.44	20	03/31/15 13:57	04/01/15 09:01	7440-02-0	
Selenium	ND	mg/kg	0.44	20	03/31/15 13:57	04/01/15 09:01	7782-49-2	
Silver	ND	mg/kg	0.44	20	03/31/15 13:57	04/01/15 09:01	7440-22-4	
Thallium	ND	mg/kg	0.088	20	03/31/15 13:57	04/01/15 09:01	7440-28-0	
Zinc	**13.7**	mg/kg	4.4	20	03/31/15 13:57	04/01/15 09:01	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.020	1	03/31/15 15:33	04/01/15 11:27	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.2**	%	0.10	1		03/30/15 11:43		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**0.58**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	83-32-9	
Acenaphthylene	**0.25**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	208-96-8	
Anthracene	**1.6**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	120-12-7	
Benzo(a)anthracene	**1.8**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	56-55-3	
Benzo(a)pyrene	**1.6**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	50-32-8	
Benzo(b)fluoranthene	**1.8**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 18:01	205-99-2	
Benzo(g,h,i)perylene	**0.72**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	191-24-2	
Benzo(k)fluoranthene	**0.76**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	207-08-9	
Chrysene	**1.8**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	53-70-3	
Fluoranthene	**3.7**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 18:01	206-44-0	
Fluorene	**1.1**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.72**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	193-39-5	
Naphthalene	**0.44**	mg/kg	0.057	5	03/30/15 10:46	04/01/15 17:39	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-6 (3-5) **Lab ID: 10300830006** Collected: 03/26/15 09:15 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**4.2**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 18:01	85-01-8	
Pyrene	**4.2**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 18:01	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**2.1**	mg/kg	0.23	20	03/30/15 10:46	04/01/15 18:01		
Surrogates								
2-Fluorobiphenyl (S)	87	%.	55-125	5	03/30/15 10:46	04/01/15 17:39	321-60-8	D3
p-Terphenyl-d14 (S)	81	%.	30-150	5	03/30/15 10:46	04/01/15 17:39	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.2	1	03/31/15 11:46	04/01/15 18:36	67-64-1	
Allyl chloride	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	107-05-1	
Benzene	ND	mg/kg	0.024	1	03/31/15 11:46	04/01/15 18:36	71-43-2	
Bromobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	108-86-1	
Bromochloromethane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	74-97-5	
Bromodichloromethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	75-27-4	
Bromoform	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	75-25-2	
Bromomethane	ND	mg/kg	0.59	1	03/31/15 11:46	04/01/15 18:36	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.29	1	03/31/15 11:46	04/01/15 18:36	78-93-3	
n-Butylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	56-23-5	
Chlorobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	108-90-7	
Chloroethane	ND	mg/kg	0.59	1	03/31/15 11:46	04/01/15 18:36	75-00-3	
Chloroform	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	67-66-3	
Chloromethane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.59	1	03/31/15 11:46	04/01/15 18:36	96-12-8	
Dibromochloromethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	106-93-4	
Dibromomethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.59	1	03/31/15 11:46	04/01/15 18:36	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-6 (3-5) **Lab ID: 10300830006** Collected: 03/26/15 09:15 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	60-29-7	
Ethylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.29	1	03/31/15 11:46	04/01/15 18:36	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	99-87-6	
Methylene Chloride	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.29	1	03/31/15 11:46	04/01/15 18:36	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	1634-04-4	
Naphthalene	**0.40**	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	91-20-3	
n-Propylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	103-65-1	
Styrene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	79-34-5	
Tetrachloroethene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.4	1	03/31/15 11:46	04/01/15 18:36	109-99-9	
Toluene	**0.069**	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	79-00-5	
Trichloroethene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.24	1	03/31/15 11:46	04/01/15 18:36	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.059	1	03/31/15 11:46	04/01/15 18:36	108-67-8	
Vinyl chloride	ND	mg/kg	0.024	1	03/31/15 11:46	04/01/15 18:36	75-01-4	
Xylene (Total)	ND	mg/kg	0.18	1	03/31/15 11:46	04/01/15 18:36	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%.	55-150	1	03/31/15 11:46	04/01/15 18:36	17060-07-0	
Toluene-d8 (S)	99	%.	61-125	1	03/31/15 11:46	04/01/15 18:36	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	54-131	1	03/31/15 11:46	04/01/15 18:36	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-7 (3-5) **Lab ID: 10300830007** Collected: 03/26/15 09:50 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**112**	mg/kg	42.2	5	03/30/15 10:25	04/01/15 10:25		T6
Surrogates								
n-Triacontane (S)	84	%.	50-150	5	03/30/15 10:25	04/01/15 10:25	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.0	1	04/06/15 09:34	04/06/15 23:18		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/06/15 09:34	04/06/15 23:18	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**0.53**	mg/kg	0.51	20	03/31/15 13:57	04/01/15 09:24	7440-36-0	
Arsenic	**2.6**	mg/kg	0.51	20	03/31/15 13:57	04/01/15 09:24	7440-38-2	
Barium	**58.2**	mg/kg	0.31	20	03/31/15 13:57	04/01/15 09:24	7440-39-3	
Beryllium	ND	mg/kg	0.20	20	03/31/15 13:57	04/01/15 09:24	7440-41-7	
Cadmium	**0.72**	mg/kg	0.081	20	03/31/15 13:57	04/01/15 09:24	7440-43-9	
Chromium	**7.5**	mg/kg	0.51	20	03/31/15 13:57	04/01/15 09:24	7440-47-3	
Copper	**14.6**	mg/kg	1.0	20	03/31/15 13:57	04/01/15 09:24	7440-50-8	
Lead	**99.4**	mg/kg	0.10	20	03/31/15 13:57	04/01/15 09:24	7439-92-1	
Nickel	**9.9**	mg/kg	0.51	20	03/31/15 13:57	04/01/15 09:24	7440-02-0	
Selenium	ND	mg/kg	0.51	20	03/31/15 13:57	04/01/15 09:24	7782-49-2	
Silver	ND	mg/kg	0.51	20	03/31/15 13:57	04/01/15 09:24	7440-22-4	
Thallium	ND	mg/kg	0.10	20	03/31/15 13:57	04/01/15 09:24	7440-28-0	
Zinc	**90.6**	mg/kg	5.1	20	03/31/15 13:57	04/01/15 09:24	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.069**	mg/kg	0.021	1	03/31/15 15:33	04/01/15 11:33	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**7.2**	%	0.10	1		03/30/15 11:43		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**0.082**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	83-32-9	
Acenaphthylene	**0.074**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	208-96-8	
Anthracene	**0.22**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	120-12-7	
Benzo(a)anthracene	**0.62**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	56-55-3	
Benzo(a)pyrene	**0.94**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	50-32-8	
Benzo(b)fluoranthene	**1.0**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	205-99-2	
Benzo(g,h,i)perylene	**0.59**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	191-24-2	
Benzo(k)fluoranthene	**0.43**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	207-08-9	
Chrysene	**0.71**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	53-70-3	
Fluoranthene	**0.94**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	206-44-0	
Fluorene	**0.062**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.51**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	193-39-5	
Naphthalene	ND	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-7 (3-5) **Lab ID: 10300830007** Collected: 03/26/15 09:50 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.71**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	85-01-8	
Pyrene	**1.2**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**1.2**	mg/kg	0.054	5	03/30/15 10:46	04/01/15 18:23		
Surrogates								
2-Fluorobiphenyl (S)	84	%.	55-125	5	03/30/15 10:46	04/01/15 18:23	321-60-8	D3
p-Terphenyl-d14 (S)	87	%.	30-150	5	03/30/15 10:46	04/01/15 18:23	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.0	1	04/01/15 09:05	04/01/15 19:59	67-64-1	
Allyl chloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	107-05-1	
Benzene	ND	mg/kg	0.021	1	04/01/15 09:05	04/01/15 19:59	71-43-2	
Bromobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	108-86-1	
Bromochloromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	74-97-5	
Bromodichloromethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	75-27-4	
Bromoform	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	75-25-2	
Bromomethane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 19:59	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 19:59	78-93-3	
n-Butylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	56-23-5	
Chlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	108-90-7	
Chloroethane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 19:59	75-00-3	
Chloroform	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	67-66-3	
Chloromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 19:59	96-12-8	
Dibromochloromethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	106-93-4	
Dibromomethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 19:59	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-7 (3-5) **Lab ID: 10300830007** Collected: 03/26/15 09:50 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	60-29-7	
Ethylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 19:59	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	99-87-6	
Methylene Chloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 19:59	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	1634-04-4	
Naphthalene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	91-20-3	
n-Propylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	103-65-1	
Styrene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	79-34-5	
Tetrachloroethene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.1	1	04/01/15 09:05	04/01/15 19:59	109-99-9	
Toluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	79-00-5	
Trichloroethene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 19:59	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 19:59	108-67-8	
Vinyl chloride	ND	mg/kg	0.021	1	04/01/15 09:05	04/01/15 19:59	75-01-4	
Xylene (Total)	ND	mg/kg	0.16	1	04/01/15 09:05	04/01/15 19:59	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%.	55-150	1	04/01/15 09:05	04/01/15 19:59	17060-07-0	
Toluene-d8 (S)	100	%.	61-125	1	04/01/15 09:05	04/01/15 19:59	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	54-131	1	04/01/15 09:05	04/01/15 19:59	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-8 (2) **Lab ID: 10300830008** Collected: 03/25/15 09:45 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	9.5	1	03/30/15 10:25	03/31/15 15:54		
Surrogates								
n-Triacontane (S)	72	%.	50-150	1	03/30/15 10:25	03/31/15 15:54	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.5	1	04/08/15 13:24	04/08/15 15:49		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	80-150	1	04/08/15 13:24	04/08/15 15:49	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:27	7440-36-0	
Arsenic	**2.2**	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:27	7440-38-2	
Barium	**94.6**	mg/kg	0.30	20	03/31/15 13:57	04/01/15 09:27	7440-39-3	
Beryllium	**0.30**	mg/kg	0.20	20	03/31/15 13:57	04/01/15 09:27	7440-41-7	
Cadmium	ND	mg/kg	0.079	20	03/31/15 13:57	04/01/15 09:27	7440-43-9	
Chromium	**7.9**	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:27	7440-47-3	
Copper	**4.7**	mg/kg	0.99	20	03/31/15 13:57	04/01/15 09:27	7440-50-8	
Lead	**5.0**	mg/kg	0.099	20	03/31/15 13:57	04/01/15 09:27	7439-92-1	
Nickel	**8.3**	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:27	7440-02-0	
Selenium	ND	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:27	7782-49-2	
Silver	ND	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:27	7440-22-4	
Thallium	ND	mg/kg	0.099	20	03/31/15 13:57	04/01/15 09:27	7440-28-0	
Zinc	**27.1**	mg/kg	4.9	20	03/31/15 13:57	04/01/15 09:27	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.023	1	03/31/15 15:33	04/01/15 11:35	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.8**	%	0.10	1		03/30/15 11:44		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	83-32-9	
Acenaphthylene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	208-96-8	
Anthracene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	207-08-9	
Chrysene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	53-70-3	
Fluoranthene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	206-44-0	
Fluorene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	193-39-5	
Naphthalene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-8 (2) **Lab ID: 10300830008** Collected: 03/25/15 09:45 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	85-01-8	
Pyrene	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	ND	mg/kg	0.012	1	03/30/15 10:46	03/31/15 15:28		
Surrogates								
2-Fluorobiphenyl (S)	56	%.	55-125	1	03/30/15 10:46	03/31/15 15:28	321-60-8	
p-Terphenyl-d14 (S)	60	%.	30-150	1	03/30/15 10:46	03/31/15 15:28	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.2	1	04/01/15 09:05	04/01/15 20:19	67-64-1	
Allyl chloride	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	107-05-1	
Benzene	ND	mg/kg	0.024	1	04/01/15 09:05	04/01/15 20:19	71-43-2	
Bromobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	108-86-1	
Bromochloromethane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	74-97-5	
Bromodichloromethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	75-27-4	
Bromoform	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	75-25-2	
Bromomethane	ND	mg/kg	0.59	1	04/01/15 09:05	04/01/15 20:19	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.30	1	04/01/15 09:05	04/01/15 20:19	78-93-3	
n-Butylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	56-23-5	
Chlorobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	108-90-7	
Chloroethane	ND	mg/kg	0.59	1	04/01/15 09:05	04/01/15 20:19	75-00-3	
Chloroform	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	67-66-3	
Chloromethane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.59	1	04/01/15 09:05	04/01/15 20:19	96-12-8	
Dibromochloromethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	106-93-4	
Dibromomethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.59	1	04/01/15 09:05	04/01/15 20:19	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-8 (2) **Lab ID: 10300830008** Collected: 03/25/15 09:45 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	60-29-7	
Ethylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.30	1	04/01/15 09:05	04/01/15 20:19	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	99-87-6	
Methylene Chloride	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.30	1	04/01/15 09:05	04/01/15 20:19	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	1634-04-4	
Naphthalene	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	91-20-3	
n-Propylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	103-65-1	
Styrene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	79-34-5	
Tetrachloroethene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.4	1	04/01/15 09:05	04/01/15 20:19	109-99-9	
Toluene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	79-00-5	
Trichloroethene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.24	1	04/01/15 09:05	04/01/15 20:19	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.059	1	04/01/15 09:05	04/01/15 20:19	108-67-8	
Vinyl chloride	ND	mg/kg	0.024	1	04/01/15 09:05	04/01/15 20:19	75-01-4	
Xylene (Total)	ND	mg/kg	0.18	1	04/01/15 09:05	04/01/15 20:19	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	90	%.	55-150	1	04/01/15 09:05	04/01/15 20:19	17060-07-0	
Toluene-d8 (S)	102	%.	61-125	1	04/01/15 09:05	04/01/15 20:19	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	54-131	1	04/01/15 09:05	04/01/15 20:19	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-10 (2) **Lab ID: 10300830010** Collected: 03/25/15 12:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**46.1**	mg/kg	9.4	1	03/30/15 10:25	03/31/15 14:58		T6
Surrogates								
n-Triacontane (S)	71	%.	50-150	1	03/30/15 10:25	03/31/15 14:58	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.3	1	04/08/15 13:24	04/08/15 16:11		
Surrogates								
a,a,a-Trifluorotoluene (S)	92	%.	80-150	1	04/08/15 13:24	04/08/15 16:11	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.55	20	03/31/15 13:57	04/01/15 09:30	7440-36-0	
Arsenic	**2.4**	mg/kg	0.55	20	03/31/15 13:57	04/01/15 09:30	7440-38-2	
Barium	**43.5**	mg/kg	0.33	20	03/31/15 13:57	04/01/15 09:30	7440-39-3	
Beryllium	ND	mg/kg	0.22	20	03/31/15 13:57	04/01/15 09:30	7440-41-7	
Cadmium	**1.3**	mg/kg	0.088	20	03/31/15 13:57	04/01/15 09:30	7440-43-9	
Chromium	**12.7**	mg/kg	0.55	20	03/31/15 13:57	04/01/15 09:30	7440-47-3	
Copper	**18.6**	mg/kg	1.1	20	03/31/15 13:57	04/01/15 09:30	7440-50-8	
Lead	**24.4**	mg/kg	0.11	20	03/31/15 13:57	04/01/15 09:30	7439-92-1	
Nickel	**10.3**	mg/kg	0.55	20	03/31/15 13:57	04/01/15 09:30	7440-02-0	
Selenium	ND	mg/kg	0.55	20	03/31/15 13:57	04/01/15 09:30	7782-49-2	
Silver	ND	mg/kg	0.55	20	03/31/15 13:57	04/01/15 09:30	7440-22-4	
Thallium	ND	mg/kg	0.11	20	03/31/15 13:57	04/01/15 09:30	7440-28-0	
Zinc	**84.6**	mg/kg	5.5	20	03/31/15 13:57	04/01/15 09:30	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.025**	mg/kg	0.021	1	03/31/15 15:33	04/01/15 11:37	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**13.9**	%	0.10	1		03/30/15 11:44		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	83-32-9	
Acenaphthylene	**0.029**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	208-96-8	
Anthracene	**0.028**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	120-12-7	
Benzo(a)anthracene	**0.045**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	56-55-3	
Benzo(a)pyrene	**0.076**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	50-32-8	
Benzo(b)fluoranthene	**0.11**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	205-99-2	
Benzo(g,h,i)perylene	**0.096**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	191-24-2	
Benzo(k)fluoranthene	**0.039**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	207-08-9	
Chrysene	**0.064**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	53-70-3	
Fluoranthene	**0.070**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	206-44-0	
Fluorene	ND	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.065**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	193-39-5	
Naphthalene	ND	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-10 (2) **Lab ID: 10300830010** Collected: 03/25/15 12:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.048**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	85-01-8	
Pyrene	**0.085**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**0.10**	mg/kg	0.012	1	03/30/15 10:46	04/01/15 15:51		
Surrogates								
2-Fluorobiphenyl (S)	74	%.	55-125	1	03/30/15 10:46	04/01/15 15:51	321-60-8	
p-Terphenyl-d14 (S)	70	%.	30-150	1	03/30/15 10:46	04/01/15 15:51	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.3	1	04/01/15 09:05	04/01/15 20:39	67-64-1	
Allyl chloride	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	107-05-1	
Benzene	ND	mg/kg	0.026	1	04/01/15 09:05	04/01/15 20:39	71-43-2	
Bromobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	108-86-1	
Bromochloromethane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	74-97-5	
Bromodichloromethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	75-27-4	
Bromoform	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	75-25-2	
Bromomethane	ND	mg/kg	0.66	1	04/01/15 09:05	04/01/15 20:39	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.33	1	04/01/15 09:05	04/01/15 20:39	78-93-3	
n-Butylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	56-23-5	
Chlorobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	108-90-7	
Chloroethane	ND	mg/kg	0.66	1	04/01/15 09:05	04/01/15 20:39	75-00-3	
Chloroform	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	67-66-3	
Chloromethane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.66	1	04/01/15 09:05	04/01/15 20:39	96-12-8	
Dibromochloromethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	106-93-4	
Dibromomethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.66	1	04/01/15 09:05	04/01/15 20:39	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-10 (2) **Lab ID: 10300830010** Collected: 03/25/15 12:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	60-29-7	
Ethylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.33	1	04/01/15 09:05	04/01/15 20:39	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	99-87-6	
Methylene Chloride	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.33	1	04/01/15 09:05	04/01/15 20:39	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	1634-04-4	
Naphthalene	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	91-20-3	
n-Propylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	103-65-1	
Styrene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	79-34-5	
Tetrachloroethene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.6	1	04/01/15 09:05	04/01/15 20:39	109-99-9	
Toluene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	79-00-5	
Trichloroethene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 20:39	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.066	1	04/01/15 09:05	04/01/15 20:39	108-67-8	
Vinyl chloride	ND	mg/kg	0.026	1	04/01/15 09:05	04/01/15 20:39	75-01-4	
Xylene (Total)	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 20:39	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	90	%.	55-150	1	04/01/15 09:05	04/01/15 20:39	17060-07-0	
Toluene-d8 (S)	101	%.	61-125	1	04/01/15 09:05	04/01/15 20:39	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	54-131	1	04/01/15 09:05	04/01/15 20:39	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-11 (1-2) **Lab ID: 10300830011** Collected: 03/26/15 12:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**64.0**	mg/kg	40.1	5	03/30/15 10:25	04/01/15 10:39		T6
Surrogates								
n-Triacontane (S)	75	%.	50-150	5	03/30/15 10:25	04/01/15 10:39	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**14.4**	mg/kg	11.0	1	04/08/15 13:24	04/08/15 16:34		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	80-150	1	04/08/15 13:24	04/08/15 16:34	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:33	7440-36-0	
Arsenic	**2.8**	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:33	7440-38-2	
Barium	**25.5**	mg/kg	0.30	20	03/31/15 13:57	04/01/15 09:33	7440-39-3	
Beryllium	ND	mg/kg	0.20	20	03/31/15 13:57	04/01/15 09:33	7440-41-7	
Cadmium	**0.096**	mg/kg	0.079	20	03/31/15 13:57	04/01/15 09:33	7440-43-9	
Chromium	**4.0**	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:33	7440-47-3	
Copper	**7.5**	mg/kg	0.99	20	03/31/15 13:57	04/01/15 09:33	7440-50-8	
Lead	**8.7**	mg/kg	0.099	20	03/31/15 13:57	04/01/15 09:33	7439-92-1	
Nickel	**5.5**	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:33	7440-02-0	
Selenium	ND	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:33	7782-49-2	
Silver	ND	mg/kg	0.49	20	03/31/15 13:57	04/01/15 09:33	7440-22-4	
Thallium	ND	mg/kg	0.099	20	03/31/15 13:57	04/01/15 09:33	7440-28-0	
Zinc	**21.2**	mg/kg	4.9	20	03/31/15 13:57	04/01/15 09:33	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	**0.022**	mg/kg	0.021	1	03/31/15 15:33	04/01/15 11:39	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**5.1**	%	0.10	1		03/30/15 11:44		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	83-32-9	
Acenaphthylene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	208-96-8	
Anthracene	**0.034**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	120-12-7	
Benzo(a)anthracene	**0.20**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	56-55-3	
Benzo(a)pyrene	**0.90**	mg/kg	0.053	5	03/30/15 10:46	04/01/15 18:44	50-32-8	
Benzo(b)fluoranthene	**0.94**	mg/kg	0.053	5	03/30/15 10:46	04/01/15 18:44	205-99-2	
Benzo(g,h,i)perylene	**1.7**	mg/kg	0.11	10	03/30/15 10:46	04/01/15 19:06	191-24-2	
Benzo(k)fluoranthene	**0.32**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	207-08-9	
Chrysene	**0.43**	mg/kg	0.053	5	03/30/15 10:46	04/01/15 18:44	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	53-70-3	
Fluoranthene	**0.16**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	206-44-0	
Fluorene	**0.011**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	86-73-7	
Indeno(1,2,3-cd)pyrene	**1.1**	mg/kg	0.053	5	03/30/15 10:46	04/01/15 18:44	193-39-5	
Naphthalene	**0.084**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-11 (1-2) **Lab ID: 10300830011** Collected: 03/26/15 12:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.34**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	85-01-8	
Pyrene	**0.26**	mg/kg	0.011	1	03/30/15 10:46	04/01/15 19:50	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**1.2**	mg/kg	0.053	5	03/30/15 10:46	04/01/15 18:44		
Surrogates								
2-Fluorobiphenyl (S)	84	%.	55-125	1	03/30/15 10:46	04/01/15 19:50	321-60-8	
p-Terphenyl-d14 (S)	64	%.	30-150	1	03/30/15 10:46	04/01/15 19:50	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.1	1	04/01/15 09:05	04/01/15 21:00	67-64-1	
Allyl chloride	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	107-05-1	
Benzene	**0.032**	mg/kg	0.022	1	04/01/15 09:05	04/01/15 21:00	71-43-2	
Bromobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	108-86-1	
Bromochloromethane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	74-97-5	
Bromodichloromethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	75-27-4	
Bromoform	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	75-25-2	
Bromomethane	ND	mg/kg	0.54	1	04/01/15 09:05	04/01/15 21:00	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.27	1	04/01/15 09:05	04/01/15 21:00	78-93-3	
n-Butylbenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	56-23-5	
Chlorobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	108-90-7	
Chloroethane	ND	mg/kg	0.54	1	04/01/15 09:05	04/01/15 21:00	75-00-3	
Chloroform	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	67-66-3	
Chloromethane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.54	1	04/01/15 09:05	04/01/15 21:00	96-12-8	
Dibromochloromethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	106-93-4	
Dibromomethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.54	1	04/01/15 09:05	04/01/15 21:00	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-11 (1-2) **Lab ID: 10300830011** Collected: 03/26/15 12:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	60-29-7	
Ethylbenzene	**0.062**	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.27	1	04/01/15 09:05	04/01/15 21:00	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	99-87-6	
Methylene Chloride	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.27	1	04/01/15 09:05	04/01/15 21:00	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	1634-04-4	
Naphthalene	**0.40**	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	91-20-3	
n-Propylbenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	103-65-1	
Styrene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	79-34-5	
Tetrachloroethene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.2	1	04/01/15 09:05	04/01/15 21:00	109-99-9	
Toluene	**0.27**	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	79-00-5	
Trichloroethene	ND	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.22	1	04/01/15 09:05	04/01/15 21:00	76-13-1	
1,2,4-Trimethylbenzene	**0.17**	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	95-63-6	
1,3,5-Trimethylbenzene	**0.066**	mg/kg	0.054	1	04/01/15 09:05	04/01/15 21:00	108-67-8	
Vinyl chloride	ND	mg/kg	0.022	1	04/01/15 09:05	04/01/15 21:00	75-01-4	
Xylene (Total)	**0.64**	mg/kg	0.16	1	04/01/15 09:05	04/01/15 21:00	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	89	%.	55-150	1	04/01/15 09:05	04/01/15 21:00	17060-07-0	
Toluene-d8 (S)	100	%.	61-125	1	04/01/15 09:05	04/01/15 21:00	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	54-131	1	04/01/15 09:05	04/01/15 21:00	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-12 (1-2) **Lab ID: 10300830012** Collected: 03/26/15 12:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**19.2**	mg/kg	8.8	1	03/30/15 10:25	03/31/15 14:51		T6
Surrogates								
n-Triacontane (S)	70	%.	50-150	1	03/30/15 10:25	03/31/15 14:51	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	12.0	1	04/08/15 13:24	04/08/15 16:57		
Surrogates								
a,a,a-Trifluorotoluene (S)	91	%.	80-150	1	04/08/15 13:24	04/08/15 16:57	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:35	7440-36-0	
Arsenic	**1.5**	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:35	7440-38-2	
Barium	**18.9**	mg/kg	0.28	20	03/31/15 13:57	04/01/15 09:35	7440-39-3	
Beryllium	ND	mg/kg	0.19	20	03/31/15 13:57	04/01/15 09:35	7440-41-7	
Cadmium	ND	mg/kg	0.076	20	03/31/15 13:57	04/01/15 09:35	7440-43-9	
Chromium	**2.4**	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:35	7440-47-3	
Copper	**3.5**	mg/kg	0.95	20	03/31/15 13:57	04/01/15 09:35	7440-50-8	
Lead	**3.2**	mg/kg	0.095	20	03/31/15 13:57	04/01/15 09:35	7439-92-1	
Nickel	**3.3**	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:35	7440-02-0	
Selenium	ND	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:35	7782-49-2	
Silver	ND	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:35	7440-22-4	
Thallium	ND	mg/kg	0.095	20	03/31/15 13:57	04/01/15 09:35	7440-28-0	
Zinc	**9.6**	mg/kg	4.7	20	03/31/15 13:57	04/01/15 09:35	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.020	1	03/31/15 15:33	04/01/15 11:41	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**4.8**	%	0.10	1		03/30/15 11:44		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	83-32-9	
Acenaphthylene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	208-96-8	
Anthracene	**0.014**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	120-12-7	
Benzo(a)anthracene	**0.057**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	56-55-3	
Benzo(a)pyrene	**0.12**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	50-32-8	
Benzo(b)fluoranthene	**0.14**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	205-99-2	
Benzo(g,h,i)perylene	**0.28**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	191-24-2	
Benzo(k)fluoranthene	**0.048**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	207-08-9	
Chrysene	**0.090**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	53-70-3	
Fluoranthene	**0.080**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	206-44-0	
Fluorene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.16**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	193-39-5	
Naphthalene	**0.024**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-12 (1-2) **Lab ID: 10300830012** Collected: 03/26/15 12:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.090**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	85-01-8	
Pyrene	**0.11**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**0.16**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:02		
Surrogates								
2-Fluorobiphenyl (S)	76	%.	55-125	1	03/30/15 10:46	04/01/15 14:02	321-60-8	
p-Terphenyl-d14 (S)	84	%.	30-150	1	03/30/15 10:46	04/01/15 14:02	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.1	1	04/01/15 09:05	04/01/15 21:20	67-64-1	
Allyl chloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	107-05-1	
Benzene	ND	mg/kg	0.021	1	04/01/15 09:05	04/01/15 21:20	71-43-2	
Bromobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	108-86-1	
Bromochloromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	74-97-5	
Bromodichloromethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	75-27-4	
Bromoform	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	75-25-2	
Bromomethane	ND	mg/kg	0.53	1	04/01/15 09:05	04/01/15 21:20	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.27	1	04/01/15 09:05	04/01/15 21:20	78-93-3	
n-Butylbenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	56-23-5	
Chlorobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	108-90-7	
Chloroethane	ND	mg/kg	0.53	1	04/01/15 09:05	04/01/15 21:20	75-00-3	
Chloroform	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	67-66-3	
Chloromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.53	1	04/01/15 09:05	04/01/15 21:20	96-12-8	
Dibromochloromethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	106-93-4	
Dibromomethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.53	1	04/01/15 09:05	04/01/15 21:20	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-12 (1-2) **Lab ID: 10300830012** Collected: 03/26/15 12:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	60-29-7	
Ethylbenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.27	1	04/01/15 09:05	04/01/15 21:20	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	99-87-6	
Methylene Chloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.27	1	04/01/15 09:05	04/01/15 21:20	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	1634-04-4	
Naphthalene	**0.28**	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	91-20-3	
n-Propylbenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	103-65-1	
Styrene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	79-34-5	
Tetrachloroethene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.1	1	04/01/15 09:05	04/01/15 21:20	109-99-9	
Toluene	**0.17**	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	79-00-5	
Trichloroethene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:20	76-13-1	
1,2,4-Trimethylbenzene	**0.094**	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.053	1	04/01/15 09:05	04/01/15 21:20	108-67-8	
Vinyl chloride	ND	mg/kg	0.021	1	04/01/15 09:05	04/01/15 21:20	75-01-4	
Xylene (Total)	**0.39**	mg/kg	0.16	1	04/01/15 09:05	04/01/15 21:20	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%.	55-150	1	04/01/15 09:05	04/01/15 21:20	17060-07-0	
Toluene-d8 (S)	99	%.	61-125	1	04/01/15 09:05	04/01/15 21:20	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	54-131	1	04/01/15 09:05	04/01/15 21:20	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-13 (2-4) **Lab ID: 10300830013** Collected: 03/26/15 13:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**11.2**	mg/kg	8.6	1	03/30/15 10:25	03/31/15 15:12		T6
Surrogates								
n-Triacontane (S)	73	%.	50-150	1	03/30/15 10:25	03/31/15 15:12	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.6	1	04/08/15 13:24	04/08/15 17:19		
Surrogates								
a,a,a-Trifluorotoluene (S)	92	%.	80-150	1	04/08/15 13:24	04/08/15 17:19	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.48	20	03/31/15 13:57	04/01/15 09:38	7440-36-0	
Arsenic	**1.6**	mg/kg	0.48	20	03/31/15 13:57	04/01/15 09:38	7440-38-2	
Barium	**26.3**	mg/kg	0.29	20	03/31/15 13:57	04/01/15 09:38	7440-39-3	
Beryllium	ND	mg/kg	0.19	20	03/31/15 13:57	04/01/15 09:38	7440-41-7	
Cadmium	**0.078**	mg/kg	0.077	20	03/31/15 13:57	04/01/15 09:38	7440-43-9	
Chromium	**3.4**	mg/kg	0.48	20	03/31/15 13:57	04/01/15 09:38	7440-47-3	
Copper	**4.0**	mg/kg	0.96	20	03/31/15 13:57	04/01/15 09:38	7440-50-8	
Lead	**3.4**	mg/kg	0.096	20	03/31/15 13:57	04/01/15 09:38	7439-92-1	
Nickel	**6.4**	mg/kg	0.48	20	03/31/15 13:57	04/01/15 09:38	7440-02-0	
Selenium	ND	mg/kg	0.48	20	03/31/15 13:57	04/01/15 09:38	7782-49-2	
Silver	ND	mg/kg	0.48	20	03/31/15 13:57	04/01/15 09:38	7440-22-4	
Thallium	ND	mg/kg	0.096	20	03/31/15 13:57	04/01/15 09:38	7440-28-0	
Zinc	**12.8**	mg/kg	4.8	20	03/31/15 13:57	04/01/15 09:38	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.021	1	03/31/15 15:33	04/01/15 11:43	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**4.5**	%	0.10	1		03/30/15 11:45		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	83-32-9	
Acenaphthylene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	208-96-8	
Anthracene	**0.017**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	120-12-7	
Benzo(a)anthracene	**0.082**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	56-55-3	
Benzo(a)pyrene	**0.12**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	50-32-8	
Benzo(b)fluoranthene	**0.17**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	205-99-2	
Benzo(g,h,i)perylene	**0.16**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	191-24-2	
Benzo(k)fluoranthene	**0.049**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	207-08-9	
Chrysene	**0.11**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	53-70-3	
Fluoranthene	**0.13**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	206-44-0	
Fluorene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.11**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	193-39-5	
Naphthalene	**0.020**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-13 (2-4) **Lab ID: 10300830013** Collected: 03/26/15 13:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.079**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	85-01-8	
Pyrene	**0.15**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**0.17**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 14:24		
Surrogates								
2-Fluorobiphenyl (S)	80	%.	55-125	1	03/30/15 10:46	04/01/15 14:24	321-60-8	
p-Terphenyl-d14 (S)	92	%.	30-150	1	03/30/15 10:46	04/01/15 14:24	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.0	1	04/01/15 09:05	04/01/15 21:40	67-64-1	
Allyl chloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	107-05-1	
Benzene	ND	mg/kg	0.021	1	04/01/15 09:05	04/01/15 21:40	71-43-2	
Bromobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	108-86-1	
Bromochloromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	74-97-5	
Bromodichloromethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	75-27-4	
Bromoform	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	75-25-2	
Bromomethane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 21:40	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 21:40	78-93-3	
n-Butylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	56-23-5	
Chlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	108-90-7	
Chloroethane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 21:40	75-00-3	
Chloroform	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	67-66-3	
Chloromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 21:40	96-12-8	
Dibromochloromethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	106-93-4	
Dibromomethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.52	1	04/01/15 09:05	04/01/15 21:40	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-13 (2-4) **Lab ID: 10300830013** Collected: 03/26/15 13:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	60-29-7	
Ethylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 21:40	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	99-87-6	
Methylene Chloride	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.26	1	04/01/15 09:05	04/01/15 21:40	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	1634-04-4	
Naphthalene	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	91-20-3	
n-Propylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	103-65-1	
Styrene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	79-34-5	
Tetrachloroethene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.1	1	04/01/15 09:05	04/01/15 21:40	109-99-9	
Toluene	**0.079**	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	79-00-5	
Trichloroethene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.21	1	04/01/15 09:05	04/01/15 21:40	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.052	1	04/01/15 09:05	04/01/15 21:40	108-67-8	
Vinyl chloride	ND	mg/kg	0.021	1	04/01/15 09:05	04/01/15 21:40	75-01-4	
Xylene (Total)	**0.18**	mg/kg	0.16	1	04/01/15 09:05	04/01/15 21:40	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	89	%.	55-150	1	04/01/15 09:05	04/01/15 21:40	17060-07-0	
Toluene-d8 (S)	99	%.	61-125	1	04/01/15 09:05	04/01/15 21:40	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	54-131	1	04/01/15 09:05	04/01/15 21:40	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-14 (2-3) **Lab ID: 10300830014** Collected: 03/26/15 13:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**39.1**	mg/kg	16.6	2	03/30/15 10:25	04/01/15 10:04		T6
Surrogates								
n-Triacontane (S)	95	%.	50-150	2	03/30/15 10:25	04/01/15 10:04	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	10.7	1	04/08/15 13:24	04/08/15 17:41		
Surrogates								
a,a,a-Trifluorotoluene (S)	92	%.	80-150	1	04/08/15 13:24	04/08/15 17:41	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:41	7440-36-0	
Arsenic	**1.9**	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:41	7440-38-2	
Barium	**23.3**	mg/kg	0.28	20	03/31/15 13:57	04/01/15 09:41	7440-39-3	
Beryllium	ND	mg/kg	0.19	20	03/31/15 13:57	04/01/15 09:41	7440-41-7	
Cadmium	ND	mg/kg	0.075	20	03/31/15 13:57	04/01/15 09:41	7440-43-9	
Chromium	**4.0**	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:41	7440-47-3	
Copper	**4.5**	mg/kg	0.93	20	03/31/15 13:57	04/01/15 09:41	7440-50-8	
Lead	**3.8**	mg/kg	0.093	20	03/31/15 13:57	04/01/15 09:41	7439-92-1	
Nickel	**5.4**	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:41	7440-02-0	
Selenium	ND	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:41	7782-49-2	
Silver	ND	mg/kg	0.47	20	03/31/15 13:57	04/01/15 09:41	7440-22-4	
Thallium	ND	mg/kg	0.093	20	03/31/15 13:57	04/01/15 09:41	7440-28-0	
Zinc	**14.7**	mg/kg	4.7	20	03/31/15 13:57	04/01/15 09:41	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.021	1	03/31/15 15:33	04/01/15 11:46	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**4.4**	%	0.10	1		03/30/15 11:45		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	83-32-9	
Acenaphthylene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	208-96-8	
Anthracene	**0.024**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	120-12-7	
Benzo(a)anthracene	**0.085**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	56-55-3	
Benzo(a)pyrene	**0.13**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	50-32-8	
Benzo(b)fluoranthene	**0.13**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	205-99-2	
Benzo(g,h,i)perylene	**0.14**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	191-24-2	
Benzo(k)fluoranthene	**0.044**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	207-08-9	
Chrysene	**0.15**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	53-70-3	
Fluoranthene	**0.084**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	206-44-0	
Fluorene	ND	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.064**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	193-39-5	
Naphthalene	**0.031**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-14 (2-3) **Lab ID: 10300830014** Collected: 03/26/15 13:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	**0.16**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	85-01-8	
Pyrene	**0.15**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	**0.16**	mg/kg	0.010	1	03/30/15 10:46	04/01/15 20:11		
Surrogates								
2-Fluorobiphenyl (S)	79	%.	55-125	1	03/30/15 10:46	04/01/15 20:11	321-60-8	
p-Terphenyl-d14 (S)	70	%.	30-150	1	03/30/15 10:46	04/01/15 20:11	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.2	1	04/01/15 09:05	04/01/15 19:18	67-64-1	
Allyl chloride	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	107-05-1	
Benzene	ND	mg/kg	0.023	1	04/01/15 09:05	04/01/15 19:18	71-43-2	
Bromobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	108-86-1	
Bromochloromethane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	74-97-5	
Bromodichloromethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	75-27-4	
Bromoform	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	75-25-2	
Bromomethane	ND	mg/kg	0.58	1	04/01/15 09:05	04/01/15 19:18	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.29	1	04/01/15 09:05	04/01/15 19:18	78-93-3	
n-Butylbenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	56-23-5	
Chlorobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	108-90-7	
Chloroethane	ND	mg/kg	0.58	1	04/01/15 09:05	04/01/15 19:18	75-00-3	
Chloroform	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	67-66-3	
Chloromethane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.58	1	04/01/15 09:05	04/01/15 19:18	96-12-8	
Dibromochloromethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	106-93-4	
Dibromomethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.58	1	04/01/15 09:05	04/01/15 19:18	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-14 (2-3) **Lab ID: 10300830014** Collected: 03/26/15 13:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	60-29-7	
Ethylbenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.29	1	04/01/15 09:05	04/01/15 19:18	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	99-87-6	
Methylene Chloride	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.29	1	04/01/15 09:05	04/01/15 19:18	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	1634-04-4	
Naphthalene	**0.26**	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	91-20-3	
n-Propylbenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	103-65-1	
Styrene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	79-34-5	
Tetrachloroethene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.3	1	04/01/15 09:05	04/01/15 19:18	109-99-9	
Toluene	**0.21**	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	79-00-5	
Trichloroethene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.23	1	04/01/15 09:05	04/01/15 19:18	76-13-1	
1,2,4-Trimethylbenzene	**0.10**	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.058	1	04/01/15 09:05	04/01/15 19:18	108-67-8	
Vinyl chloride	ND	mg/kg	0.023	1	04/01/15 09:05	04/01/15 19:18	75-01-4	
Xylene (Total)	**0.38**	mg/kg	0.17	1	04/01/15 09:05	04/01/15 19:18	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	89	%.	55-150	1	04/01/15 09:05	04/01/15 19:18	17060-07-0	
Toluene-d8 (S)	99	%.	61-125	1	04/01/15 09:05	04/01/15 19:18	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	54-131	1	04/01/15 09:05	04/01/15 19:18	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: HA-2 (1-3) **Lab ID: 10300830016** Collected: 03/25/15 10:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	9.0	1	03/30/15 10:25	03/31/15 15:19		
Surrogates								
n-Triacontane (S)	71	%.	50-150	1	03/30/15 10:25	03/31/15 15:19	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	12.1	1	04/08/15 13:24	04/08/15 18:03		
Surrogates								
a,a,a-Trifluorotoluene (S)	93	%.	80-150	1	04/08/15 13:24	04/08/15 18:03	98-08-8	
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 09:44	7440-36-0	
Arsenic	**3.3**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 09:44	7440-38-2	
Barium	**7.6**	mg/kg	0.27	20	03/31/15 13:57	04/01/15 09:44	7440-39-3	
Beryllium	ND	mg/kg	0.18	20	03/31/15 13:57	04/01/15 09:44	7440-41-7	
Cadmium	ND	mg/kg	0.071	20	03/31/15 13:57	04/01/15 09:44	7440-43-9	
Chromium	**1.9**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 09:44	7440-47-3	
Copper	**2.0**	mg/kg	0.89	20	03/31/15 13:57	04/01/15 09:44	7440-50-8	
Lead	**0.66**	mg/kg	0.089	20	03/31/15 13:57	04/01/15 09:44	7439-92-1	
Nickel	**3.0**	mg/kg	0.45	20	03/31/15 13:57	04/01/15 09:44	7440-02-0	
Selenium	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 09:44	7782-49-2	
Silver	ND	mg/kg	0.45	20	03/31/15 13:57	04/01/15 09:44	7440-22-4	
Thallium	ND	mg/kg	0.089	20	03/31/15 13:57	04/01/15 09:44	7440-28-0	
Zinc	ND	mg/kg	4.5	20	03/31/15 13:57	04/01/15 09:44	7440-66-6	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.019	1	03/31/15 15:33	04/01/15 11:48	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**9.6**	%	0.10	1		03/30/15 11:45		
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	83-32-9	
Acenaphthylene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	208-96-8	
Anthracene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	207-08-9	
Chrysene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	53-70-3	
Fluoranthene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	206-44-0	
Fluorene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	193-39-5	
Naphthalene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	91-20-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: HA-2 (1-3) **Lab ID: 10300830016** Collected: 03/25/15 10:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Phenanthrene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	85-01-8	
Pyrene	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50	129-00-0	
Total BaP Eq. MN 2006sh. ND=0	ND	mg/kg	0.011	1	03/30/15 10:46	03/31/15 15:50		
Surrogates								
2-Fluorobiphenyl (S)	74	%.	55-125	1	03/30/15 10:46	03/31/15 15:50	321-60-8	
p-Terphenyl-d14 (S)	78	%.	30-150	1	03/30/15 10:46	03/31/15 15:50	1718-51-0	
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.2	1	04/01/15 09:05	04/01/15 22:00	67-64-1	
Allyl chloride	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	107-05-1	
Benzene	ND	mg/kg	0.025	1	04/01/15 09:05	04/01/15 22:00	71-43-2	
Bromobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	108-86-1	
Bromochloromethane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	74-97-5	
Bromodichloromethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	75-27-4	
Bromoform	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	75-25-2	
Bromomethane	ND	mg/kg	0.62	1	04/01/15 09:05	04/01/15 22:00	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.31	1	04/01/15 09:05	04/01/15 22:00	78-93-3	
n-Butylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	56-23-5	
Chlorobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	108-90-7	
Chloroethane	ND	mg/kg	0.62	1	04/01/15 09:05	04/01/15 22:00	75-00-3	
Chloroform	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	67-66-3	
Chloromethane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.62	1	04/01/15 09:05	04/01/15 22:00	96-12-8	
Dibromochloromethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	106-93-4	
Dibromomethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.62	1	04/01/15 09:05	04/01/15 22:00	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	10061-01-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: HA-2 (1-3) **Lab ID: 10300830016** Collected: 03/25/15 10:30 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	60-29-7	
Ethylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.31	1	04/01/15 09:05	04/01/15 22:00	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	99-87-6	
Methylene Chloride	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.31	1	04/01/15 09:05	04/01/15 22:00	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	1634-04-4	
Naphthalene	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	91-20-3	
n-Propylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	103-65-1	
Styrene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	79-34-5	
Tetrachloroethene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.5	1	04/01/15 09:05	04/01/15 22:00	109-99-9	
Toluene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	79-00-5	
Trichloroethene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 22:00	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.062	1	04/01/15 09:05	04/01/15 22:00	108-67-8	
Vinyl chloride	ND	mg/kg	0.025	1	04/01/15 09:05	04/01/15 22:00	75-01-4	
Xylene (Total)	ND	mg/kg	0.19	1	04/01/15 09:05	04/01/15 22:00	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%.	55-150	1	04/01/15 09:05	04/01/15 22:00	17060-07-0	
Toluene-d8 (S)	100	%.	61-125	1	04/01/15 09:05	04/01/15 22:00	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	54-131	1	04/01/15 09:05	04/01/15 22:00	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: Trip Blank - SL **Lab ID: 10300830017** Collected: 03/25/15 00:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Acetone	ND	mg/kg	1.0	1	04/01/15 09:05	04/01/15 15:42	67-64-1	
Allyl chloride	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	107-05-1	
Benzene	ND	mg/kg	0.020	1	04/01/15 09:05	04/01/15 15:42	71-43-2	
Bromobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	108-86-1	
Bromochloromethane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	74-97-5	
Bromodichloromethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	75-27-4	
Bromoform	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	75-25-2	
Bromomethane	ND	mg/kg	0.50	1	04/01/15 09:05	04/01/15 15:42	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 15:42	78-93-3	
n-Butylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	56-23-5	
Chlorobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	108-90-7	
Chloroethane	ND	mg/kg	0.50	1	04/01/15 09:05	04/01/15 15:42	75-00-3	
Chloroform	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	67-66-3	
Chloromethane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.50	1	04/01/15 09:05	04/01/15 15:42	96-12-8	
Dibromochloromethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	106-93-4	
Dibromomethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	156-60-5	
Dichlorofluoromethane	ND	mg/kg	0.50	1	04/01/15 09:05	04/01/15 15:42	75-43-4	
1,2-Dichloropropane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	10061-02-6	
Diethyl ether (Ethyl ether)	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	60-29-7	
Ethylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 15:42	87-68-3	
Isopropylbenzene (Cumene)	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	99-87-6	
Methylene Chloride	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.25	1	04/01/15 09:05	04/01/15 15:42	108-10-1	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: Trip Blank - SL **Lab ID: 10300830017** Collected: 03/25/15 00:00 Received: 03/27/15 08:20 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Med Level	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	1634-04-4	
Naphthalene	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	91-20-3	
n-Propylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	103-65-1	
Styrene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	79-34-5	
Tetrachloroethene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	127-18-4	
Tetrahydrofuran	ND	mg/kg	2.0	1	04/01/15 09:05	04/01/15 15:42	109-99-9	
Toluene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	79-00-5	
Trichloroethene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	mg/kg	0.20	1	04/01/15 09:05	04/01/15 15:42	76-13-1	
1,2,4-Trimethylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.050	1	04/01/15 09:05	04/01/15 15:42	108-67-8	
Vinyl chloride	ND	mg/kg	0.020	1	04/01/15 09:05	04/01/15 15:42	75-01-4	
Xylene (Total)	ND	mg/kg	0.15	1	04/01/15 09:05	04/01/15 15:42	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	87	%.	55-150	1	04/01/15 09:05	04/01/15 15:42	17060-07-0	
Toluene-d8 (S)	97	%.	61-125	1	04/01/15 09:05	04/01/15 15:42	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	54-131	1	04/01/15 09:05	04/01/15 15:42	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-8W **Lab ID: 10300830018** Collected: 03/25/15 10:20 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	ug/L	116	1	03/31/15 10:53	04/01/15 12:29		
Surrogates								
n-Triacontane (S)	93	%.	50-150	1	03/31/15 10:53	04/01/15 12:29	638-68-6	P4
6020A MET ICPMS, Dissolved	Analytical Method: EPA 6020A Preparation Method: EPA 3020							
Antimony, Dissolved	**13.7**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:11	7440-36-0	
Arsenic, Dissolved	**348**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:11	7440-38-2	
Barium, Dissolved	**66.5**	ug/L	0.30	1	03/30/15 07:07	03/30/15 12:11	7440-39-3	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/30/15 07:07	03/30/15 12:11	7440-41-7	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/30/15 07:07	03/30/15 12:11	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:11	7440-47-3	
Copper, Dissolved	ND	ug/L	1.0	1	03/30/15 07:07	03/30/15 12:11	7440-50-8	
Lead, Dissolved	ND	ug/L	0.10	1	03/30/15 07:07	03/30/15 12:11	7439-92-1	
Nickel, Dissolved	**10.8**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:11	7440-02-0	
Selenium, Dissolved	**2.5**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:11	7782-49-2	
Silver, Dissolved	ND	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:11	7440-22-4	
Thallium, Dissolved	ND	ug/L	0.10	1	03/30/15 07:07	03/30/15 12:11	7440-28-0	
Zinc, Dissolved	ND	ug/L	5.0	1	03/30/15 07:07	03/30/15 12:11	7440-66-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470A							
Mercury, Dissolved	ND	ug/L	0.20	1	03/30/15 10:43	04/01/15 12:37	7439-97-6	
8260 VOC	Analytical Method: EPA 8260							
Acetone	ND	ug/L	20.0	1		04/01/15 23:38	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/15 23:38	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/15 23:38	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/15 23:38	108-86-1	
Bromochloromethane	ND	ug/L	4.0	1		04/01/15 23:38	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/01/15 23:38	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/15 23:38	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/15 23:38	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/15 23:38	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/15 23:38	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/01/15 23:38	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/01/15 23:38	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/15 23:38	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/15 23:38	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/15 23:38	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/15 23:38	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/15 23:38	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/15 23:38	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/15 23:38	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/01/15 23:38	74-95-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-8W **Lab ID: 10300830018** Collected: 03/25/15 10:20 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260							
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:38	106-46-7	
Dichlorodifluoromethane	ND	ug/L	4.0	1		04/01/15 23:38	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		04/01/15 23:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/15 23:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		04/01/15 23:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/15 23:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/15 23:38	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/15 23:38	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/15 23:38	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/15 23:38	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/15 23:38	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/15 23:38	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/15 23:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/15 23:38	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/15 23:38	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/15 23:38	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/15 23:38	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/15 23:38	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/15 23:38	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/15 23:38	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/15 23:38	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		04/01/15 23:38	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/15 23:38	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/15 23:38	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/15 23:38	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/01/15 23:38	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/15 23:38	109-99-9	
Toluene	ND	ug/L	1.0	1		04/01/15 23:38	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:38	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:38	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/15 23:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/15 23:38	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		04/01/15 23:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/15 23:38	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/15 23:38	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/15 23:38	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/15 23:38	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		04/01/15 23:38	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/01/15 23:38	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1		04/01/15 23:38	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		04/01/15 23:38	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-8W **Lab ID: 10300830018** Collected: 03/25/15 10:20 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260							
Surrogates								
4-Bromofluorobenzene (S)	104	%.	75-125	1		04/01/15 23:38	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-10W **Lab ID: 10300830019** Collected: 03/25/15 12:30 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	ug/L	110	1	03/31/15 10:53	04/01/15 12:36		
Surrogates								
n-Triacontane (S)	91	%.	50-150	1	03/31/15 10:53	04/01/15 12:36	638-68-6	
6020A MET ICPMS, Dissolved	Analytical Method: EPA 6020A Preparation Method: EPA 3020							
Antimony, Dissolved	ND	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:01	7440-36-0	
Arsenic, Dissolved	**10.8**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:01	7440-38-2	
Barium, Dissolved	**74.6**	ug/L	0.30	1	03/30/15 07:07	03/30/15 12:01	7440-39-3	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/30/15 07:07	03/30/15 12:01	7440-41-7	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/30/15 07:07	03/30/15 12:01	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:01	7440-47-3	
Copper, Dissolved	ND	ug/L	1.0	1	03/30/15 07:07	03/30/15 12:01	7440-50-8	
Lead, Dissolved	ND	ug/L	0.10	1	03/30/15 07:07	03/30/15 12:01	7439-92-1	
Nickel, Dissolved	**11.0**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:01	7440-02-0	
Selenium, Dissolved	**0.62**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:01	7782-49-2	
Silver, Dissolved	ND	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:01	7440-22-4	
Thallium, Dissolved	ND	ug/L	0.10	1	03/30/15 07:07	03/30/15 12:01	7440-28-0	
Zinc, Dissolved	ND	ug/L	5.0	1	03/30/15 07:07	03/30/15 12:01	7440-66-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470A							
Mercury, Dissolved	ND	ug/L	0.20	1	03/30/15 10:43	04/01/15 12:40	7439-97-6	
8260 VOC	Analytical Method: EPA 8260							
Acetone	ND	ug/L	20.0	1		04/01/15 23:53	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/15 23:53	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/15 23:53	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/15 23:53	108-86-1	
Bromochloromethane	ND	ug/L	4.0	1		04/01/15 23:53	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/01/15 23:53	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/15 23:53	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/15 23:53	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/15 23:53	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/15 23:53	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/01/15 23:53	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/01/15 23:53	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/15 23:53	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/15 23:53	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/15 23:53	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/15 23:53	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/15 23:53	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/15 23:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/15 23:53	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/01/15 23:53	74-95-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-10W **Lab ID: 10300830019** Collected: 03/25/15 12:30 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260							
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:53	106-46-7	
Dichlorodifluoromethane	ND	ug/L	4.0	1		04/01/15 23:53	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		04/01/15 23:53	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/15 23:53	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		04/01/15 23:53	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/15 23:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/15 23:53	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/15 23:53	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/15 23:53	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/15 23:53	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/15 23:53	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/15 23:53	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/15 23:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/15 23:53	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/15 23:53	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/15 23:53	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/15 23:53	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/15 23:53	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/15 23:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/15 23:53	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/15 23:53	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		04/01/15 23:53	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/15 23:53	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/15 23:53	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/15 23:53	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/01/15 23:53	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/15 23:53	109-99-9	
Toluene	ND	ug/L	1.0	1		04/01/15 23:53	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:53	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/15 23:53	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/15 23:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/15 23:53	79-00-5	
Trichloroethene	**1.0**	ug/L	0.40	1		04/01/15 23:53	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/15 23:53	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/15 23:53	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/15 23:53	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/15 23:53	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		04/01/15 23:53	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/01/15 23:53	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%.	75-125	1		04/01/15 23:53	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		04/01/15 23:53	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: PP-10W **Lab ID: 10300830019** Collected: 03/25/15 12:30 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260							
Surrogates								
4-Bromofluorobenzene (S)	100	%.	75-125	1		04/01/15 23:53	460-00-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: HA-W **Lab ID: 10300830020** Collected: 03/26/15 11:00 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	ug/L	116	1	03/31/15 10:53	04/01/15 13:31		
Surrogates								
n-Triacontane (S)	94	%.	50-150	1	03/31/15 10:53	04/01/15 13:31	638-68-6	P4
6020A MET ICPMS, Dissolved	Analytical Method: EPA 6020A Preparation Method: EPA 3020							
Antimony, Dissolved	**6.9**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:06	7440-36-0	
Arsenic, Dissolved	**737**	ug/L	5.0	10	03/30/15 07:07	03/31/15 07:41	7440-38-2	
Barium, Dissolved	**39.9**	ug/L	0.30	1	03/30/15 07:07	03/30/15 12:06	7440-39-3	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/30/15 07:07	03/30/15 12:06	7440-41-7	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/30/15 07:07	03/30/15 12:06	7440-43-9	
Chromium, Dissolved	**0.90**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:06	7440-47-3	
Copper, Dissolved	ND	ug/L	1.0	1	03/30/15 07:07	03/30/15 12:06	7440-50-8	
Lead, Dissolved	ND	ug/L	0.10	1	03/30/15 07:07	03/30/15 12:06	7439-92-1	
Nickel, Dissolved	**0.50**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:06	7440-02-0	
Selenium, Dissolved	**2.7**	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:06	7782-49-2	
Silver, Dissolved	ND	ug/L	0.50	1	03/30/15 07:07	03/30/15 12:06	7440-22-4	
Thallium, Dissolved	ND	ug/L	0.10	1	03/30/15 07:07	03/30/15 12:06	7440-28-0	
Zinc, Dissolved	ND	ug/L	5.0	1	03/30/15 07:07	03/30/15 12:06	7440-66-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470A							
Mercury, Dissolved	ND	ug/L	0.20	1	03/30/15 10:43	04/01/15 12:47	7439-97-6	
8260 VOC	Analytical Method: EPA 8260							
Acetone	ND	ug/L	20.0	1		04/02/15 00:07	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/02/15 00:07	107-05-1	
Benzene	ND	ug/L	1.0	1		04/02/15 00:07	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/02/15 00:07	108-86-1	
Bromochloromethane	ND	ug/L	4.0	1		04/02/15 00:07	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/02/15 00:07	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/02/15 00:07	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/02/15 00:07	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/02/15 00:07	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/02/15 00:07	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/02/15 00:07	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/02/15 00:07	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/02/15 00:07	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/02/15 00:07	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/02/15 00:07	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/02/15 00:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/02/15 00:07	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/02/15 00:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/02/15 00:07	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/02/15 00:07	74-95-3	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: HA-W **Lab ID: 10300830020** Collected: 03/26/15 11:00 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260							
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/02/15 00:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/02/15 00:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/02/15 00:07	106-46-7	
Dichlorodifluoromethane	ND	ug/L	4.0	1		04/02/15 00:07	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		04/02/15 00:07	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/02/15 00:07	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		04/02/15 00:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		04/02/15 00:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		04/02/15 00:07	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/02/15 00:07	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/02/15 00:07	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/02/15 00:07	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/02/15 00:07	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/02/15 00:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/02/15 00:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/02/15 00:07	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/02/15 00:07	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/02/15 00:07	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/02/15 00:07	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/02/15 00:07	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/02/15 00:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/02/15 00:07	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/02/15 00:07	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		04/02/15 00:07	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	103-65-1	
Styrene	ND	ug/L	1.0	1		04/02/15 00:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/02/15 00:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/02/15 00:07	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/02/15 00:07	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/02/15 00:07	109-99-9	
Toluene	ND	ug/L	1.0	1		04/02/15 00:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/02/15 00:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/02/15 00:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/02/15 00:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/02/15 00:07	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		04/02/15 00:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/02/15 00:07	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/02/15 00:07	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/02/15 00:07	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/02/15 00:07	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		04/02/15 00:07	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/02/15 00:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1		04/02/15 00:07	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		04/02/15 00:07	2037-26-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Sample: HA-W **Lab ID: 10300830020** Collected: 03/26/15 11:00 Received: 03/27/15 08:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260							
Surrogates								
4-Bromofluorobenzene (S)	98	%.	75-125	1		04/02/15 00:07	460-00-4	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: GCV/13574 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007

METHOD BLANK: 1932398 Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/06/15 15:52	
a,a,a-Trifluorotoluene (S)	%.	98	80-150	04/06/15 15:52	

LABORATORY CONTROL SAMPLE & LCSD: 1932399 1932400

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	46.2	50.6	92	101	80-120	9	20	
a,a,a-Trifluorotoluene (S)	%.				101	101	80-150			

MATRIX SPIKE SAMPLE: 1932401

Parameter	Units	10300504004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	52.5	69.7	126	80-120	CH,M1
a,a,a-Trifluorotoluene (S)	%.				109	80-150	

SAMPLE DUPLICATE: 1932402

Parameter	Units	10300504005 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%.	99	99	4		

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: GCV/13582 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

METHOD BLANK: 1934294 Matrix: Solid
Associated Lab Samples: 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/08/15 15:26	
a,a,a-Trifluorotoluene (S)	%.	91	80-150	04/08/15 15:26	

LABORATORY CONTROL SAMPLE & LCSD: 1934295 1934296

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	50.3	52.6	101	105	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				100	101	80-150			

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MERP/13082 Analysis Method: EPA 7470
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury Dissolved
Associated Lab Samples: 10300830018, 10300830019, 10300830020

METHOD BLANK: 1927057 Matrix: Water
Associated Lab Samples: 10300830018, 10300830019, 10300830020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	04/01/15 12:28	

LABORATORY CONTROL SAMPLE: 1927058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.3	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1927059 1927060

Parameter	Units	10300830019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.9	5.0	98	100	75-125	1	20	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MERP/13087 — Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B — Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

METHOD BLANK: 1927082 — Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.017	04/01/15 11:13	

LABORATORY CONTROL SAMPLE: 1927083

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.44	0.45	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1927084 — 1927085

Parameter	Units	10300830002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.022	.51	.51	0.53	0.54	100	102	75-125	1	20	

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MPRP/53233 | Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 | Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

METHOD BLANK: 1927019 | Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.47	04/01/15 08:50	
Arsenic	mg/kg	ND	0.47	04/01/15 08:50	
Barium	mg/kg	ND	0.28	04/01/15 08:50	
Beryllium	mg/kg	ND	0.19	04/01/15 08:50	
Cadmium	mg/kg	ND	0.075	04/01/15 08:50	
Chromium	mg/kg	ND	0.47	04/01/15 08:50	
Copper	mg/kg	ND	0.94	04/01/15 08:50	
Lead	mg/kg	ND	0.094	04/01/15 08:50	
Nickel	mg/kg	ND	0.47	04/01/15 08:50	
Selenium	mg/kg	ND	0.47	04/01/15 08:50	
Silver	mg/kg	ND	0.47	04/01/15 08:50	
Thallium	mg/kg	ND	0.094	04/01/15 08:50	
Zinc	mg/kg	ND	4.7	04/01/15 08:50	

LABORATORY CONTROL SAMPLE: 1927020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	19.8	17.1	86	80-120	
Arsenic	mg/kg	19.8	17.3	87	80-120	
Barium	mg/kg	19.8	17.3	87	80-120	
Beryllium	mg/kg	19.8	18.8	95	80-120	
Cadmium	mg/kg	19.8	18.2	92	80-120	
Chromium	mg/kg	19.8	18.6	94	80-120	
Copper	mg/kg	19.8	17.5	88	80-120	
Lead	mg/kg	19.8	18.7	95	80-120	
Nickel	mg/kg	19.8	18.4	93	80-120	
Selenium	mg/kg	19.8	17.3	87	80-120	
Silver	mg/kg	19.8	19.4	98	80-120	
Thallium	mg/kg	19.8	19.0	96	80-120	
Zinc	mg/kg	19.8	18.1	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1927021 1927022

Parameter	Units	10300830002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	ND	20.9	19.2	16.1	12.8	76	66	75-125	23	20	M6,R1
Arsenic	mg/kg	3.0	20.9	19.2	25.7	21.5	109	96	75-125	18	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1927021 1927022

Parameter	Units	10300830002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/kg	65.4	20.9	19.2	90.6	94.6	121	153	75-125	4	20	M6
Beryllium	mg/kg	0.36	20.9	19.2	23.5	18.9	111	97	75-125	22	20	R1
Cadmium	mg/kg	0.17	20.9	19.2	23.8	19.4	113	100	75-125	20	20	
Chromium	mg/kg	8.4	20.9	19.2	36.8	35.9	136	144	75-125	2	20	M6
Copper	mg/kg	7.0	20.9	19.2	31.0	26.2	115	100	75-125	17	20	
Lead	mg/kg	16.2	20.9	19.2	43.6	36.3	131	105	75-125	18	20	M6
Nickel	mg/kg	9.6	20.9	19.2	35.8	36.8	125	142	75-125	3	20	M6
Selenium	mg/kg	ND	20.9	19.2	22.3	17.6	106	91	75-125	24	20	R1
Silver	mg/kg	ND	20.9	19.2	24.6	20.1	117	105	75-125	20	20	
Thallium	mg/kg	0.11	20.9	19.2	24.3	19.9	116	104	75-125	20	20	
Zinc	mg/kg	60.6	20.9	19.2	102	91.5	200	162	75-125	11	20	M6

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MPRP/53235 Analysis Method: EPA 6020A
QC Batch Method: EPA 3020 Analysis Description: 6020A Water Dissolved UPD4
Associated Lab Samples: 10300830018, 10300830019, 10300830020

METHOD BLANK: 1927032 Matrix: Water
Associated Lab Samples: 10300830018, 10300830019, 10300830020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	03/30/15 11:51	
Arsenic, Dissolved	ug/L	ND	0.50	03/30/15 11:51	
Barium, Dissolved	ug/L	ND	0.30	03/30/15 11:51	
Beryllium, Dissolved	ug/L	ND	0.20	03/30/15 11:51	
Cadmium, Dissolved	ug/L	ND	0.080	03/30/15 11:51	
Chromium, Dissolved	ug/L	ND	0.50	03/30/15 11:51	
Copper, Dissolved	ug/L	ND	1.0	03/30/15 11:51	
Lead, Dissolved	ug/L	ND	0.10	03/30/15 11:51	
Nickel, Dissolved	ug/L	ND	0.50	03/30/15 11:51	
Selenium, Dissolved	ug/L	ND	0.50	03/30/15 11:51	
Silver, Dissolved	ug/L	ND	0.50	03/30/15 11:51	
Thallium, Dissolved	ug/L	ND	0.10	03/30/15 11:51	
Zinc, Dissolved	ug/L	ND	5.0	03/30/15 11:51	

LABORATORY CONTROL SAMPLE: 1927033

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	80	83.9	105	80-120	
Arsenic, Dissolved	ug/L	80	82.8	103	80-120	
Barium, Dissolved	ug/L	80	85.0	106	80-120	
Beryllium, Dissolved	ug/L	80	85.6	107	80-120	
Cadmium, Dissolved	ug/L	80	85.0	106	80-120	
Chromium, Dissolved	ug/L	80	84.6	106	80-120	
Copper, Dissolved	ug/L	80	85.2	106	80-120	
Lead, Dissolved	ug/L	80	88.2	110	80-120	
Nickel, Dissolved	ug/L	80	83.9	105	80-120	
Selenium, Dissolved	ug/L	80	83.4	104	80-120	
Silver, Dissolved	ug/L	80	85.1	106	80-120	
Thallium, Dissolved	ug/L	80	85.6	107	80-120	
Zinc, Dissolved	ug/L	80	85.2	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1927034 1927035

Parameter	Units	10300830018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	13.7	80	80	100	99.7	108	108	75-125	0	20	
Arsenic, Dissolved	ug/L	348	80	80	430	434	103	107	75-125	1	20	
Barium, Dissolved	ug/L	66.5	80	80	154	153	110	108	75-125	1	20	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1927034 1927035

Parameter	Units	10300830018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Beryllium, Dissolved	ug/L	ND	80	80	85.6	85.7	107	107	75-125	0	20	
Cadmium, Dissolved	ug/L	ND	80	80	85.2	85.3	106	107	75-125	0	20	
Chromium, Dissolved	ug/L	ND	80	80	84.8	84.9	106	106	75-125	0	20	
Copper, Dissolved	ug/L	ND	80	80	83.7	83.8	104	104	75-125	0	20	
Lead, Dissolved	ug/L	ND	80	80	87.4	87.4	109	109	75-125	0	20	
Nickel, Dissolved	ug/L	10.8	80	80	93.1	93.8	103	104	75-125	1	20	
Selenium, Dissolved	ug/L	2.5	80	80	87.4	86.2	106	105	75-125	1	20	
Silver, Dissolved	ug/L	ND	80	80	82.7	82.6	103	103	75-125	0	20	
Thallium, Dissolved	ug/L	ND	80	80	91.3	90.9	114	114	75-125	0	20	
Zinc, Dissolved	ug/L	ND	80	80	87.9	90.4	106	109	75-125	3	20	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MPRP/53266 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

SAMPLE DUPLICATE: 1928054

Parameter	Units	10300367001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	0.72	0.70	3	30	

SAMPLE DUPLICATE: 1928055

Parameter	Units	10300830016 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	9.6	8.6	10	30	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MSV/30929 Analysis Method: EPA 8260
QC Batch Method: EPA 5035/5030B Analysis Description: 8260 MSV 5030 Med Level
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006

METHOD BLANK: 1928306 Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.050	03/31/15 17:05	
1,1,1-Trichloroethane	mg/kg	ND	0.050	03/31/15 17:05	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.050	03/31/15 17:05	
1,1,2-Trichloroethane	mg/kg	ND	0.050	03/31/15 17:05	
1,1,2-Trichlorotrifluoroethane	mg/kg	ND	0.20	03/31/15 17:05	
1,1-Dichloroethane	mg/kg	ND	0.050	03/31/15 17:05	
1,1-Dichloroethene	mg/kg	ND	0.20	03/31/15 17:05	
1,1-Dichloropropene	mg/kg	ND	0.050	03/31/15 17:05	
1,2,3-Trichlorobenzene	mg/kg	ND	0.050	03/31/15 17:05	
1,2,3-Trichloropropane	mg/kg	ND	0.20	03/31/15 17:05	
1,2,4-Trichlorobenzene	mg/kg	ND	0.050	03/31/15 17:05	
1,2,4-Trimethylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.50	03/31/15 17:05	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.050	03/31/15 17:05	
1,2-Dichlorobenzene	mg/kg	ND	0.050	03/31/15 17:05	
1,2-Dichloroethane	mg/kg	ND	0.050	03/31/15 17:05	
1,2-Dichloropropane	mg/kg	ND	0.050	03/31/15 17:05	
1,3,5-Trimethylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
1,3-Dichlorobenzene	mg/kg	ND	0.050	03/31/15 17:05	
1,3-Dichloropropane	mg/kg	ND	0.050	03/31/15 17:05	
1,4-Dichlorobenzene	mg/kg	ND	0.050	03/31/15 17:05	
2,2-Dichloropropane	mg/kg	ND	0.20	03/31/15 17:05	
2-Butanone (MEK)	mg/kg	ND	0.25	03/31/15 17:05	
2-Chlorotoluene	mg/kg	ND	0.050	03/31/15 17:05	
4-Chlorotoluene	mg/kg	ND	0.050	03/31/15 17:05	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.25	03/31/15 17:05	
Acetone	mg/kg	ND	1.0	03/31/15 17:05	
Allyl chloride	mg/kg	ND	0.20	03/31/15 17:05	
Benzene	mg/kg	ND	0.020	03/31/15 17:05	
Bromobenzene	mg/kg	ND	0.050	03/31/15 17:05	
Bromochloromethane	mg/kg	ND	0.20	03/31/15 17:05	
Bromodichloromethane	mg/kg	ND	0.050	03/31/15 17:05	
Bromoform	mg/kg	ND	0.20	03/31/15 17:05	
Bromomethane	mg/kg	ND	0.50	03/31/15 17:05	
Carbon tetrachloride	mg/kg	ND	0.20	03/31/15 17:05	
Chlorobenzene	mg/kg	ND	0.050	03/31/15 17:05	
Chloroethane	mg/kg	ND	0.50	03/31/15 17:05	
Chloroform	mg/kg	ND	0.050	03/31/15 17:05	
Chloromethane	mg/kg	ND	0.20	03/31/15 17:05	
cis-1,2-Dichloroethene	mg/kg	ND	0.050	03/31/15 17:05	
cis-1,3-Dichloropropene	mg/kg	ND	0.050	03/31/15 17:05	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

METHOD BLANK: 1928306 Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	mg/kg	ND	0.050	03/31/15 17:05	
Dibromomethane	mg/kg	ND	0.050	03/31/15 17:05	
Dichlorodifluoromethane	mg/kg	ND	0.20	03/31/15 17:05	
Dichlorofluoromethane	mg/kg	ND	0.50	03/31/15 17:05	
Diethyl ether (Ethyl ether)	mg/kg	ND	0.20	03/31/15 17:05	
Ethylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
Hexachloro-1,3-butadiene	mg/kg	ND	0.25	03/31/15 17:05	
Isopropylbenzene (Cumene)	mg/kg	ND	0.050	03/31/15 17:05	
Methyl-tert-butyl ether	mg/kg	ND	0.050	03/31/15 17:05	
Methylene Chloride	mg/kg	ND	0.20	03/31/15 17:05	
n-Butylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
n-Propylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
Naphthalene	mg/kg	ND	0.20	03/31/15 17:05	
p-Isopropyltoluene	mg/kg	ND	0.050	03/31/15 17:05	
sec-Butylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
Styrene	mg/kg	ND	0.050	03/31/15 17:05	
tert-Butylbenzene	mg/kg	ND	0.050	03/31/15 17:05	
Tetrachloroethene	mg/kg	ND	0.050	03/31/15 17:05	
Tetrahydrofuran	mg/kg	ND	2.0	03/31/15 17:05	
Toluene	mg/kg	ND	0.050	03/31/15 17:05	
trans-1,2-Dichloroethene	mg/kg	ND	0.20	03/31/15 17:05	
trans-1,3-Dichloropropene	mg/kg	ND	0.050	03/31/15 17:05	
Trichloroethene	mg/kg	ND	0.050	03/31/15 17:05	
Trichlorofluoromethane	mg/kg	ND	0.20	03/31/15 17:05	
Vinyl chloride	mg/kg	ND	0.020	03/31/15 17:05	
Xylene (Total)	mg/kg	ND	0.15	03/31/15 17:05	
1,2-Dichloroethane-d4 (S)	%.	91	55-150	03/31/15 17:05	
4-Bromofluorobenzene (S)	%.	100	54-131	03/31/15 17:05	
Toluene-d8 (S)	%.	96	61-125	03/31/15 17:05	

LABORATORY CONTROL SAMPLE: 1928307

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	1	0.91	91	75-125	
1,1,1-Trichloroethane	mg/kg	1	0.94	94	66-125	
1,1,2,2-Tetrachloroethane	mg/kg	1	1.1	109	69-125	CH,E,SS
1,1,2-Trichloroethane	mg/kg	1	0.91	91	75-125	
1,1,2-Trichlorotrifluoroethane	mg/kg	1	0.84	84	55-125	
1,1-Dichloroethane	mg/kg	1	0.92	92	67-125	
1,1-Dichloroethene	mg/kg	1	0.90	90	62-125	
1,1-Dichloropropene	mg/kg	1	0.94	94	65-125	
1,2,3-Trichlorobenzene	mg/kg	1	0.92	92	58-132	
1,2,3-Trichloropropane	mg/kg	1	0.89	89	71-125	
1,2,4-Trichlorobenzene	mg/kg	1	0.91	91	63-128	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1928307

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	0.90	90	74-125	
1,2-Dibromo-3-chloropropane	mg/kg	2.5	2.3	94	55-142	
1,2-Dibromoethane (EDB)	mg/kg	1	0.91	91	75-125	
1,2-Dichlorobenzene	mg/kg	1	0.94	94	75-125	
1,2-Dichloroethane	mg/kg	1	0.85	85	71-125	
1,2-Dichloropropane	mg/kg	1	0.88	88	74-125	
1,3,5-Trimethylbenzene	mg/kg	1	0.92	92	72-125	
1,3-Dichlorobenzene	mg/kg	1	0.90	90	75-125	
1,3-Dichloropropane	mg/kg	1	0.88	88	75-125	
1,4-Dichlorobenzene	mg/kg	1	0.96	96	75-125	
2,2-Dichloropropane	mg/kg	1	0.89	89	45-125	
2-Butanone (MEK)	mg/kg	5	4.4	88	39-136	
2-Chlorotoluene	mg/kg	1	0.92	92	73-125	
4-Chlorotoluene	mg/kg	1	0.92	92	74-125	
4-Methyl-2-pentanone (MIBK)	mg/kg	5	4.6	92	55-132	
Acetone	mg/kg	5	4.5	90	55-131	
Allyl chloride	mg/kg	1	0.90	90	53-125	
Benzene	mg/kg	1	0.88	88	69-125	
Bromobenzene	mg/kg	1	0.89	89	75-125	
Bromochloromethane	mg/kg	1	0.94	94	75-125	
Bromodichloromethane	mg/kg	1	0.90	90	75-125	
Bromoform	mg/kg	1	0.90	90	71-125	
Bromomethane	mg/kg	1	0.78	78	42-150	
Carbon tetrachloride	mg/kg	1	0.86	86	62-125	
Chlorobenzene	mg/kg	1	0.94	94	75-125	
Chloroethane	mg/kg	1	0.76	76	41-150	
Chloroform	mg/kg	1	0.87	87	72-125	
Chloromethane	mg/kg	1	0.72	72	50-125	
cis-1,2-Dichloroethene	mg/kg	1	0.92	92	73-125	
cis-1,3-Dichloropropene	mg/kg	1	0.91	91	74-125	
Dibromochloromethane	mg/kg	1	0.95	95	75-125	
Dibromomethane	mg/kg	1	1.0	100	75-125	
Dichlorodifluoromethane	mg/kg	1	0.53	53	30-125	
Dichlorofluoromethane	mg/kg	1	0.73	73	30-150	
Diethyl ether (Ethyl ether)	mg/kg	1	0.87	87	58-125	
Ethylbenzene	mg/kg	1	0.92	92	72-125	
Hexachloro-1,3-butadiene	mg/kg	1	1.0	103	59-138	
Isopropylbenzene (Cumene)	mg/kg	1	0.99	99	72-125	
Methyl-tert-butyl ether	mg/kg	1	0.86	86	72-125	
Methylene Chloride	mg/kg	1	0.96	96	71-125	
n-Butylbenzene	mg/kg	1	0.89	89	65-125	
n-Propylbenzene	mg/kg	1	0.93	93	71-125	
Naphthalene	mg/kg	1	0.95	95	55-139	
p-Isopropyltoluene	mg/kg	1	0.95	95	69-125	
sec-Butylbenzene	mg/kg	1	0.94	94	68-125	
Styrene	mg/kg	1	1.0	102	75-125	
tert-Butylbenzene	mg/kg	1	0.93	93	70-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1928307

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	mg/kg	1	0.94	94	69-125	
Tetrahydrofuran	mg/kg	10	9.5	95	62-129	
Toluene	mg/kg	1	0.92	92	72-125	
trans-1,2-Dichloroethene	mg/kg	1	0.94	94	68-125	
trans-1,3-Dichloropropene	mg/kg	1	0.91	91	74-125	
Trichloroethene	mg/kg	1	0.96	96	72-125	
Trichlorofluoromethane	mg/kg	1	0.66	66	30-150	
Vinyl chloride	mg/kg	1	0.73	73	53-125	
Xylene (Total)	mg/kg	3	2.9	98	74-125	
1,2-Dichloroethane-d4 (S)	%.			91	55-150	
4-Bromofluorobenzene (S)	%.			96	54-131	
Toluene-d8 (S)	%.			99	61-125	

MATRIX SPIKE SAMPLE: 1928308

Parameter	Units	10300640002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	1.2	1.2	101	62-150	
1,1,1-Trichloroethane	mg/kg	ND	1.2	1.2	103	58-150	
1,1,2,2-Tetrachloroethane	mg/kg	ND	1.2	1.6	134	30-150	E,SS
1,1,2-Trichloroethane	mg/kg	ND	1.2	1.2	103	61-149	
1,1,2-Trichlorotrifluoroethane	mg/kg	ND	1.2	1.1	92	45-150	
1,1-Dichloroethane	mg/kg	ND	1.2	1.2	101	56-150	
1,1-Dichloroethene	mg/kg	ND	1.2	1.1	92	48-150	
1,1-Dichloropropene	mg/kg	ND	1.2	1.1	94	58-150	
1,2,3-Trichlorobenzene	mg/kg	ND	1.2	1.3	107	55-150	
1,2,3-Trichloropropane	mg/kg	ND	1.2	1.2	104	57-148	
1,2,4-Trichlorobenzene	mg/kg	ND	1.2	1.2	104	61-150	
1,2,4-Trimethylbenzene	mg/kg	ND	1.2	1.2	97	64-150	
1,2-Dibromo-3-chloropropane	mg/kg	ND	2.9	3.3	111	40-150	
1,2-Dibromoethane (EDB)	mg/kg	ND	1.2	1.2	101	62-147	
1,2-Dichlorobenzene	mg/kg	ND	1.2	1.2	102	73-133	
1,2-Dichloroethane	mg/kg	ND	1.2	1.0	88	63-132	
1,2-Dichloropropane	mg/kg	ND	1.2	1.1	96	69-127	
1,3,5-Trimethylbenzene	mg/kg	ND	1.2	1.2	99	63-137	
1,3-Dichlorobenzene	mg/kg	ND	1.2	1.2	98	69-133	
1,3-Dichloropropane	mg/kg	ND	1.2	1.2	98	70-130	
1,4-Dichlorobenzene	mg/kg	ND	1.2	1.1	94	69-130	
2,2-Dichloropropane	mg/kg	ND	1.2	1.1	95	54-135	
2-Butanone (MEK)	mg/kg	ND	5.9	5.7	97	49-145	
2-Chlorotoluene	mg/kg	ND	1.2	1.2	98	68-129	
4-Chlorotoluene	mg/kg	ND	1.2	1.1	95	67-134	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	5.9	6.4	109	60-150	
Acetone	mg/kg	ND	5.9	5.7	97	65-135	
Allyl chloride	mg/kg	ND	1.2	1.1	95	55-126	
Benzene	mg/kg	ND	1.2	1.1	93	63-126	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

MATRIX SPIKE SAMPLE: 1928308

Parameter	Units	10300640002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	mg/kg	ND	1.2	1.1	93	68-133	
Bromochloromethane	mg/kg	ND	1.2	1.2	98	66-130	
Bromodichloromethane	mg/kg	ND	1.2	1.2	100	68-129	
Bromoform	mg/kg	ND	1.2	1.2	104	63-135	
Bromomethane	mg/kg	ND	1.2	1.0	84	30-150	
Carbon tetrachloride	mg/kg	ND	1.2	1.1	95	56-140	
Chlorobenzene	mg/kg	ND	1.2	1.2	98	69-130	
Chloroethane	mg/kg	ND	1.2	1.1	92	46-150	
Chloroform	mg/kg	ND	1.2	1.1	95	70-127	
Chloromethane	mg/kg	ND	1.2	0.92	77	51-125	
cis-1,2-Dichloroethene	mg/kg	ND	1.2	1.1	97	68-125	
cis-1,3-Dichloropropene	mg/kg	ND	1.2	1.1	94	67-126	
Dibromochloromethane	mg/kg	ND	1.2	1.2	103	66-135	
Dibromomethane	mg/kg	ND	1.2	1.3	107	68-132	
Dichlorodifluoromethane	mg/kg	ND	1.2	0.75	63	30-138	
Dichlorofluoromethane	mg/kg	ND	1.2	1.1	89	30-150	
Diethyl ether (Ethyl ether)	mg/kg	ND	1.2	1.1	95	56-135	
Ethylbenzene	mg/kg	ND	1.2	1.1	96	69-126	
Hexachloro-1,3-butadiene	mg/kg	ND	1.2	1.2	98	50-150	
Isopropylbenzene (Cumene)	mg/kg	ND	1.2	1.2	104	65-135	
Methyl-tert-butyl ether	mg/kg	ND	1.2	1.2	98	66-129	
Methylene Chloride	mg/kg	ND	1.2	1.1	97	64-125	
n-Butylbenzene	mg/kg	ND	1.2	1.1	95	62-141	
n-Propylbenzene	mg/kg	ND	1.2	1.2	98	65-135	
Naphthalene	mg/kg	ND	1.2	1.3	112	62-150	
p-Isopropyltoluene	mg/kg	ND	1.2	1.2	101	62-139	
sec-Butylbenzene	mg/kg	ND	1.2	1.2	99	64-137	
Styrene	mg/kg	ND	1.2	1.2	103	70-132	
tert-Butylbenzene	mg/kg	ND	1.2	1.2	100	65-136	
Tetrachloroethene	mg/kg	ND	1.2	1.2	101	61-142	
Tetrahydrofuran	mg/kg	ND	11.9	13.1	110	68-138	
Toluene	mg/kg	ND	1.2	1.2	100	66-128	
trans-1,2-Dichloroethene	mg/kg	ND	1.2	1.0	87	63-129	
trans-1,3-Dichloropropene	mg/kg	ND	1.2	1.1	96	67-132	
Trichloroethene	mg/kg	ND	1.2	1.1	96	52-150	
Trichlorofluoromethane	mg/kg	ND	1.2	1.0	87	39-150	
Vinyl chloride	mg/kg	ND	1.2	0.93	78	50-125	
Xylene (Total)	mg/kg	ND	3.5	3.7	103	70-130	
1,2-Dichloroethane-d4 (S)	%.				94	55-150	
4-Bromofluorobenzene (S)	%.				95	54-131	
Toluene-d8 (S)	%.				101	61-125	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

SAMPLE DUPLICATE: 1928309

Parameter	Units	10300640003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,1-Trichloroethane	mg/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,2-Trichloroethane	mg/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	mg/kg	ND	ND		30	
1,1-Dichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethene	mg/kg	ND	ND		30	
1,1-Dichloropropene	mg/kg	ND	ND		30	
1,2,3-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,3-Trichloropropane	mg/kg	ND	ND		30	
1,2,4-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,4-Trimethylbenzene	mg/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	mg/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	mg/kg	ND	ND		30	
1,2-Dichlorobenzene	mg/kg	ND	ND		30	
1,2-Dichloroethane	mg/kg	ND	ND		30	
1,2-Dichloropropane	mg/kg	ND	ND		30	
1,3,5-Trimethylbenzene	mg/kg	ND	ND		30	
1,3-Dichlorobenzene	mg/kg	ND	ND		30	
1,3-Dichloropropane	mg/kg	ND	ND		30	
1,4-Dichlorobenzene	mg/kg	ND	ND		30	
2,2-Dichloropropane	mg/kg	ND	ND		30	
2-Butanone (MEK)	mg/kg	ND	ND		30	
2-Chlorotoluene	mg/kg	ND	ND		30	
4-Chlorotoluene	mg/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	ND		30	
Acetone	mg/kg	ND	ND		30	
Allyl chloride	mg/kg	ND	ND		30	
Benzene	mg/kg	ND	ND		30	
Bromobenzene	mg/kg	ND	ND		30	
Bromochloromethane	mg/kg	ND	ND		30	
Bromodichloromethane	mg/kg	ND	ND		30	
Bromoform	mg/kg	ND	ND		30	
Bromomethane	mg/kg	ND	ND		30	
Carbon tetrachloride	mg/kg	ND	ND		30	
Chlorobenzene	mg/kg	ND	ND		30	
Chloroethane	mg/kg	ND	ND		30	
Chloroform	mg/kg	ND	ND		30	
Chloromethane	mg/kg	ND	ND		30	
cis-1,2-Dichloroethene	mg/kg	ND	ND		30	
cis-1,3-Dichloropropene	mg/kg	ND	ND		30	
Dibromochloromethane	mg/kg	ND	ND		30	
Dibromomethane	mg/kg	ND	ND		30	
Dichlorodifluoromethane	mg/kg	ND	ND		30	
Dichlorofluoromethane	mg/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	mg/kg	ND	ND		30	
Ethylbenzene	mg/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

SAMPLE DUPLICATE: 1928309

Parameter	Units	10300640003 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	mg/kg	ND	ND		30	
Isopropylbenzene (Cumene)	mg/kg	ND	ND		30	
Methyl-tert-butyl ether	mg/kg	ND	ND		30	
Methylene Chloride	mg/kg	ND	ND		30	
n-Butylbenzene	mg/kg	ND	ND		30	
n-Propylbenzene	mg/kg	ND	ND		30	
Naphthalene	mg/kg	ND	ND		30	
p-Isopropyltoluene	mg/kg	ND	ND		30	
sec-Butylbenzene	mg/kg	ND	ND		30	
Styrene	mg/kg	ND	ND		30	
tert-Butylbenzene	mg/kg	ND	ND		30	
Tetrachloroethene	mg/kg	ND	ND		30	
Tetrahydrofuran	mg/kg	ND	ND		30	
Toluene	mg/kg	ND	ND		30	
trans-1,2-Dichloroethene	mg/kg	ND	ND		30	
trans-1,3-Dichloropropene	mg/kg	ND	ND		30	
Trichloroethene	mg/kg	ND	ND		30	
Trichlorofluoromethane	mg/kg	ND	ND		30	
Vinyl chloride	mg/kg	ND	ND		30	
Xylene (Total)	mg/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	91	90	2		
4-Bromofluorobenzene (S)	%.	99	100	0		
Toluene-d8 (S)	%.	101	100	1		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MSV/30935 Analysis Method: EPA 8260
QC Batch Method: EPA 5035/5030B Analysis Description: 8260 MSV 5030 Med Level
Associated Lab Samples: 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016, 10300830017

METHOD BLANK: 1928535 Matrix: Solid
Associated Lab Samples: 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016, 10300830017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.050	04/01/15 15:22	
1,1,1-Trichloroethane	mg/kg	ND	0.050	04/01/15 15:22	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.050	04/01/15 15:22	
1,1,2-Trichloroethane	mg/kg	ND	0.050	04/01/15 15:22	
1,1,2-Trichlorotrifluoroethane	mg/kg	ND	0.20	04/01/15 15:22	
1,1-Dichloroethane	mg/kg	ND	0.050	04/01/15 15:22	
1,1-Dichloroethene	mg/kg	ND	0.20	04/01/15 15:22	
1,1-Dichloropropene	mg/kg	ND	0.050	04/01/15 15:22	
1,2,3-Trichlorobenzene	mg/kg	ND	0.050	04/01/15 15:22	
1,2,3-Trichloropropane	mg/kg	ND	0.20	04/01/15 15:22	
1,2,4-Trichlorobenzene	mg/kg	ND	0.050	04/01/15 15:22	
1,2,4-Trimethylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.50	04/01/15 15:22	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.050	04/01/15 15:22	
1,2-Dichlorobenzene	mg/kg	ND	0.050	04/01/15 15:22	
1,2-Dichloroethane	mg/kg	ND	0.050	04/01/15 15:22	
1,2-Dichloropropane	mg/kg	ND	0.050	04/01/15 15:22	
1,3,5-Trimethylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
1,3-Dichlorobenzene	mg/kg	ND	0.050	04/01/15 15:22	
1,3-Dichloropropane	mg/kg	ND	0.050	04/01/15 15:22	
1,4-Dichlorobenzene	mg/kg	ND	0.050	04/01/15 15:22	
2,2-Dichloropropane	mg/kg	ND	0.20	04/01/15 15:22	
2-Butanone (MEK)	mg/kg	ND	0.25	04/01/15 15:22	
2-Chlorotoluene	mg/kg	ND	0.050	04/01/15 15:22	
4-Chlorotoluene	mg/kg	ND	0.050	04/01/15 15:22	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.25	04/01/15 15:22	
Acetone	mg/kg	ND	1.0	04/01/15 15:22	
Allyl chloride	mg/kg	ND	0.20	04/01/15 15:22	
Benzene	mg/kg	ND	0.020	04/01/15 15:22	
Bromobenzene	mg/kg	ND	0.050	04/01/15 15:22	
Bromochloromethane	mg/kg	ND	0.20	04/01/15 15:22	
Bromodichloromethane	mg/kg	ND	0.050	04/01/15 15:22	
Bromoform	mg/kg	ND	0.20	04/01/15 15:22	
Bromomethane	mg/kg	ND	0.50	04/01/15 15:22	
Carbon tetrachloride	mg/kg	ND	0.20	04/01/15 15:22	
Chlorobenzene	mg/kg	ND	0.050	04/01/15 15:22	
Chloroethane	mg/kg	ND	0.50	04/01/15 15:22	
Chloroform	mg/kg	ND	0.050	04/01/15 15:22	
Chloromethane	mg/kg	ND	0.20	04/01/15 15:22	
cis-1,2-Dichloroethene	mg/kg	ND	0.050	04/01/15 15:22	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

METHOD BLANK: 1928535 Matrix: Solid

Associated Lab Samples: 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016, 10300830017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
cis-1,3-Dichloropropene	mg/kg	ND	0.050	04/01/15 15:22	
Dibromochloromethane	mg/kg	ND	0.050	04/01/15 15:22	
Dibromomethane	mg/kg	ND	0.050	04/01/15 15:22	
Dichlorodifluoromethane	mg/kg	ND	0.20	04/01/15 15:22	
Dichlorofluoromethane	mg/kg	ND	0.50	04/01/15 15:22	
Diethyl ether (Ethyl ether)	mg/kg	ND	0.20	04/01/15 15:22	
Ethylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
Hexachloro-1,3-butadiene	mg/kg	ND	0.25	04/01/15 15:22	
Isopropylbenzene (Cumene)	mg/kg	ND	0.050	04/01/15 15:22	
Methyl-tert-butyl ether	mg/kg	ND	0.050	04/01/15 15:22	
Methylene Chloride	mg/kg	ND	0.20	04/01/15 15:22	
n-Butylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
n-Propylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
Naphthalene	mg/kg	ND	0.20	04/01/15 15:22	
p-Isopropyltoluene	mg/kg	ND	0.050	04/01/15 15:22	
sec-Butylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
Styrene	mg/kg	ND	0.050	04/01/15 15:22	
tert-Butylbenzene	mg/kg	ND	0.050	04/01/15 15:22	
Tetrachloroethene	mg/kg	ND	0.050	04/01/15 15:22	
Tetrahydrofuran	mg/kg	ND	2.0	04/01/15 15:22	
Toluene	mg/kg	ND	0.050	04/01/15 15:22	
trans-1,2-Dichloroethene	mg/kg	ND	0.20	04/01/15 15:22	
trans-1,3-Dichloropropene	mg/kg	ND	0.050	04/01/15 15:22	
Trichloroethene	mg/kg	ND	0.050	04/01/15 15:22	
Trichlorofluoromethane	mg/kg	ND	0.20	04/01/15 15:22	
Vinyl chloride	mg/kg	ND	0.020	04/01/15 15:22	
Xylene (Total)	mg/kg	ND	0.15	04/01/15 15:22	
1,2-Dichloroethane-d4 (S)	%.	87	55-150	04/01/15 15:22	
4-Bromofluorobenzene (S)	%.	101	54-131	04/01/15 15:22	
Toluene-d8 (S)	%.	97	61-125	04/01/15 15:22	

LABORATORY CONTROL SAMPLE: 1928536

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	1	1.0	101	75-125	
1,1,1-Trichloroethane	mg/kg	1	1.1	107	66-125	
1,1,2,2-Tetrachloroethane	mg/kg	1	1.2	120	69-125	E,SS
1,1,2-Trichloroethane	mg/kg	1	1.1	105	75-125	
1,1,2-Trichlorotrifluoroethane	mg/kg	1	0.97	97	55-125	
1,1-Dichloroethane	mg/kg	1	1.0	101	67-125	
1,1-Dichloroethene	mg/kg	1	0.93	93	62-125	
1,1-Dichloropropene	mg/kg	1	0.97	97	65-125	
1,2,3-Trichlorobenzene	mg/kg	1	1.1	106	58-132	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1928536

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,3-Trichloropropane	mg/kg	1	1.0	105	71-125	
1,2,4-Trichlorobenzene	mg/kg	1	1.0	103	63-128	
1,2,4-Trimethylbenzene	mg/kg	1	0.97	97	74-125	
1,2-Dibromo-3-chloropropane	mg/kg	2.5	2.8	111	55-142	
1,2-Dibromoethane (EDB)	mg/kg	1	1.0	103	75-125	
1,2-Dichlorobenzene	mg/kg	1	1.0	103	75-125	
1,2-Dichloroethane	mg/kg	1	0.91	91	71-125	
1,2-Dichloropropane	mg/kg	1	0.96	96	74-125	
1,3,5-Trimethylbenzene	mg/kg	1	0.98	98	72-125	
1,3-Dichlorobenzene	mg/kg	1	0.95	95	75-125	
1,3-Dichloropropane	mg/kg	1	0.99	99	75-125	
1,4-Dichlorobenzene	mg/kg	1	0.98	98	75-125	
2,2-Dichloropropane	mg/kg	1	0.95	95	45-125	
2-Butanone (MEK)	mg/kg	5	5.0	101	39-136	
2-Chlorotoluene	mg/kg	1	0.97	97	73-125	
4-Chlorotoluene	mg/kg	1	0.93	93	74-125	
4-Methyl-2-pentanone (MIBK)	mg/kg	5	5.3	105	55-132	
Acetone	mg/kg	5	5.3	105	55-131	
Allyl chloride	mg/kg	1	0.96	96	53-125	
Benzene	mg/kg	1	0.94	94	69-125	
Bromobenzene	mg/kg	1	0.93	93	75-125	
Bromochloromethane	mg/kg	1	0.98	98	75-125	
Bromodichloromethane	mg/kg	1	1.0	102	75-125	
Bromoform	mg/kg	1	1.0	101	71-125	
Bromomethane	mg/kg	1	0.83	83	42-150	
Carbon tetrachloride	mg/kg	1	0.96	96	62-125	
Chlorobenzene	mg/kg	1	0.98	98	75-125	
Chloroethane	mg/kg	1	0.87	87	41-150	
Chloroform	mg/kg	1	0.95	95	72-125	
Chloromethane	mg/kg	1	0.73	73	50-125	
cis-1,2-Dichloroethene	mg/kg	1	0.99	99	73-125	
cis-1,3-Dichloropropene	mg/kg	1	0.96	96	74-125	
Dibromochloromethane	mg/kg	1	1.1	107	75-125	
Dibromomethane	mg/kg	1	1.1	111	75-125	
Dichlorodifluoromethane	mg/kg	1	0.66	66	30-125	
Dichlorofluoromethane	mg/kg	1	0.87	87	30-150	
Diethyl ether (Ethyl ether)	mg/kg	1	1.0	102	58-125	
Ethylbenzene	mg/kg	1	0.97	97	72-125	
Hexachloro-1,3-butadiene	mg/kg	1	0.96	96	59-138	
Isopropylbenzene (Cumene)	mg/kg	1	1.0	104	72-125	
Methyl-tert-butyl ether	mg/kg	1	0.99	99	72-125	
Methylene Chloride	mg/kg	1	0.95	95	71-125	
n-Butylbenzene	mg/kg	1	0.94	94	65-125	
n-Propylbenzene	mg/kg	1	0.95	95	71-125	
Naphthalene	mg/kg	1	1.2	115	55-139	
p-Isopropyltoluene	mg/kg	1	0.99	99	69-125	
sec-Butylbenzene	mg/kg	1	0.96	96	68-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1928536

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Styrene	mg/kg	1	1.0	103	75-125	
tert-Butylbenzene	mg/kg	1	0.98	98	70-125	
Tetrachloroethene	mg/kg	1	1.0	103	69-125	
Tetrahydrofuran	mg/kg	10	11.8	118	62-129	
Toluene	mg/kg	1	0.99	99	72-125	
trans-1,2-Dichloroethene	mg/kg	1	0.91	91	68-125	
trans-1,3-Dichloropropene	mg/kg	1	0.96	96	74-125	
Trichloroethene	mg/kg	1	1.0	101	72-125	
Trichlorofluoromethane	mg/kg	1	0.89	89	30-150	
Vinyl chloride	mg/kg	1	0.76	76	53-125	
Xylene (Total)	mg/kg	3	3.1	104	74-125	
1,2-Dichloroethane-d4 (S)	%.			94	55-150	
4-Bromofluorobenzene (S)	%.			94	54-131	
Toluene-d8 (S)	%.			100	61-125	

MATRIX SPIKE SAMPLE: 1928537

Parameter	Units	10300801001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	1.1	1.1	97	62-150	
1,1,1-Trichloroethane	mg/kg	ND	1.1	1.2	101	58-150	
1,1,2,2-Tetrachloroethane	mg/kg	ND	1.1	1.4	121	30-150	E,SS
1,1,2-Trichloroethane	mg/kg	ND	1.1	1.2	103	61-149	
1,1,2-Trichlorotrifluoroethane	mg/kg	ND	1.1	1.1	92	45-150	
1,1-Dichloroethane	mg/kg	ND	1.1	1.1	93	56-150	
1,1-Dichloroethene	mg/kg	ND	1.1	0.96	83	48-150	
1,1-Dichloropropene	mg/kg	ND	1.1	1.0	88	58-150	
1,2,3-Trichlorobenzene	mg/kg	ND	1.1	1.1	99	55-150	
1,2,3-Trichloropropane	mg/kg	ND	1.1	1.2	104	57-148	
1,2,4-Trichlorobenzene	mg/kg	ND	1.1	1.1	96	61-150	
1,2,4-Trimethylbenzene	mg/kg	ND	1.1	1.1	94	64-150	
1,2-Dibromo-3-chloropropane	mg/kg	ND	2.8	3.0	104	40-150	
1,2-Dibromoethane (EDB)	mg/kg	ND	1.1	1.1	97	62-147	
1,2-Dichlorobenzene	mg/kg	ND	1.1	1.1	97	73-133	
1,2-Dichloroethane	mg/kg	ND	1.1	0.96	84	63-132	
1,2-Dichloropropane	mg/kg	ND	1.1	1.0	91	69-127	
1,3,5-Trimethylbenzene	mg/kg	ND	1.1	1.1	94	63-137	
1,3-Dichlorobenzene	mg/kg	ND	1.1	1.0	88	69-133	
1,3-Dichloropropane	mg/kg	ND	1.1	1.1	95	70-130	
1,4-Dichlorobenzene	mg/kg	ND	1.1	1.0	89	69-130	
2,2-Dichloropropane	mg/kg	ND	1.1	1.0	87	54-135	
2-Butanone (MEK)	mg/kg	ND	5.8	5.6	98	49-145	
2-Chlorotoluene	mg/kg	ND	1.1	1.1	92	68-129	
4-Chlorotoluene	mg/kg	ND	1.1	1.0	87	67-134	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	5.8	5.9	102	60-150	
Acetone	mg/kg	ND	5.8	5.5	96	65-135	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

MATRIX SPIKE SAMPLE: 1928537

Parameter	Units	10300801001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Allyl chloride	mg/kg	ND	1.1	0.97	84	55-126	
Benzene	mg/kg	ND	1.1	1.0	89	63-126	
Bromobenzene	mg/kg	ND	1.1	1.0	89	68-133	
Bromochloromethane	mg/kg	ND	1.1	0.98	85	66-130	
Bromodichloromethane	mg/kg	ND	1.1	1.1	94	68-129	
Bromoform	mg/kg	ND	1.1	1.1	96	63-135	
Bromomethane	mg/kg	ND	1.1	0.91	77	30-150	
Carbon tetrachloride	mg/kg	ND	1.1	1.1	91	56-140	
Chlorobenzene	mg/kg	ND	1.1	1.0	91	69-130	
Chloroethane	mg/kg	ND	1.1	0.93	81	46-150	
Chloroform	mg/kg	ND	1.1	1.0	87	70-127	
Chloromethane	mg/kg	ND	1.1	0.72	63	51-125	
cis-1,2-Dichloroethene	mg/kg	ND	1.1	0.99	86	68-125	
cis-1,3-Dichloropropene	mg/kg	ND	1.1	1.0	88	67-126	
Dibromochloromethane	mg/kg	ND	1.1	1.2	103	66-135	
Dibromomethane	mg/kg	ND	1.1	1.1	99	68-132	
Dichlorodifluoromethane	mg/kg	ND	1.1	0.56	49	30-138	
Dichlorofluoromethane	mg/kg	ND	1.1	0.99	86	30-150	
Diethyl ether (Ethyl ether)	mg/kg	ND	1.1	1.1	92	56-135	
Ethylbenzene	mg/kg	ND	1.1	1.1	92	69-126	
Hexachloro-1,3-butadiene	mg/kg	ND	1.1	1.1	93	50-150	
Isopropylbenzene (Cumene)	mg/kg	ND	1.1	1.1	96	65-135	
Methyl-tert-butyl ether	mg/kg	ND	1.1	1.1	95	66-129	
Methylene Chloride	mg/kg	ND	1.1	0.95	83	64-125	
n-Butylbenzene	mg/kg	ND	1.1	1.0	90	62-141	
n-Propylbenzene	mg/kg	ND	1.1	1.1	92	65-135	
Naphthalene	mg/kg	ND	1.1	1.2	107	62-150	
p-Isopropyltoluene	mg/kg	ND	1.1	1.1	95	62-139	
sec-Butylbenzene	mg/kg	ND	1.1	1.1	93	64-137	
Styrene	mg/kg	ND	1.1	1.1	94	70-132	
tert-Butylbenzene	mg/kg	ND	1.1	1.1	94	65-136	
Tetrachloroethene	mg/kg	ND	1.1	1.1	97	61-142	
Tetrahydrofuran	mg/kg	ND	11.5	12.8	111	68-138	
Toluene	mg/kg	ND	1.1	1.1	94	66-128	
trans-1,2-Dichloroethene	mg/kg	ND	1.1	0.86	75	63-129	
trans-1,3-Dichloropropene	mg/kg	ND	1.1	1.0	90	67-132	
Trichloroethene	mg/kg	ND	1.1	1.0	90	52-150	
Trichlorofluoromethane	mg/kg	ND	1.1	1.1	92	39-150	
Vinyl chloride	mg/kg	ND	1.1	0.74	64	50-125	
Xylene (Total)	mg/kg	ND	3.4	3.3	97	70-130	
1,2-Dichloroethane-d4 (S)	%.				93	55-150	
4-Bromofluorobenzene (S)	%.				96	54-131	
Toluene-d8 (S)	%.				102	61-125	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

SAMPLE DUPLICATE: 1928538

Parameter	Units	10300801002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,1-Trichloroethane	mg/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,2-Trichloroethane	mg/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	mg/kg	ND	ND		30	
1,1-Dichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethene	mg/kg	ND	ND		30	
1,1-Dichloropropene	mg/kg	ND	ND		30	
1,2,3-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,3-Trichloropropane	mg/kg	ND	ND		30	
1,2,4-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,4-Trimethylbenzene	mg/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	mg/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	mg/kg	ND	ND		30	
1,2-Dichlorobenzene	mg/kg	ND	ND		30	
1,2-Dichloroethane	mg/kg	ND	ND		30	
1,2-Dichloropropane	mg/kg	ND	ND		30	
1,3,5-Trimethylbenzene	mg/kg	ND	ND		30	
1,3-Dichlorobenzene	mg/kg	ND	ND		30	
1,3-Dichloropropane	mg/kg	ND	ND		30	
1,4-Dichlorobenzene	mg/kg	ND	ND		30	
2,2-Dichloropropane	mg/kg	ND	ND		30	
2-Butanone (MEK)	mg/kg	ND	ND		30	
2-Chlorotoluene	mg/kg	ND	ND		30	
4-Chlorotoluene	mg/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	ND		30	
Acetone	mg/kg	ND	ND		30	
Allyl chloride	mg/kg	ND	ND		30	
Benzene	mg/kg	ND	ND		30	
Bromobenzene	mg/kg	ND	ND		30	
Bromochloromethane	mg/kg	ND	ND		30	
Bromodichloromethane	mg/kg	ND	ND		30	
Bromoform	mg/kg	ND	ND		30	
Bromomethane	mg/kg	ND	ND		30	
Carbon tetrachloride	mg/kg	ND	ND		30	
Chlorobenzene	mg/kg	ND	ND		30	
Chloroethane	mg/kg	ND	ND		30	
Chloroform	mg/kg	ND	ND		30	
Chloromethane	mg/kg	ND	ND		30	
cis-1,2-Dichloroethene	mg/kg	ND	ND		30	
cis-1,3-Dichloropropene	mg/kg	ND	ND		30	
Dibromochloromethane	mg/kg	ND	ND		30	
Dibromomethane	mg/kg	ND	ND		30	
Dichlorodifluoromethane	mg/kg	ND	ND		30	
Dichlorofluoromethane	mg/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	mg/kg	ND	ND		30	
Ethylbenzene	mg/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

SAMPLE DUPLICATE: 1928538

Parameter	Units	10300801002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	mg/kg	ND	ND		30	
Isopropylbenzene (Cumene)	mg/kg	ND	ND		30	
Methyl-tert-butyl ether	mg/kg	ND	ND		30	
Methylene Chloride	mg/kg	ND	ND		30	
n-Butylbenzene	mg/kg	ND	ND		30	
n-Propylbenzene	mg/kg	ND	ND		30	
Naphthalene	mg/kg	ND	ND		30	
p-Isopropyltoluene	mg/kg	ND	ND		30	
sec-Butylbenzene	mg/kg	ND	ND		30	
Styrene	mg/kg	ND	ND		30	
tert-Butylbenzene	mg/kg	ND	ND		30	
Tetrachloroethene	mg/kg	ND	ND		30	
Tetrahydrofuran	mg/kg	ND	ND		30	
Toluene	mg/kg	ND	.014J		30	
trans-1,2-Dichloroethene	mg/kg	ND	ND		30	
trans-1,3-Dichloropropene	mg/kg	ND	ND		30	
Trichloroethene	mg/kg	ND	ND		30	
Trichlorofluoromethane	mg/kg	ND	ND		30	
Vinyl chloride	mg/kg	ND	ND		30	
Xylene (Total)	mg/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	92	91	2		
4-Bromofluorobenzene (S)	%.	97	97	2		
Toluene-d8 (S)	%.	100	101	0		

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: MSV/30955 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 465 W
Associated Lab Samples: 10300830018, 10300830019, 10300830020

METHOD BLANK: 1929511 Matrix: Water
Associated Lab Samples: 10300830018, 10300830019, 10300830020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	04/01/15 19:46	
1,1,1-Trichloroethane	ug/L	ND	1.0	04/01/15 19:46	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	04/01/15 19:46	
1,1,2-Trichloroethane	ug/L	ND	1.0	04/01/15 19:46	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	04/01/15 19:46	
1,1-Dichloroethane	ug/L	ND	1.0	04/01/15 19:46	
1,1-Dichloroethene	ug/L	ND	1.0	04/01/15 19:46	
1,1-Dichloropropene	ug/L	ND	1.0	04/01/15 19:46	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	04/01/15 19:46	
1,2,3-Trichloropropane	ug/L	ND	4.0	04/01/15 19:46	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	04/01/15 19:46	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	04/01/15 19:46	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	04/01/15 19:46	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	04/01/15 19:46	
1,2-Dichlorobenzene	ug/L	ND	1.0	04/01/15 19:46	
1,2-Dichloroethane	ug/L	ND	1.0	04/01/15 19:46	
1,2-Dichloropropane	ug/L	ND	4.0	04/01/15 19:46	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	04/01/15 19:46	
1,3-Dichlorobenzene	ug/L	ND	1.0	04/01/15 19:46	
1,3-Dichloropropane	ug/L	ND	1.0	04/01/15 19:46	
1,4-Dichlorobenzene	ug/L	ND	1.0	04/01/15 19:46	
2,2-Dichloropropane	ug/L	ND	4.0	04/01/15 19:46	
2-Butanone (MEK)	ug/L	ND	5.0	04/01/15 19:46	
2-Chlorotoluene	ug/L	ND	1.0	04/01/15 19:46	
4-Chlorotoluene	ug/L	ND	1.0	04/01/15 19:46	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	04/01/15 19:46	
Acetone	ug/L	ND	20.0	04/01/15 19:46	
Allyl chloride	ug/L	ND	4.0	04/01/15 19:46	
Benzene	ug/L	ND	1.0	04/01/15 19:46	
Bromobenzene	ug/L	ND	1.0	04/01/15 19:46	
Bromochloromethane	ug/L	ND	4.0	04/01/15 19:46	
Bromodichloromethane	ug/L	ND	1.0	04/01/15 19:46	
Bromoform	ug/L	ND	4.0	04/01/15 19:46	
Bromomethane	ug/L	ND	4.0	04/01/15 19:46	
Carbon tetrachloride	ug/L	ND	1.0	04/01/15 19:46	
Chlorobenzene	ug/L	ND	1.0	04/01/15 19:46	
Chloroethane	ug/L	ND	1.0	04/01/15 19:46	
Chloroform	ug/L	ND	1.0	04/01/15 19:46	
Chloromethane	ug/L	ND	4.0	04/01/15 19:46	
cis-1,2-Dichloroethene	ug/L	ND	1.0	04/01/15 19:46	
cis-1,3-Dichloropropene	ug/L	ND	4.0	04/01/15 19:46	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

METHOD BLANK: 1929511 Matrix: Water
Associated Lab Samples: 10300830018, 10300830019, 10300830020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	04/01/15 19:46	
Dibromomethane	ug/L	ND	4.0	04/01/15 19:46	
Dichlorodifluoromethane	ug/L	ND	4.0	04/01/15 19:46	
Dichlorofluoromethane	ug/L	ND	1.0	04/01/15 19:46	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	04/01/15 19:46	
Ethylbenzene	ug/L	ND	1.0	04/01/15 19:46	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	04/01/15 19:46	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	04/01/15 19:46	
Methyl-tert-butyl ether	ug/L	ND	1.0	04/01/15 19:46	
Methylene Chloride	ug/L	ND	4.0	04/01/15 19:46	
n-Butylbenzene	ug/L	ND	1.0	04/01/15 19:46	
n-Propylbenzene	ug/L	ND	1.0	04/01/15 19:46	
Naphthalene	ug/L	ND	4.0	04/01/15 19:46	
p-Isopropyltoluene	ug/L	ND	1.0	04/01/15 19:46	
sec-Butylbenzene	ug/L	ND	1.0	04/01/15 19:46	
Styrene	ug/L	ND	1.0	04/01/15 19:46	
tert-Butylbenzene	ug/L	ND	1.0	04/01/15 19:46	
Tetrachloroethene	ug/L	ND	1.0	04/01/15 19:46	
Tetrahydrofuran	ug/L	ND	10.0	04/01/15 19:46	
Toluene	ug/L	ND	1.0	04/01/15 19:46	
trans-1,2-Dichloroethene	ug/L	ND	1.0	04/01/15 19:46	
trans-1,3-Dichloropropene	ug/L	ND	4.0	04/01/15 19:46	
Trichloroethene	ug/L	ND	0.40	04/01/15 19:46	
Trichlorofluoromethane	ug/L	ND	1.0	04/01/15 19:46	
Vinyl chloride	ug/L	ND	0.40	04/01/15 19:46	
Xylene (Total)	ug/L	ND	3.0	04/01/15 19:46	
1,2-Dichloroethane-d4 (S)	%.	94	75-125	04/01/15 19:46	
4-Bromofluorobenzene (S)	%.	101	75-125	04/01/15 19:46	
Toluene-d8 (S)	%.	101	75-125	04/01/15 19:46	

LABORATORY CONTROL SAMPLE: 1929512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	10	9.8	98	75-125	
1,1,1-Trichloroethane	ug/L	10	9.0	90	75-125	
1,1,2,2-Tetrachloroethane	ug/L	10	9.2	92	75-125	
1,1,2-Trichloroethane	ug/L	10	8.4	84	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	10	8.6	86	60-135	
1,1-Dichloroethane	ug/L	10	8.6	86	69-125	
1,1-Dichloroethene	ug/L	10	9.6	96	68-125	
1,1-Dichloropropene	ug/L	10	9.6	96	74-125	
1,2,3-Trichlorobenzene	ug/L	10	9.4	94	69-136	
1,2,3-Trichloropropane	ug/L	10	9.7	97	75-125	
1,2,4-Trichlorobenzene	ug/L	10	8.1	81	73-127	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1929512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	10	10.4	104	75-125	
1,2-Dibromo-3-chloropropane	ug/L	25	22.9	92	65-145	
1,2-Dibromoethane (EDB)	ug/L	10	9.2	92	75-125	
1,2-Dichlorobenzene	ug/L	10	9.1	91	75-125	
1,2-Dichloroethane	ug/L	10	9.2	92	73-125	
1,2-Dichloropropane	ug/L	10	9.7	97	75-125	
1,3,5-Trimethylbenzene	ug/L	10	9.9	99	75-125	
1,3-Dichlorobenzene	ug/L	10	9.5	95	74-125	
1,3-Dichloropropane	ug/L	10	10.2	102	75-125	
1,4-Dichlorobenzene	ug/L	10	9.9	99	75-125	
2,2-Dichloropropane	ug/L	10	9.7	97	59-139	
2-Butanone (MEK)	ug/L	50	52.2	104	63-130	
2-Chlorotoluene	ug/L	10	9.8	98	72-125	
4-Chlorotoluene	ug/L	10	9.7	97	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	50	51.0	102	71-126	
Acetone	ug/L	50	51.3	103	69-131	
Allyl chloride	ug/L	10	8.9	89	67-125	
Benzene	ug/L	10	9.4	94	71-125	
Bromobenzene	ug/L	10	10.4	104	75-125	
Bromochloromethane	ug/L	10	9.8	98	75-125	
Bromodichloromethane	ug/L	10	9.8	98	75-125	
Bromoform	ug/L	10	9.5	95	70-125	
Bromomethane	ug/L	10	8.2	82	30-150	
Carbon tetrachloride	ug/L	10	9.0	90	75-126	
Chlorobenzene	ug/L	10	11.0	110	75-125	
Chloroethane	ug/L	10	8.4	84	65-134	
Chloroform	ug/L	10	9.6	96	75-125	
Chloromethane	ug/L	10	7.8	78	39-150	
cis-1,2-Dichloroethene	ug/L	10	9.7	97	72-125	
cis-1,3-Dichloropropene	ug/L	10	9.1	91	75-125	
Dibromochloromethane	ug/L	10	9.3	93	75-125	
Dibromomethane	ug/L	10	9.6	96	75-125	
Dichlorodifluoromethane	ug/L	10	8.0	80	50-134	
Dichlorofluoromethane	ug/L	10	10.3	103	69-125	
Diethyl ether (Ethyl ether)	ug/L	10	8.9	89	72-125	
Ethylbenzene	ug/L	10	9.9	99	75-125	
Hexachloro-1,3-butadiene	ug/L	10	10.7	107	70-138	
Isopropylbenzene (Cumene)	ug/L	10	10.0	100	75-125	
Methyl-tert-butyl ether	ug/L	10	10.2	102	73-125	
Methylene Chloride	ug/L	10	9.5	95	73-125	
n-Butylbenzene	ug/L	10	8.0	80	72-133	
n-Propylbenzene	ug/L	10	9.4	94	72-126	
Naphthalene	ug/L	10	8.2	82	70-127	
p-Isopropyltoluene	ug/L	10	9.1	91	72-132	
sec-Butylbenzene	ug/L	10	8.4	84	73-132	
Styrene	ug/L	10	10.3	103	75-125	
tert-Butylbenzene	ug/L	10	9.8	98	73-128	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1929512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	10	9.4	94	74-125	
Tetrahydrofuran	ug/L	100	98.5	98	62-133	
Toluene	ug/L	10	10.2	102	74-125	
trans-1,2-Dichloroethene	ug/L	10	10.0	100	69-125	
trans-1,3-Dichloropropene	ug/L	10	9.7	97	75-125	
Trichloroethene	ug/L	10	9.7	97	75-125	
Trichlorofluoromethane	ug/L	10	8.1	81	74-127	
Vinyl chloride	ug/L	10	9.2	92	66-132	
Xylene (Total)	ug/L	30	31.0	103	75-125	
1,2-Dichloroethane-d4 (S)	%.			92	75-125	
4-Bromofluorobenzene (S)	%.			103	75-125	
Toluene-d8 (S)	%.			102	75-125	

MATRIX SPIKE SAMPLE: 1930696

Parameter	Units	10300823003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	10	7.5	75	70-138	
1,1,1-Trichloroethane	ug/L	ND	10	7.6	76	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	10	9.8	98	64-140	
1,1,2-Trichloroethane	ug/L	ND	10	7.5	75	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	10	7.4	74	51-150	
1,1-Dichloroethane	ug/L	ND	10	7.7	77	49-150	
1,1-Dichloroethene	ug/L	ND	10	8.3	83	40-150	
1,1-Dichloropropene	ug/L	ND	10	7.3	73	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	10	10.3	103	59-148	
1,2,3-Trichloropropane	ug/L	ND	10	10	100	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	10	6.0	60	61-140	M1
1,2,4-Trimethylbenzene	ug/L	ND	10	6.8	68	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	25	17.1	68	53-150	
1,2-Dibromoethane (EDB)	ug/L	ND	10	6.4	64	65-137	M1
1,2-Dichlorobenzene	ug/L	ND	10	6.1	61	66-133	M1
1,2-Dichloroethane	ug/L	ND	10	7.8	78	54-138	
1,2-Dichloropropane	ug/L	ND	10	7.2	72	62-138	
1,3,5-Trimethylbenzene	ug/L	ND	10	6.8	68	58-140	
1,3-Dichlorobenzene	ug/L	ND	10	6.3	63	66-132	M1
1,3-Dichloropropane	ug/L	ND	10	7.5	75	66-134	
1,4-Dichlorobenzene	ug/L	ND	10	6.2	62	65-129	M1
2,2-Dichloropropane	ug/L	ND	10	7.4	74	40-150	
2-Butanone (MEK)	ug/L	ND	50	37.3	75	51-147	
2-Chlorotoluene	ug/L	ND	10	6.8	68	58-147	
4-Chlorotoluene	ug/L	ND	10	6.4	64	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	50	38.1	76	59-143	
Acetone	ug/L	ND	50	43.6	87	63-147	
Allyl chloride	ug/L	ND	10	7.4	74	45-150	
Benzene	ug/L	ND	10	8.0	78	53-139	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

MATRIX SPIKE SAMPLE: 1930696

Parameter	Units	10300823003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/L	ND	10	7.3	73	66-136	
Bromochloromethane	ug/L	ND	10	7.1	71	64-136	
Bromodichloromethane	ug/L	ND	10	8.1	81	66-138	
Bromoform	ug/L	ND	10	7.6	76	59-136	
Bromomethane	ug/L	ND	10	8.3	83	30-150	
Carbon tetrachloride	ug/L	ND	10	7.4	74	56-150	
Chlorobenzene	ug/L	ND	10	7.8	78	65-133	
Chloroethane	ug/L	ND	10	8.7	87	48-150	
Chloroform	ug/L	ND	10	8.0	80	57-145	
Chloromethane	ug/L	ND	10	8.7	87	30-150	
cis-1,2-Dichloroethene	ug/L	ND	10	7.2	72	49-150	
cis-1,3-Dichloropropene	ug/L	ND	10	7.2	72	64-130	
Dibromochloromethane	ug/L	ND	10	6.8	68	68-138	
Dibromomethane	ug/L	ND	10	7.8	78	67-134	
Dichlorodifluoromethane	ug/L	ND	10	8.6	86	45-150	
Dichlorofluoromethane	ug/L	ND	10	10.1	101	54-150	
Diethyl ether (Ethyl ether)	ug/L	ND	10	7.5	75	50-145	
Ethylbenzene	ug/L	ND	10	8.1	76	55-139	
Hexachloro-1,3-butadiene	ug/L	ND	10	4.8	48	49-150	M1
Isopropylbenzene (Cumene)	ug/L	ND	10	6.7	67	64-142	
Methyl-tert-butyl ether	ug/L	ND	10	7.8	78	62-129	
Methylene Chloride	ug/L	ND	10	8.2	82	57-132	
n-Butylbenzene	ug/L	ND	10	5.7	57	55-150	
n-Propylbenzene	ug/L	ND	10	6.3	63	59-142	
Naphthalene	ug/L	ND	10	8.0	80	51-150	
p-Isopropyltoluene	ug/L	ND	10	6.0	60	60-149	
sec-Butylbenzene	ug/L	ND	10	5.8	58	60-150	M1
Styrene	ug/L	ND	10	7.4	74	68-134	
tert-Butylbenzene	ug/L	ND	10	6.2	62	62-146	
Tetrachloroethene	ug/L	ND	10	6.8	68	50-150	
Tetrahydrofuran	ug/L	ND	100	71.2	71	59-145	
Toluene	ug/L	ND	10	10.3	97	52-148	
trans-1,2-Dichloroethene	ug/L	ND	10	7.9	79	45-150	
trans-1,3-Dichloropropene	ug/L	ND	10	7.6	76	68-132	
Trichloroethene	ug/L	ND	10	7.4	74	52-150	
Trichlorofluoromethane	ug/L	ND	10	10	100	55-150	
Vinyl chloride	ug/L	ND	10	9.0	90	43-150	
Xylene (Total)	ug/L	ND	30	22.5	75	54-144	
1,2-Dichloroethane-d4 (S)	%.				95	75-125	HS
4-Bromofluorobenzene (S)	%.				113	75-125	
Toluene-d8 (S)	%.				104	75-125	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

SAMPLE DUPLICATE: 1930697

Parameter	Units	10300823005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	.38J		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	.89J		30	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

SAMPLE DUPLICATE: 1930697

Parameter	Units	10300823005 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	.88J		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	100	98	2		HS
4-Bromofluorobenzene (S)	%.	102	96	5		
Toluene-d8 (S)	%.	101	100	1		

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: OEXT/28695 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

METHOD BLANK: 1928102 Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	mg/kg	ND	0.010	03/31/15 08:15	
Acenaphthylene	mg/kg	ND	0.010	03/31/15 08:15	
Anthracene	mg/kg	ND	0.010	03/31/15 08:15	
Benzo(a)anthracene	mg/kg	ND	0.010	03/31/15 08:15	
Benzo(a)pyrene	mg/kg	ND	0.010	03/31/15 08:15	
Benzo(b)fluoranthene	mg/kg	ND	0.010	03/31/15 08:15	
Benzo(g,h,i)perylene	mg/kg	ND	0.010	03/31/15 08:15	
Benzo(k)fluoranthene	mg/kg	ND	0.010	03/31/15 08:15	
Chrysene	mg/kg	ND	0.010	03/31/15 08:15	
Dibenz(a,h)anthracene	mg/kg	ND	0.010	03/31/15 08:15	
Fluoranthene	mg/kg	ND	0.010	03/31/15 08:15	
Fluorene	mg/kg	ND	0.010	03/31/15 08:15	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.010	03/31/15 08:15	
Naphthalene	mg/kg	ND	0.010	03/31/15 08:15	
Phenanthrene	mg/kg	ND	0.010	03/31/15 08:15	
Pyrene	mg/kg	ND	0.010	03/31/15 08:15	
2-Fluorobiphenyl (S)	%.	81	55-125	03/31/15 08:15	
p-Terphenyl-d14 (S)	%.	92	30-150	03/31/15 08:15	

LABORATORY CONTROL SAMPLE: 1928103

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	mg/kg	.033	0.026	79	53-125	
Acenaphthylene	mg/kg	.033	0.027	81	53-125	
Anthracene	mg/kg	.033	0.031	94	61-125	
Benzo(a)anthracene	mg/kg	.033	0.027	80	62-125	
Benzo(a)pyrene	mg/kg	.033	0.029	87	64-125	
Benzo(b)fluoranthene	mg/kg	.033	0.028	85	66-125	
Benzo(g,h,i)perylene	mg/kg	.033	0.027	82	59-125	
Benzo(k)fluoranthene	mg/kg	.033	0.027	80	61-125	
Chrysene	mg/kg	.033	0.026	77	63-125	
Dibenz(a,h)anthracene	mg/kg	.033	0.029	86	59-125	
Fluoranthene	mg/kg	.033	0.026	77	64-125	
Fluorene	mg/kg	.033	0.028	84	57-125	
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.027	82	58-125	
Naphthalene	mg/kg	.033	0.025	74	52-125	
Phenanthrene	mg/kg	.033	0.026	79	60-125	
Pyrene	mg/kg	.033	0.032	97	63-125	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

LABORATORY CONTROL SAMPLE: 1928103

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Fluorobiphenyl (S)	%.			73	55-125	
p-Terphenyl-d14 (S)	%.			80	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1928104 1928105

Parameter	Units	10300367001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	mg/kg	ND	.033	.033	0.030	0.031	82	86	39-125	5	30	
Acenaphthylene	mg/kg	ND	.033	.033	0.036	0.043	79	99	30-150	18	30	
Anthracene	mg/kg	ND	.033	.033	0.042	0.047	97	111	30-150	11	30	
Benzo(a)anthracene	mg/kg	28.2 ug/kg	.033	.033	0.052	0.070	71	125	30-150	30	30	
Benzo(a)pyrene	mg/kg	37.7 ug/kg	.033	.033	0.063	0.080	75	127	30-150	25	30	
Benzo(b)fluoranthene	mg/kg	54.8 ug/kg	.033	.033	0.076	0.10	63	133	30-150	27	30	
Benzo(g,h,i)perylene	mg/kg	34.4 ug/kg	.033	.033	0.058	0.070	71	107	30-150	19	30	
Benzo(k)fluoranthene	mg/kg	22.1 ug/kg	.033	.033	0.045	0.057	70	104	30-150	23	30	
Chrysene	mg/kg	38.9 ug/kg	.033	.033	0.062	0.082	69	128	30-150	28	30	
Dibenz(a,h)anthracene	mg/kg	ND	.033	.033	0.034	0.038	101	114	30-150	12	30	
Fluoranthene	mg/kg	67.0 ug/kg	.033	.033	0.086	0.11	57	125	30-150	23	30	
Fluorene	mg/kg	ND	.033	.033	0.030	0.032	82	89	30-146	7	30	
Indeno(1,2,3-cd)pyrene	mg/kg	25.5 ug/kg	.033	.033	0.049	0.059	71	100	30-150	18	30	
Naphthalene	mg/kg	ND	.033	.033	0.023	0.027	69	79	30-131	14	30	
Phenanthrene	mg/kg	26.1 ug/kg	.033	.033	0.052	0.056	78	88	30-150	7	30	
Pyrene	mg/kg	70.1 ug/kg	.033	.033	0.091	0.12	63	137	30-150	24	30	
2-Fluorobiphenyl (S)	%.						80	80	55-125			
p-Terphenyl-d14 (S)	%.						82	81	30-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: OEXT/28694 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

METHOD BLANK: 1928091 Matrix: Solid
Associated Lab Samples: 10300830002, 10300830003, 10300830005, 10300830006, 10300830007, 10300830008, 10300830010, 10300830011, 10300830012, 10300830013, 10300830014, 10300830016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/31/15 13:49	
n-Triacontane (S)	%.	52	50-150	03/31/15 13:49	

LABORATORY CONTROL SAMPLE & LCSD: 1928092 1928093

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	69.1	74.3	86	93	70-120	7	20	
n-Triacontane (S)	%.				74	77	50-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300830

QC Batch: OEXT/28707 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10300830018, 10300830019, 10300830020

METHOD BLANK: 1928671 Matrix: Water
Associated Lab Samples: 10300830018, 10300830019, 10300830020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	ug/L	ND	100	04/01/15 10:55	
n-Triacontane (S)	%.	90	50-150	04/01/15 10:55	

LABORATORY CONTROL SAMPLE & LCSD: 1928672 1928673

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	ug/L	2000	1820	1750	91	88	75-115	4	20	
n-Triacontane (S)	%.				93	88	50-150			

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QUALIFIERS

Project: B1500394 Roof Depot
Pace Project No.: 10300830

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P4	Sample field preservation does not meet EPA or method recommendations for this analysis.
R1	RPD value was outside control limits.
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300830002	**PP-2 (2-4)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830003	**PP-3 (1-2)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830005	**PP-5 (2-4)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830006	**PP-6 (3-5)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830007	**PP-7 (3-5)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830008	**PP-8 (2)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830010	**PP-10 (2)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830011	**PP-11 (1-2)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830012	**PP-12 (1-2)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830013	**PP-13 (2-4)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830014	**PP-14 (2-3)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830016	**HA-2 (1-3)**	WI MOD DRO	OEXT/28694	WI MOD DRO	GCSV/15376
10300830018	**PP-8W**	WI MOD DRO	OEXT/28707	WI MOD DRO	GCSV/15381
10300830019	**PP-10W**	WI MOD DRO	OEXT/28707	WI MOD DRO	GCSV/15381
10300830020	**HA-W**	WI MOD DRO	OEXT/28707	WI MOD DRO	GCSV/15381
10300830002	**PP-2 (2-4)**	EPA 5030 Medium Soil	GCV/13574	WI MOD GRO	GCV/13577
10300830003	**PP-3 (1-2)**	EPA 5030 Medium Soil	GCV/13574	WI MOD GRO	GCV/13577
10300830005	**PP-5 (2-4)**	EPA 5030 Medium Soil	GCV/13574	WI MOD GRO	GCV/13577
10300830006	**PP-6 (3-5)**	EPA 5030 Medium Soil	GCV/13574	WI MOD GRO	GCV/13577
10300830007	**PP-7 (3-5)**	EPA 5030 Medium Soil	GCV/13574	WI MOD GRO	GCV/13577
10300830008	**PP-8 (2)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830010	**PP-10 (2)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830011	**PP-11 (1-2)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830012	**PP-12 (1-2)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830013	**PP-13 (2-4)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830014	**PP-14 (2-3)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830016	**HA-2 (1-3)**	EPA 5030 Medium Soil	GCV/13582	WI MOD GRO	GCV/13588
10300830002	**PP-2 (2-4)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830003	**PP-3 (1-2)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830005	**PP-5 (2-4)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830006	**PP-6 (3-5)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830007	**PP-7 (3-5)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830008	**PP-8 (2)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830010	**PP-10 (2)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830011	**PP-11 (1-2)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830012	**PP-12 (1-2)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830013	**PP-13 (2-4)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830014	**PP-14 (2-3)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830016	**HA-2 (1-3)**	EPA 3050	MPRP/53233	EPA 6020A	ICPM/23615
10300830018	**PP-8W**	EPA 3020	MPRP/53235	EPA 6020A	ICPM/23590
10300830019	**PP-10W**	EPA 3020	MPRP/53235	EPA 6020A	ICPM/23590
10300830020	**HA-W**	EPA 3020	MPRP/53235	EPA 6020A	ICPM/23590
10300830018	**PP-8W**	EPA 7470A	MERP/13082	EPA 7470	MERC/15205
10300830019	**PP-10W**	EPA 7470A	MERP/13082	EPA 7470	MERC/15205
10300830020	**HA-W**	EPA 7470A	MERP/13082	EPA 7470	MERC/15205

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300830002	**PP-2 (2-4)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830003	**PP-3 (1-2)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830005	**PP-5 (2-4)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830006	**PP-6 (3-5)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830007	**PP-7 (3-5)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830008	**PP-8 (2)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830010	**PP-10 (2)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830011	**PP-11 (1-2)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830012	**PP-12 (1-2)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830013	**PP-13 (2-4)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830014	**PP-14 (2-3)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830016	**HA-2 (1-3)**	EPA 7471B	MERP/13087	EPA 7471B	MERC/15216
10300830002	**PP-2 (2-4)**	ASTM D2974	MPRP/53266		
10300830003	**PP-3 (1-2)**	ASTM D2974	MPRP/53266		
10300830005	**PP-5 (2-4)**	ASTM D2974	MPRP/53266		
10300830006	**PP-6 (3-5)**	ASTM D2974	MPRP/53266		
10300830007	**PP-7 (3-5)**	ASTM D2974	MPRP/53266		
10300830008	**PP-8 (2)**	ASTM D2974	MPRP/53266		
10300830010	**PP-10 (2)**	ASTM D2974	MPRP/53266		
10300830011	**PP-11 (1-2)**	ASTM D2974	MPRP/53266		
10300830012	**PP-12 (1-2)**	ASTM D2974	MPRP/53266		
10300830013	**PP-13 (2-4)**	ASTM D2974	MPRP/53266		
10300830014	**PP-14 (2-3)**	ASTM D2974	MPRP/53266		
10300830016	**HA-2 (1-3)**	ASTM D2974	MPRP/53266		
10300830002	**PP-2 (2-4)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830003	**PP-3 (1-2)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830005	**PP-5 (2-4)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830006	**PP-6 (3-5)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830007	**PP-7 (3-5)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830008	**PP-8 (2)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830010	**PP-10 (2)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830011	**PP-11 (1-2)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830012	**PP-12 (1-2)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830013	**PP-13 (2-4)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830014	**PP-14 (2-3)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830016	**HA-2 (1-3)**	EPA 3550	OEXT/28695	EPA 8270D by SIM	MSSV/12104
10300830002	**PP-2 (2-4)**	EPA 5035/5030B	MSV/30929	EPA 8260	MSV/30945
10300830003	**PP-3 (1-2)**	EPA 5035/5030B	MSV/30929	EPA 8260	MSV/30945
10300830005	**PP-5 (2-4)**	EPA 5035/5030B	MSV/30929	EPA 8260	MSV/30945
10300830006	**PP-6 (3-5)**	EPA 5035/5030B	MSV/30929	EPA 8260	MSV/30945
10300830007	**PP-7 (3-5)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830008	**PP-8 (2)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830010	**PP-10 (2)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830011	**PP-11 (1-2)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830012	**PP-12 (1-2)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830013	**PP-13 (2-4)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830014	**PP-14 (2-3)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: B1500394 Roof Depot
Pace Project No.: 10300830

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300830016	**HA-2 (1-3)**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830017	**Trip Blank - SL**	EPA 5035/5030B	MSV/30935	EPA 8260	MSV/30956
10300830018	**PP-8W**	EPA 8260	MSV/30955		
10300830019	**PP-10W**	EPA 8260	MSV/30955		
10300830020	**HA-W**	EPA 8260	MSV/30955		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10 300830

Page: 1 of 3

1797139

Section A Required Client Information:

Company: Braun Intertec
Address: 11001 Hampshire Ave. Bloomington, MN 55438
Email To:
Phone: Fax:
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: Jeremy Hansen
Copy To:
Purchase Order No.:
Project Name: Roof Depot
Project Number: B15000394

Section C Invoice Information:

Attention:
Company Name:
Address: Same.
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☒ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): VOCs	GRO	DRO	PAHs	Priority Pollutant Metals 6020	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	PP-1 (2-4)	SL	G			3/25/15	1545		5							2		X	X	X	X	X		001
2	PP-2 (2-4)					3/25/15	1630		5							2		X	X	X	X	X		002
3	PP-3 (1-2)					3/25/15	1700		5							2								003
4	PP-4 (2-4)					3/25/15	1500		5							2								004
5	PP-5 (2-4)					3/26/15	840		5							2								005
6	PP-6 (3-5)					3/26/15	915		5							2								006
7	PP-7 (3-5)					3/26/15	950		5							2								007
8	PP-8 (2)					3/25/15	945		5							2								008
9	PP-9 (1-3)					3/26/15	1030		5							2								009
10	PP-10 (2)					3/25/15	1200		5							2								010
11	PP-11 (1-2)					3/26/15	1230		5							2								011
12	PP-12 (1-2)					3/26/15	1200		5							2								012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	TM/ Braun	3/27/15	@ 820	[illegible]	3/27/15	0820	Wet/Ice	Y	N	Y
	[illegible]	3/27/15	1040	[illegible]	3/27/15	1040				

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Tim Mattor
SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): (03/25/15)

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10300830

Page: 2 of 3

1797141

Section A Required Client Information:

Company: Braun Intertec
Address: 11001 Hampshire Ave. Bloomington, MN 55438
Email To:
Phone: Fax:
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: Jeremy Hansen
Copy To:
Purchase Order No.:
Project Name: Roof Depot
Project Number: B1500394

Section C Invoice Information:

Attention:
Company Name:
Address: Same.
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☒ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	VOCs	GRO	DRO	PAHs	Reality Pollutant Metals (one)							Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DP-13 (2-4)	SL	G			3/26/15	1300		5							2			X	X	X	X	X								013
2	DP-14 (2-3)	|	|			|	1330		5							2			X	X	X	X	X								014
3	HA-1 (1-3)	|	|			3/25/15	1130		5							2			X	X	X	X	X								015 T.M.
4	HA-2 (1-3)	|	|			|	1030		5							2			X	X	X	X	X								016
5	Trip Blanks								2							2			X													017
6																															
7																															
8																															
9																															
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
soil trip blanks in each cooler	THM / Braun	3/27/15	820	Pace BL	3/27/15	0820	5/16	Y	N	Y
	Pace BL	3/27/15	1446		3/27/15	1440				

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tim H. Mellor

SIGNATURE of SAMPLER: T. Mellor

DATE Signed (MM/DD/YY): 03/25/15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1030083c

Page: 3 of 3

1797140

Section A Required Client Information:

Company: Braun Intertec
Address: 11001 Hampshire Ave. Bloomington, MN 55438
Email To:
Phone: Fax:
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: Jeremy Hansen
Copy To:
Purchase Order No.:
Project Name: Roof Depot
Project Number: B1500394

Section C Invoice Information:

Attention:
Company Name: Same
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) VOCs	DRO	Priority Pollutant Metals (6020)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	PP-8W	WT	G			3/25/15	1020		6			1	5					X	X	X		018
2	PP-10W	"	"			"	1230		6			1	5					X	X	X		019
3	HA-W	"	"			3/26/15	1100		6			1	5					X	X	X		020
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	THM / Braun	3/27/15	@830	Pace	3/27/15	0830	1.3/1.6 Y N X
	Pace	3/27/15	1040		3/27/15	1040	

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tim H. Molitor

SIGNATURE of SAMPLER: T. Molitor DATE Signed (MM/DD/YY): 03/25/15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®	Document Name: **BLM Sample Condition Upon Receipt Form**	Document Revised: 19Mar2015 Page 1 of 1
	Document No.: **F-MN-C-161-rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Brann

Project #: WO#: 10300830

10300830

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ Spee Dee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermom. Used: ☐ B88A0143310092 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.3, 1.4 **Cooler Temp Corrected (°C):** 1.5, 1.6 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** PW 5/27/15

Comments:

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☒ Yes	☐ No	☒ N/A PW 5/27/15	
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL, WT	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☒ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	Sample # 3/3
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☒ Yes	☐ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	15. SL Trip Blanks only
Trip Blank Custody Seals Present?	☐ Yes	☒ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: for Steve Albrecht **Date:** 3.30.15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: BLM to MN Sample Transfer Form	Revised Date: 14Nov2014 Page: 1 of 1
	Document Number: F-MN-C-162-rev.00	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS Fed Ex Courier
Tracking #:	
Client:	BS Farm
Due Date:	4/8/15
Pace WO:	10300830
Project Manager:	SJA

BLM to MN Sample Transfer Condition Upon Receipt Form

ANALYSIS REQUESTED

Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
Tests					
VOC, GRO	VG9M	2	10300830[001-016]	Yes	EM 3/27/15
DRO	BJFG	2	"	NO	EM 3/27/15
PAH, 8RCRA, Dry Weight	JGNU	1	"	NO	EM 3/27/15
Trip Blank	VG9M	2	10300830 [017]	Yes	EM 3/27/15
VOC	VG9H	3	10300830[018-020]	Yes	EM 3/27/15
DRO	AG1H	2	"	Yes	EM 3/27/15
8RCRA	BP3N	1	"	Yes	EM 3/27/15

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MINNESOTA SAMPLE RECEIPT INFORMATION

IR Gun (circle): B88A9132521491, B88A912167504, B88A9130516413 Correction Factor: +0.2 Sample Matrix: WT, SL

Cooler Temp Read (°C): 0.4, 1.8 Cooler Temp Corrected (°C): 0.6, 2.0

Arrived on Ice:	Yes X No__	Sample Composites Required:	Yes __ No__ NA X
Short Hold Time Requested < 72 Hours:	Yes __ No X	Custody Seal Present:	Yes __ No X
Rush TAT Requested:	Yes __ No X	Trip Blank Present:	Yes X No__ NA __
Samples Arrived within Hold Time:	Yes X No__	Trip Blank Custody Seals Present:	Yes __ No__ NA X
		Containers Intact:	Yes X No__

CUSTODY TRANSFER

Relinquished by/Affiliation	Date	Time	Accepted By Affiliation	Date	Time
[signature]	3/27/15	1430	[signature] Pace	3/27/15	1430

FICATION/RESOLUTION

Person Contacted: _____ Date: _____

Comments/Resolution: _____

Project Manager Review: [signature] Date: 3.30.15

Data File: \\192.168.10.12\chem\10gcs9.i\040115dro.b/040115000008.D

Report Date: 04/01/2015

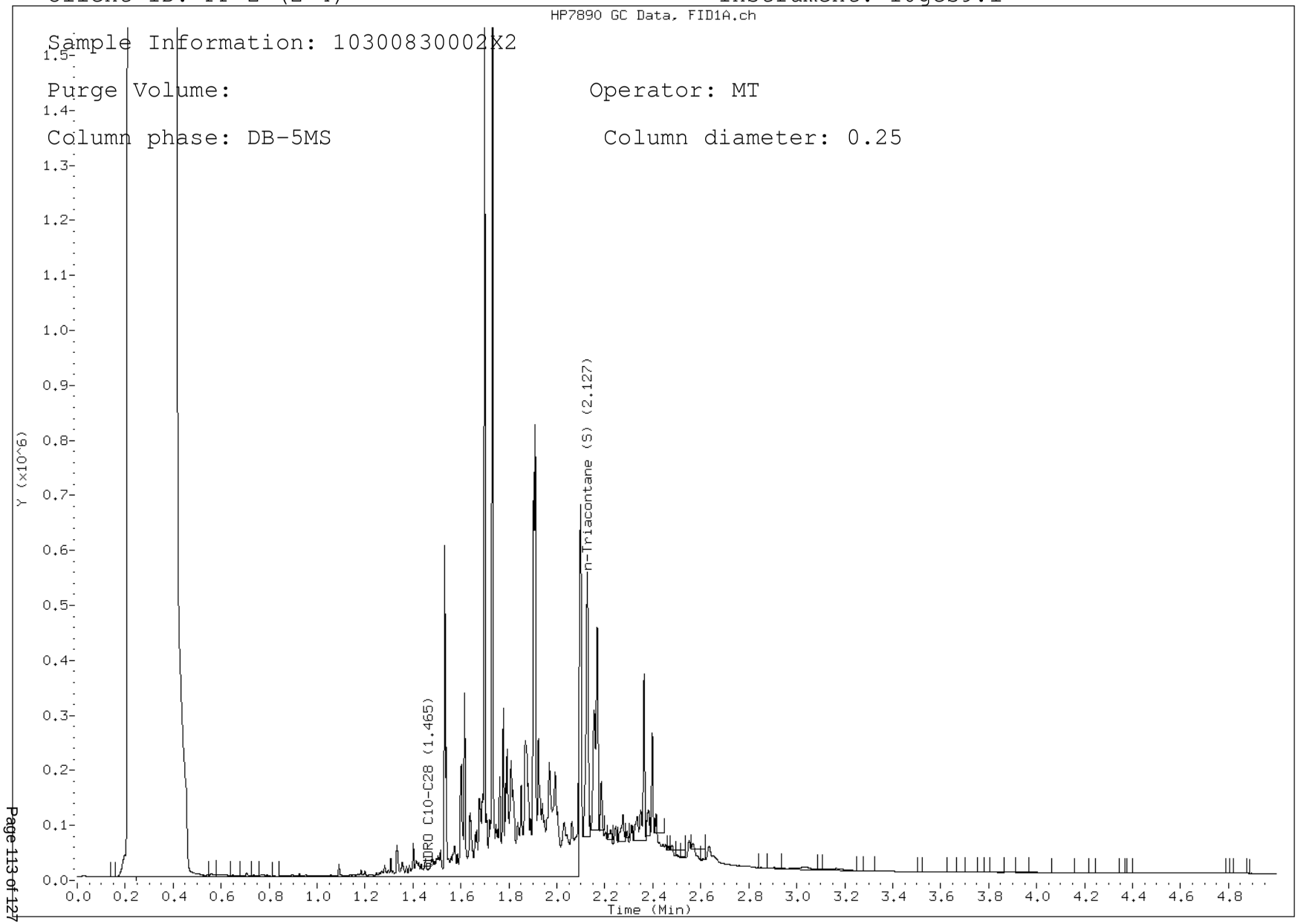
Sample ID: 10300830002

Client ID: PP-2 (2-4) Instrument: 10gcs9.i

Sample Information: 10300830002X2

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\040115dro.b/040115000009.D

Report Date: 04/01/2015

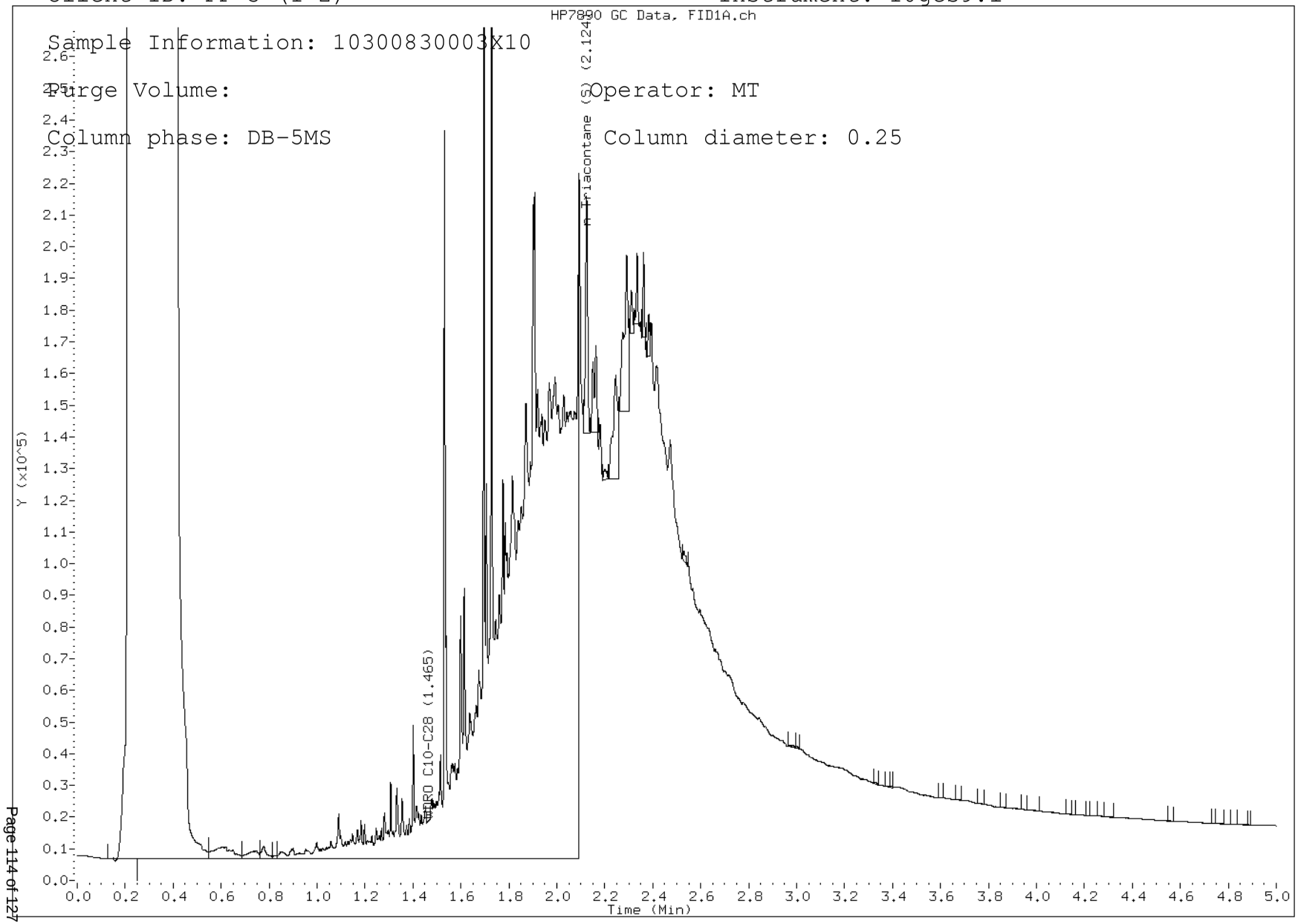
Sample ID: 10300830003

Client ID: PP-3 (1-2) Instrument: 10gcs9.i

Sample Information: 10300830003X10

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\033115dro.b/033115000047.D

Report Date: 04/01/2015

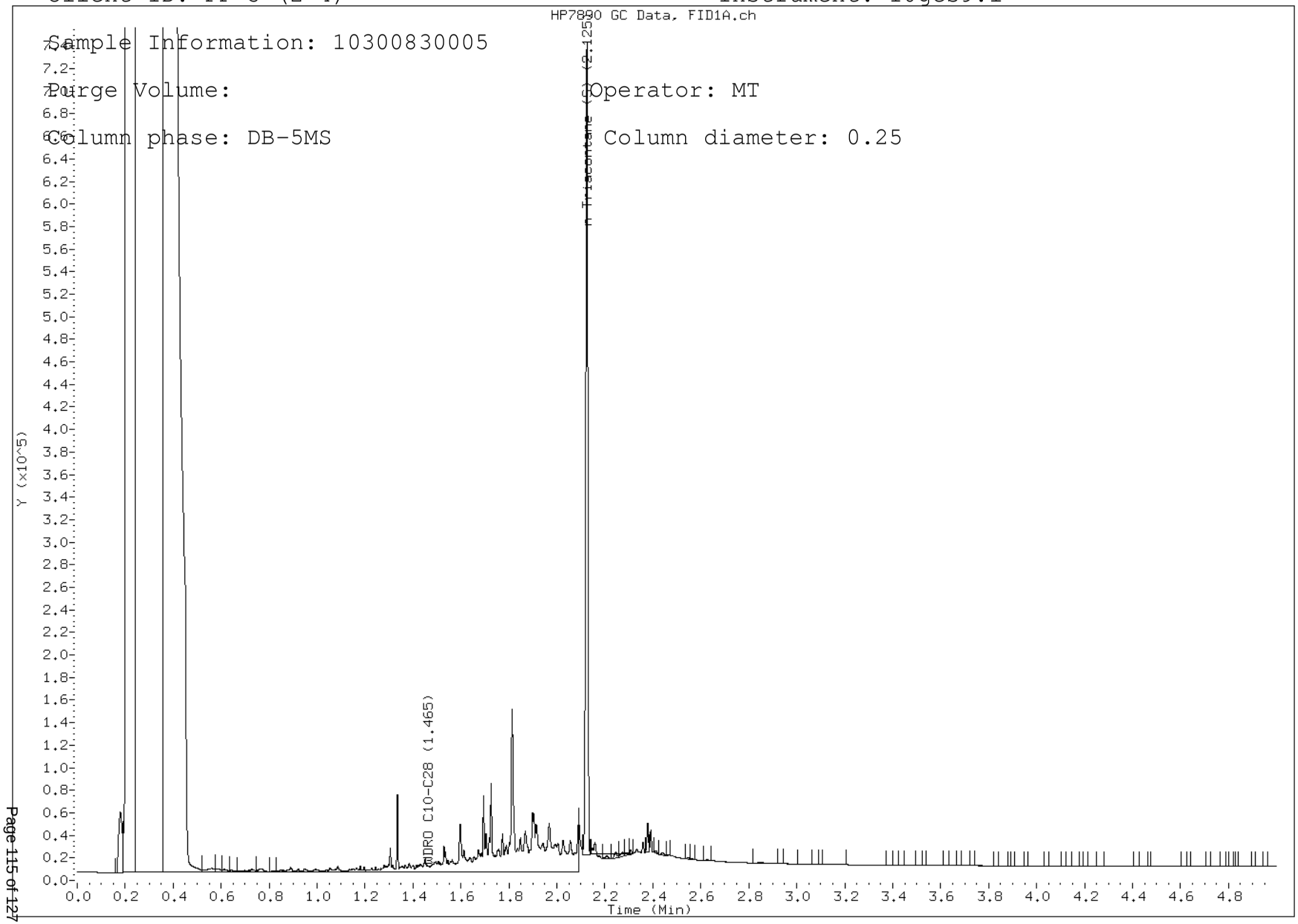
Sample ID: 10300830005

Client ID: PP-5 (2-4) Instrument: 10gcs9.i

Sample Information: 10300830005

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\040115dro.b/040115000011.D

Report Date: 04/01/2015

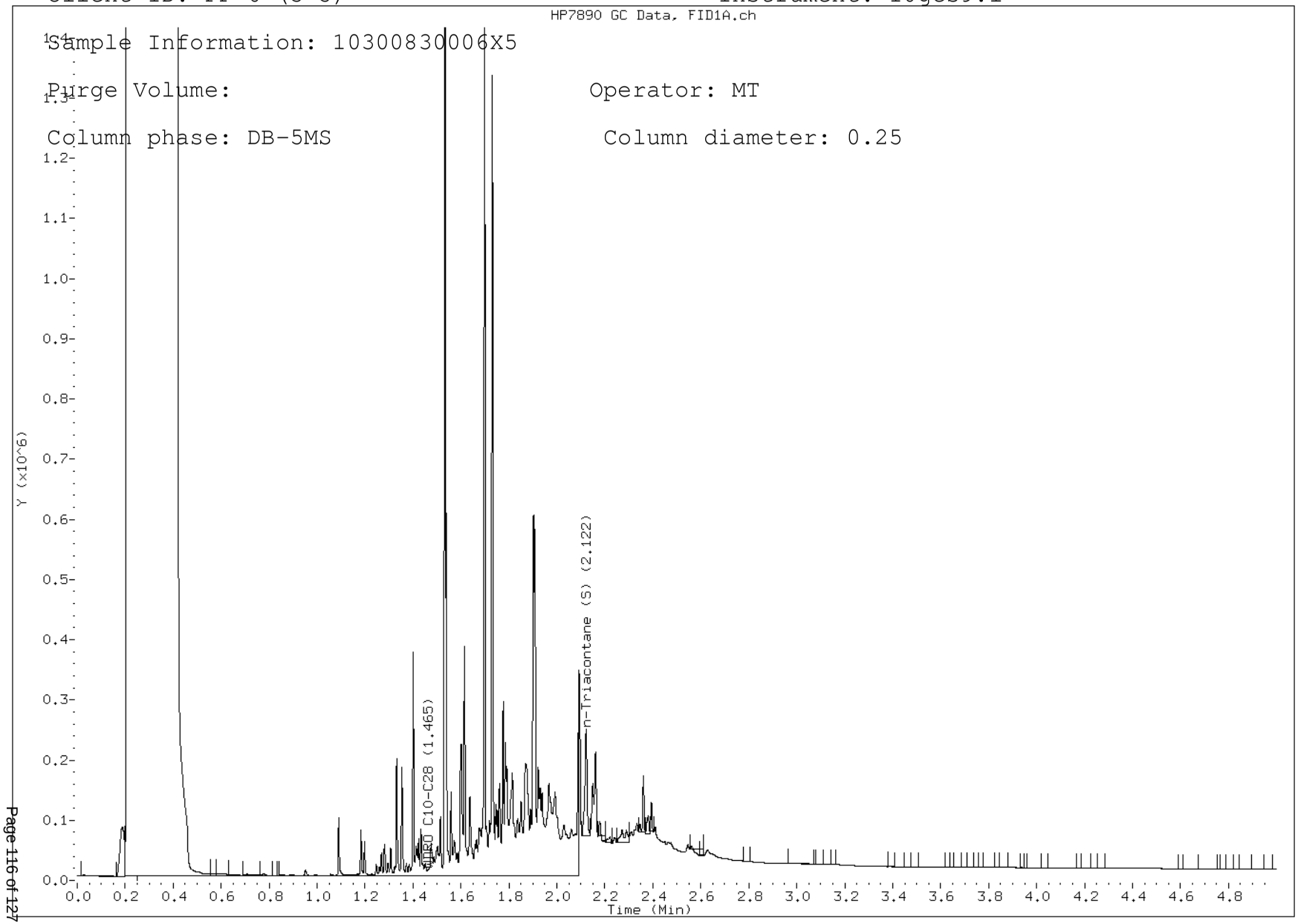
Sample ID: 10300830006

Client ID: PP-6 (3-5) Instrument: 10gcs9.i

Sample Information: 10300830006X5

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\040115dro.b/040115000010.D

Report Date: 04/01/2015

Sample ID: 10300830007

Client ID: PP-7 (3-5) Instrument: 10gcs9.i

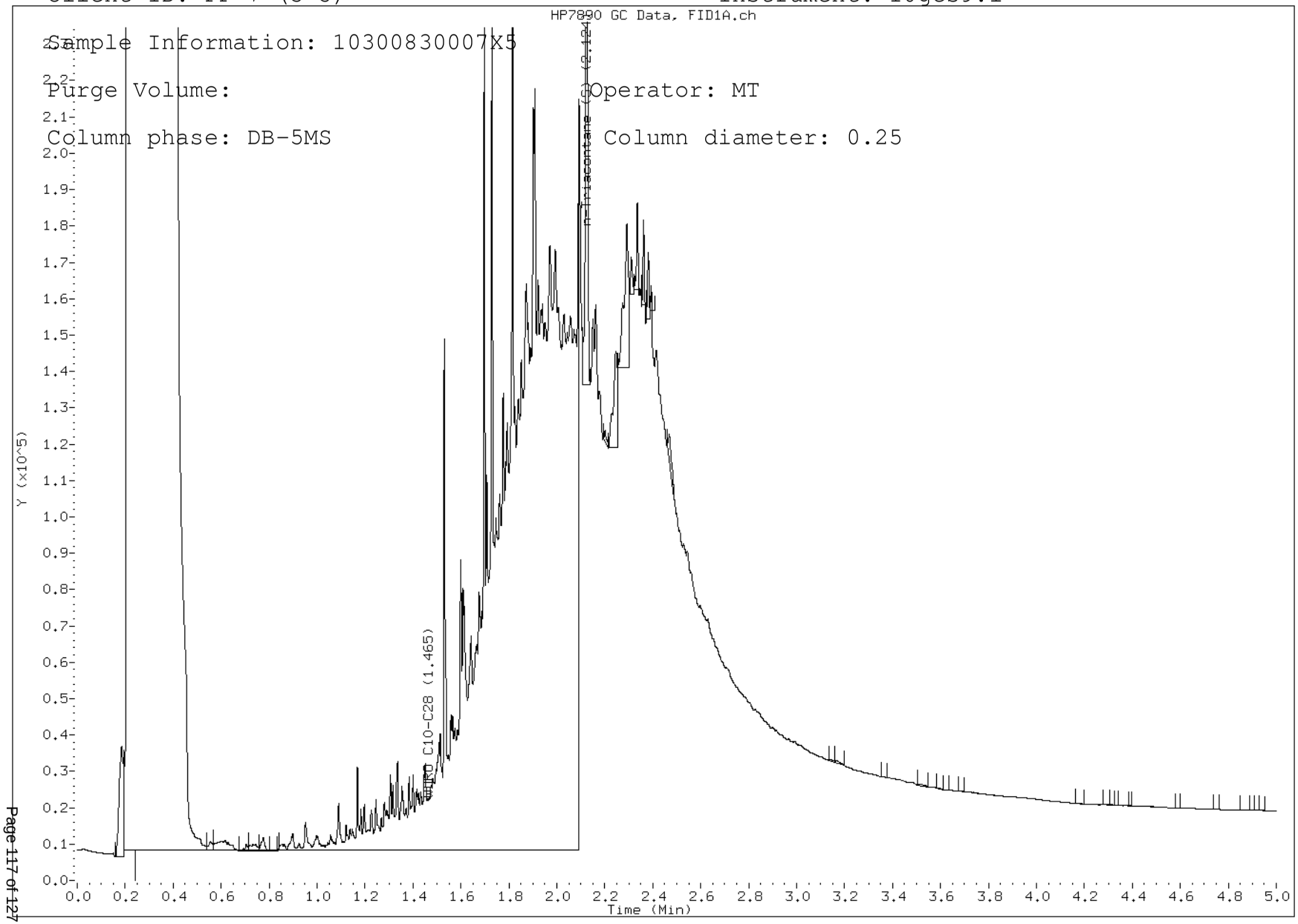
Sample Information: 10300830007X5

Purge Volume:

Operator: MT

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\033115dro.b/033115000054.D

Report Date: 04/01/2015

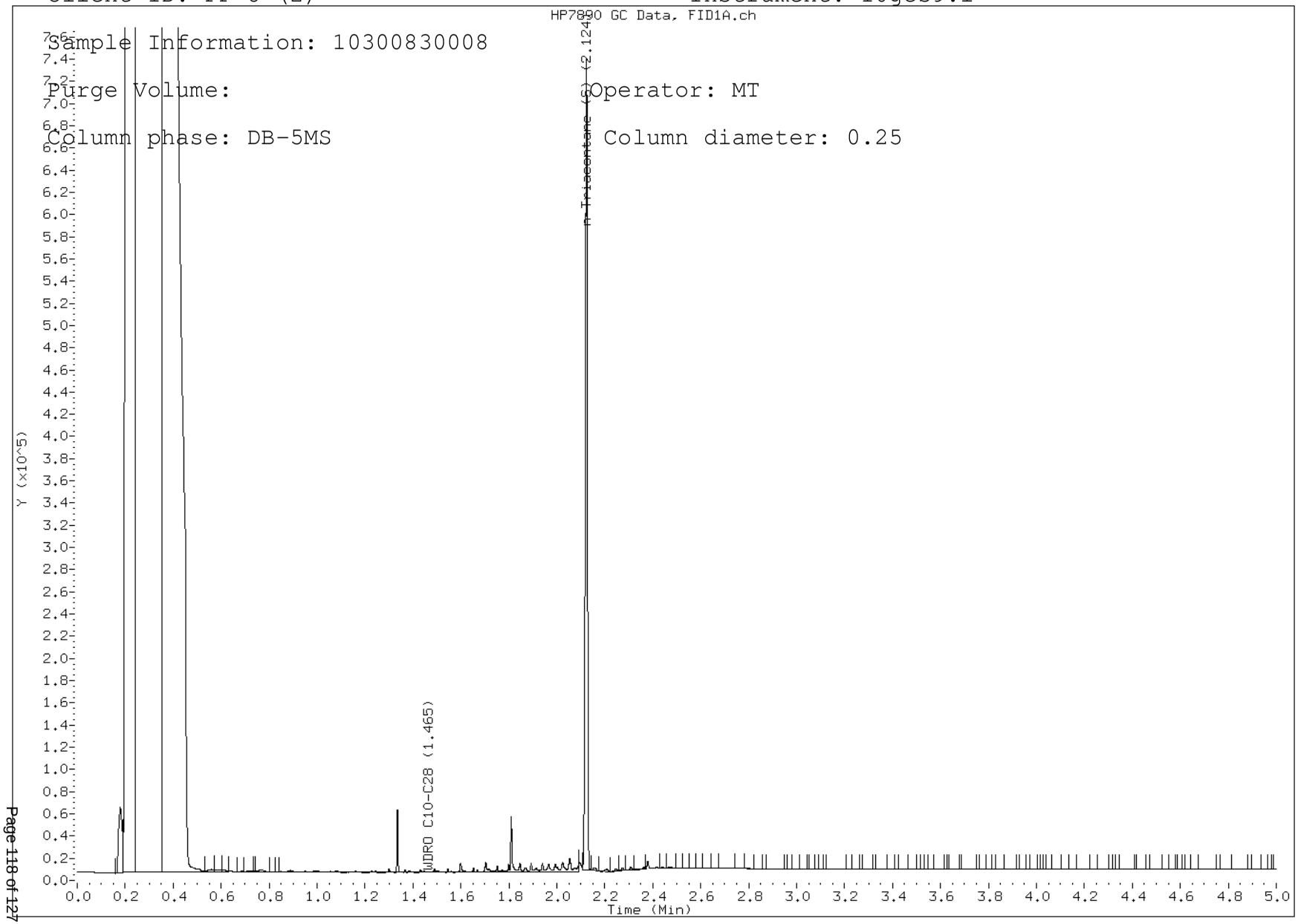
Sample ID: 10300830008

Client ID: PP-8 (2) Instrument: 10gcs9.i

Sample Information: 10300830008

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\033115dro.b/033115000046.D

Report Date: 04/01/2015

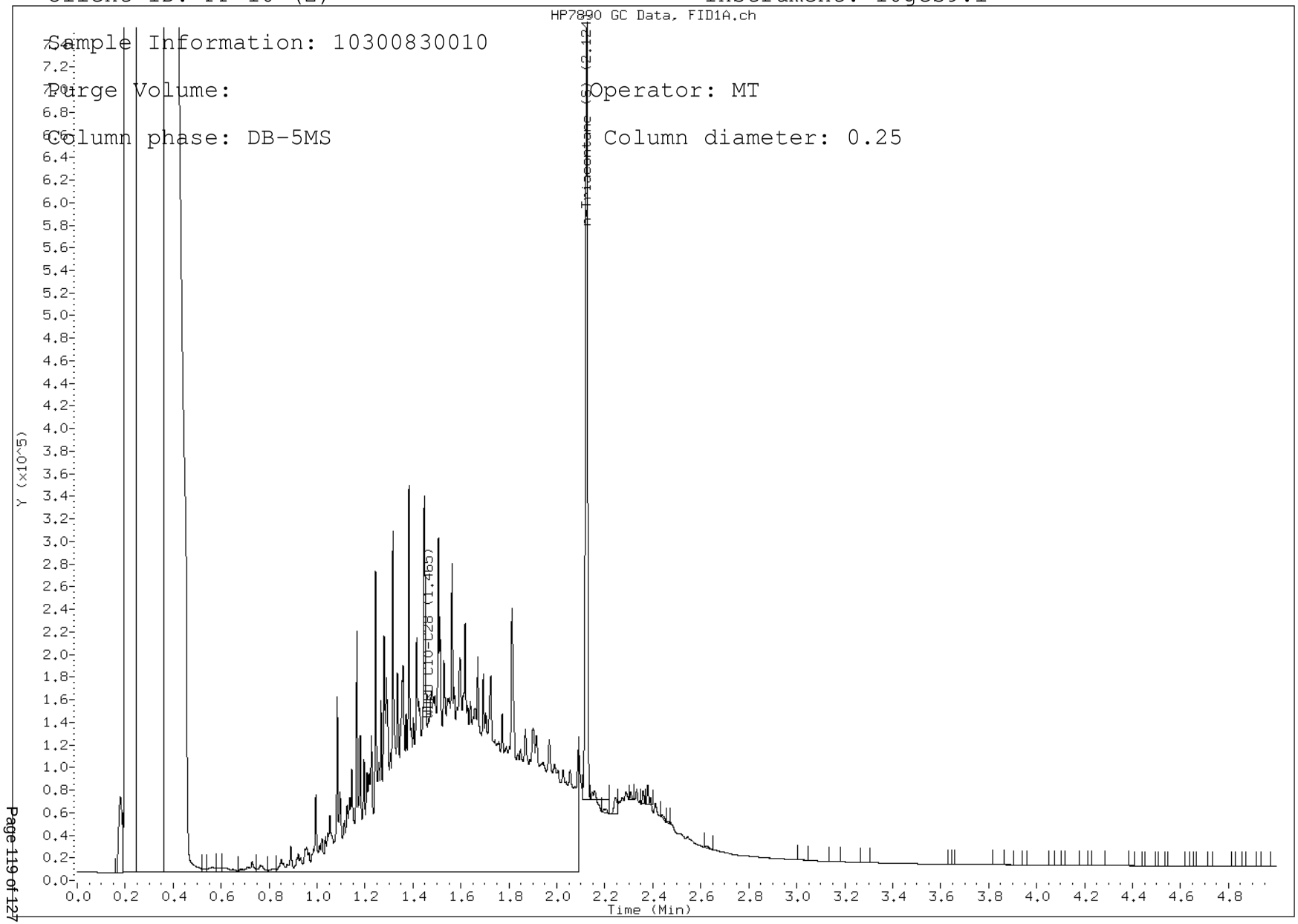
Sample ID: 10300830010

Client ID: PP-10 (2) Instrument: 10gcs9.i

Sample Information: 10300830010

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\040115dro.b/040115000012.D

Report Date: 04/01/2015

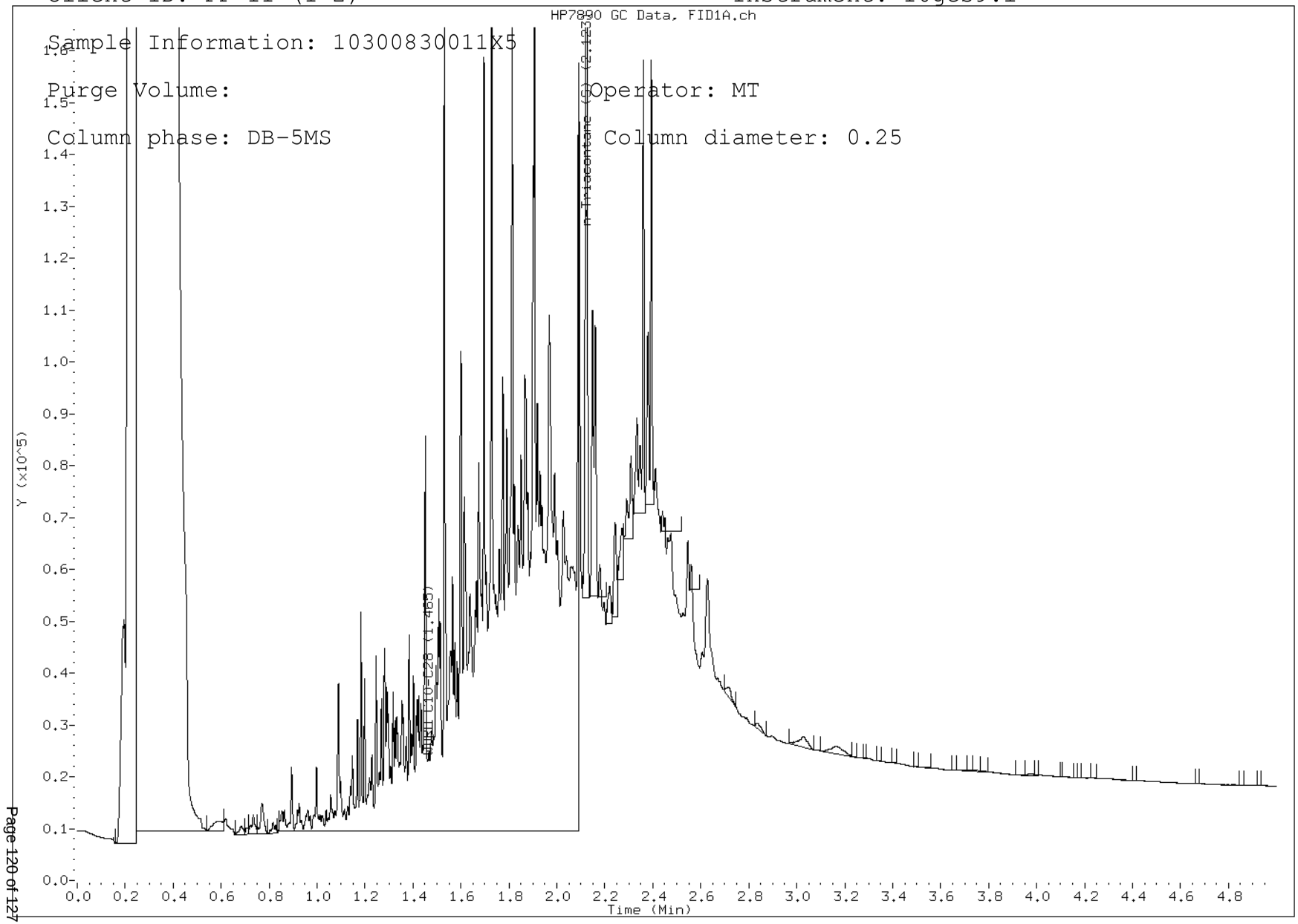
Sample ID: 10300830011

Client ID: PP-11 (1-2) Instrument: 10gcs9.i

Sample Information: 10300830011X5

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\033115dro.b/033115000045.D

Report Date: 04/01/2015

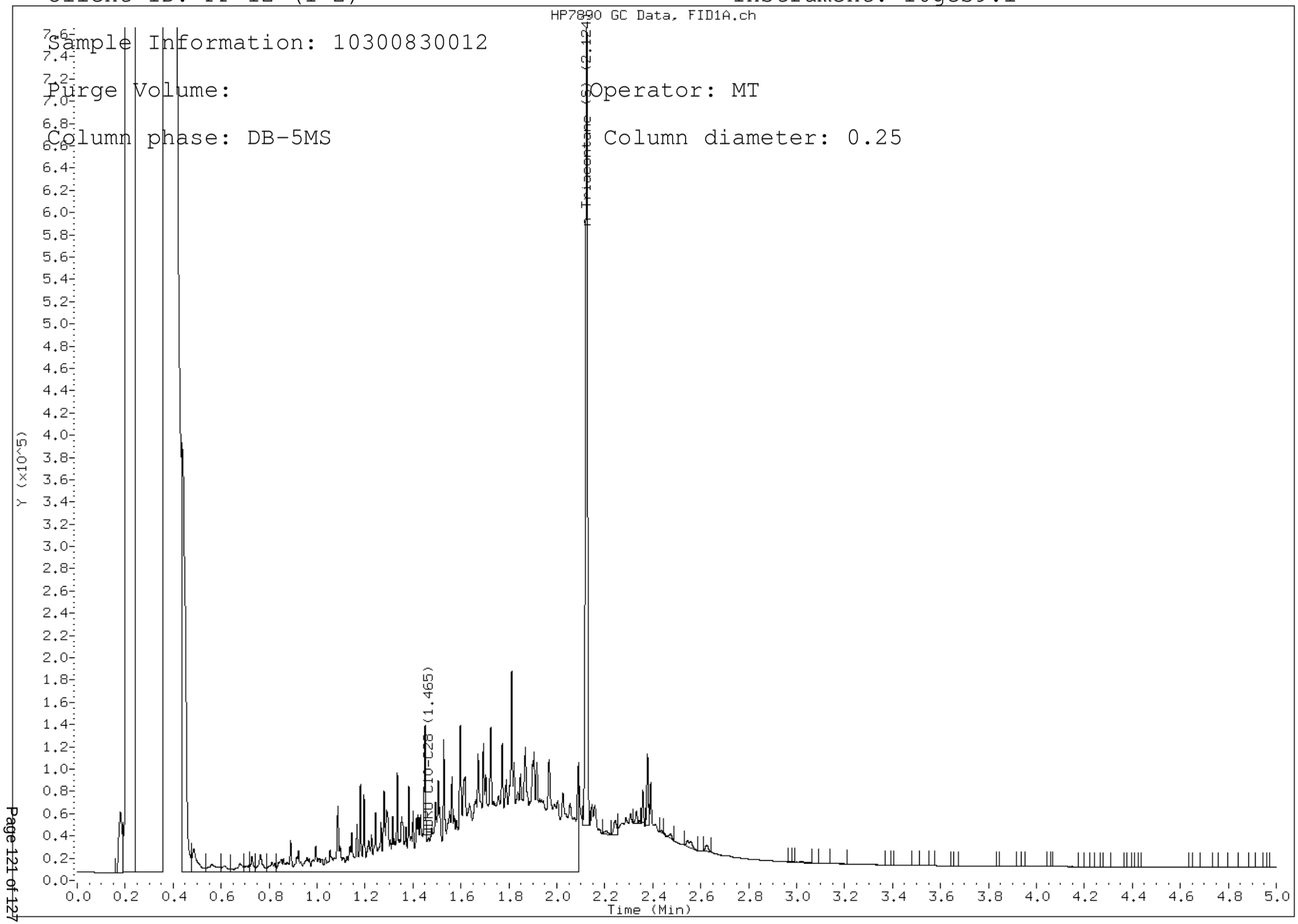
Sample ID: 10300830012

Client ID: PP-12 (1-2) Instrument: 10gcs9.i

Sample Information: 10300830012

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\033115dro.b/033115000048.D

Report Date: 04/01/2015

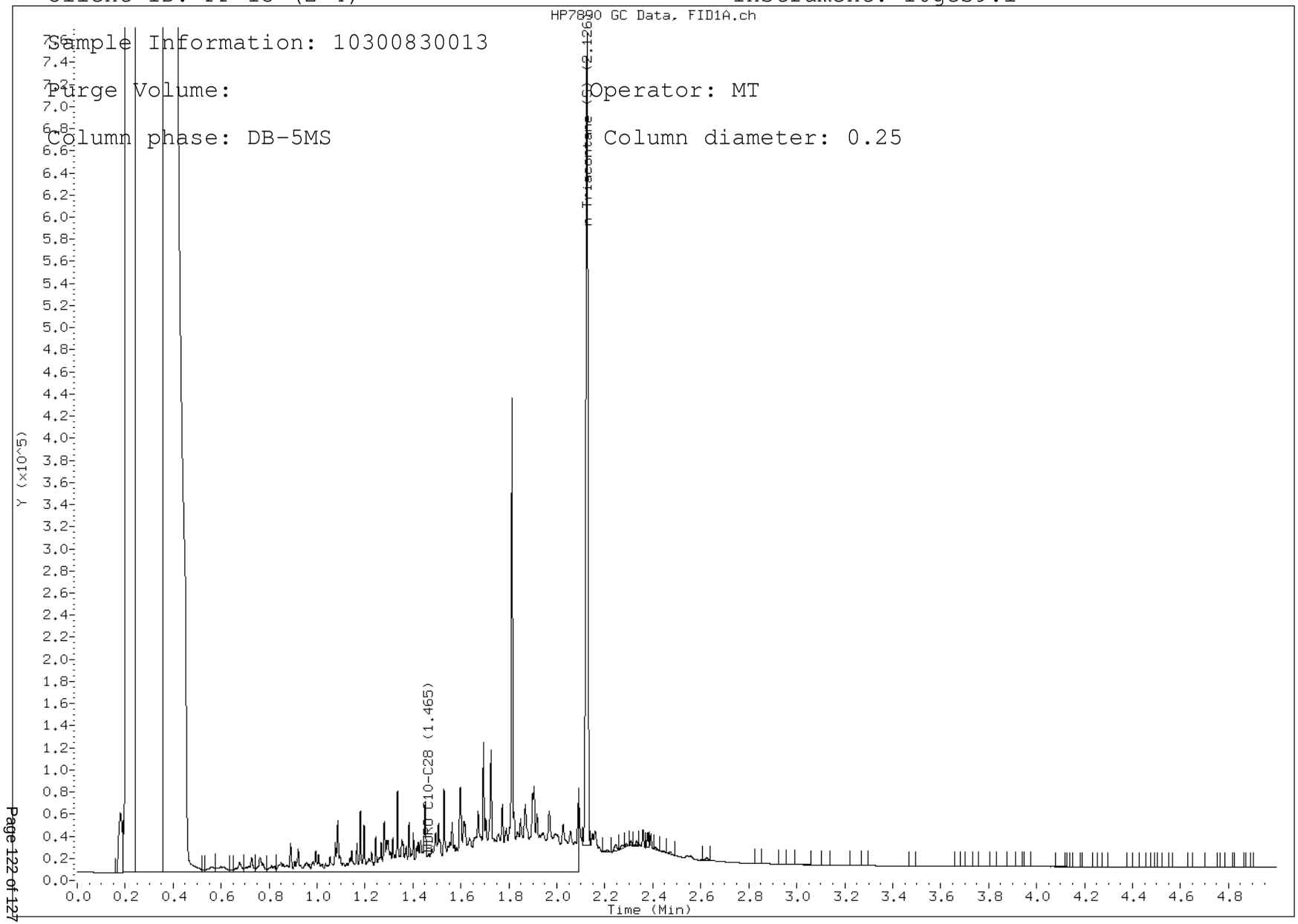
Sample ID: 10300830013

Client ID: PP-13 (2-4) Instrument: 10gcs9.i

Sample Information: 10300830013

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs9.i\040115dro.b/040115000007.D

Report Date: 04/01/2015

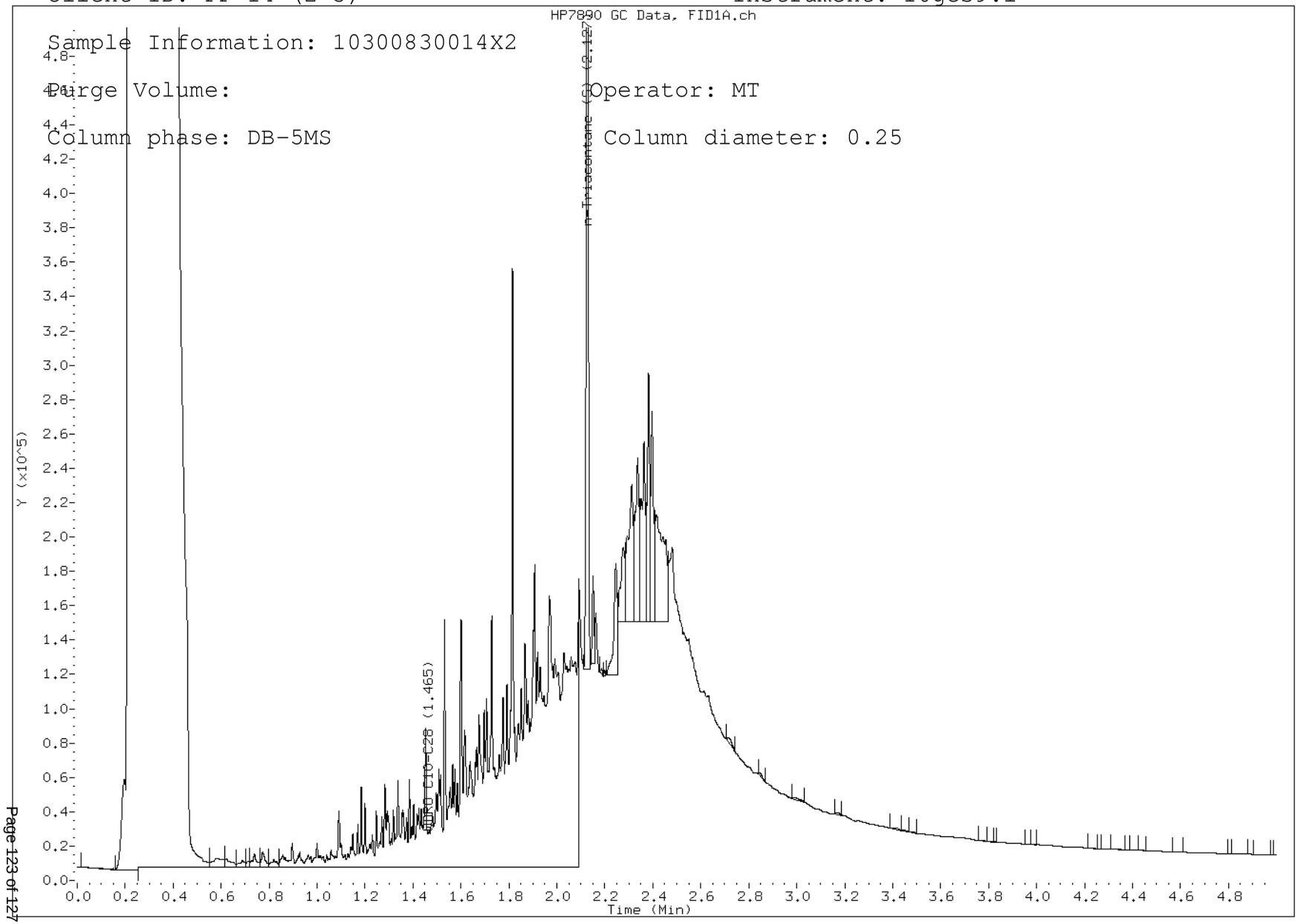
Sample ID: 10300830014

Client ID: PP-14 (2-3) Instrument: 10gcs9.i

Sample Information: 10300830014X2

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25

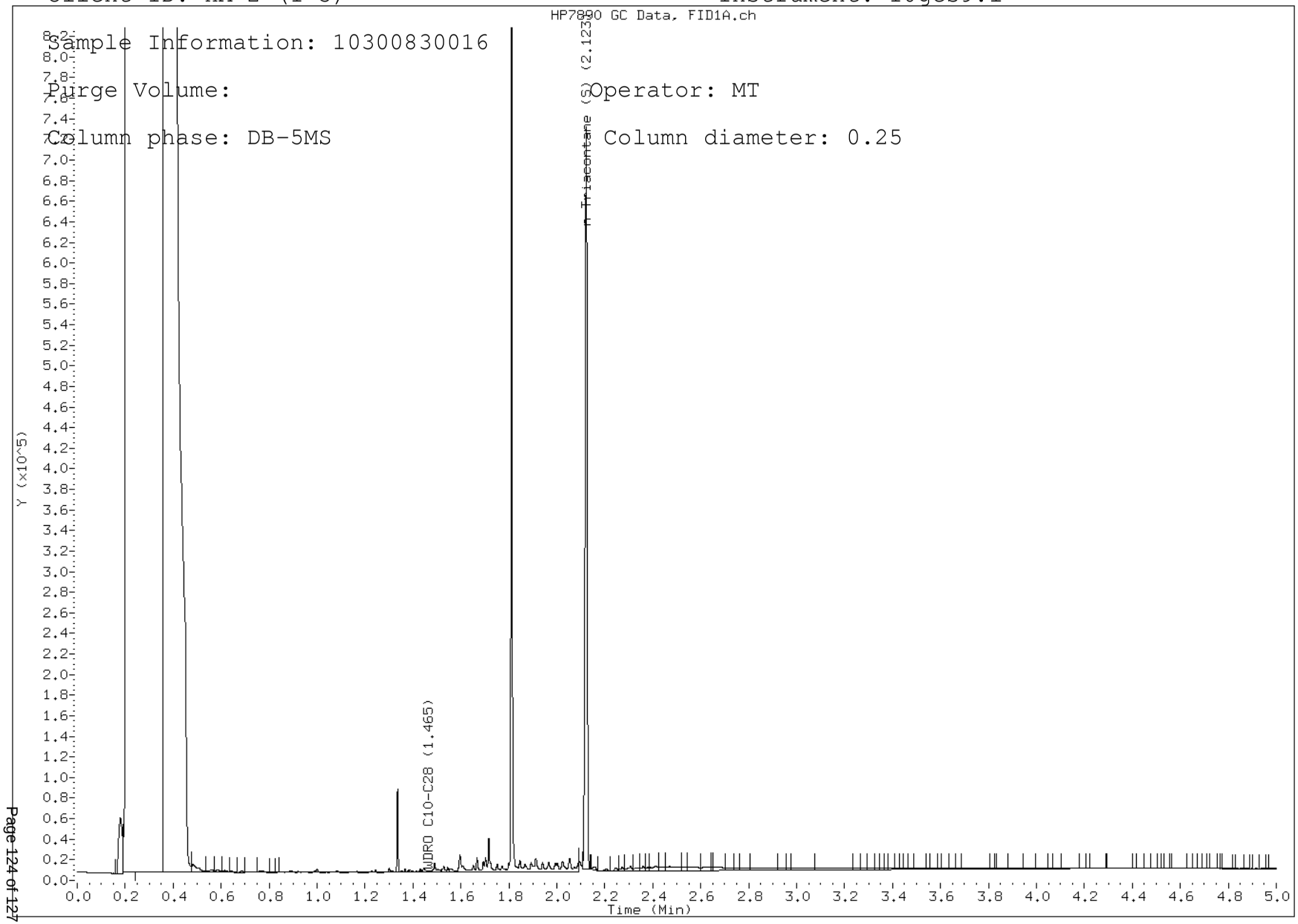


Data File: \\192.168.10.12\chem\10gcs9.i\033115dro.b/033115000049.D

Report Date: 04/01/2015

Sample ID: 10300830016

Client ID: HA-2 (1-3) Instrument: 10gcs9.i



Data File: \\192.168.10.12\chem\10gcs4.i\040115dro.b/04010017.D

Report Date: 04/02/2015

Sample ID: 10300830018

Client ID: PP-8W

Instrument: 10gcs4.i

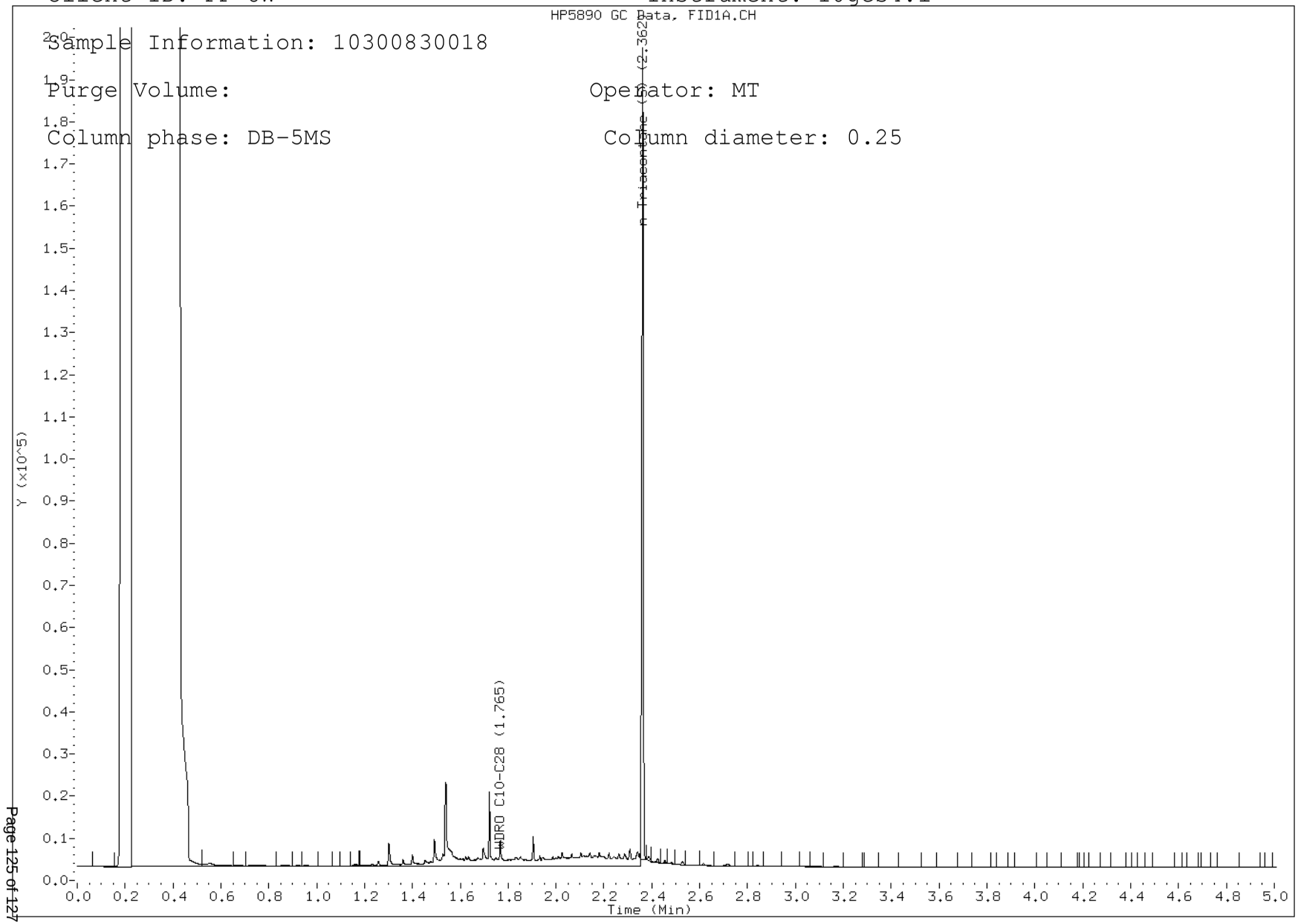
Sample Information: 10300830018

Purge Volume:

Operator: MT

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs4.i\040115dro.b/04010018.D

Report Date: 04/02/2015

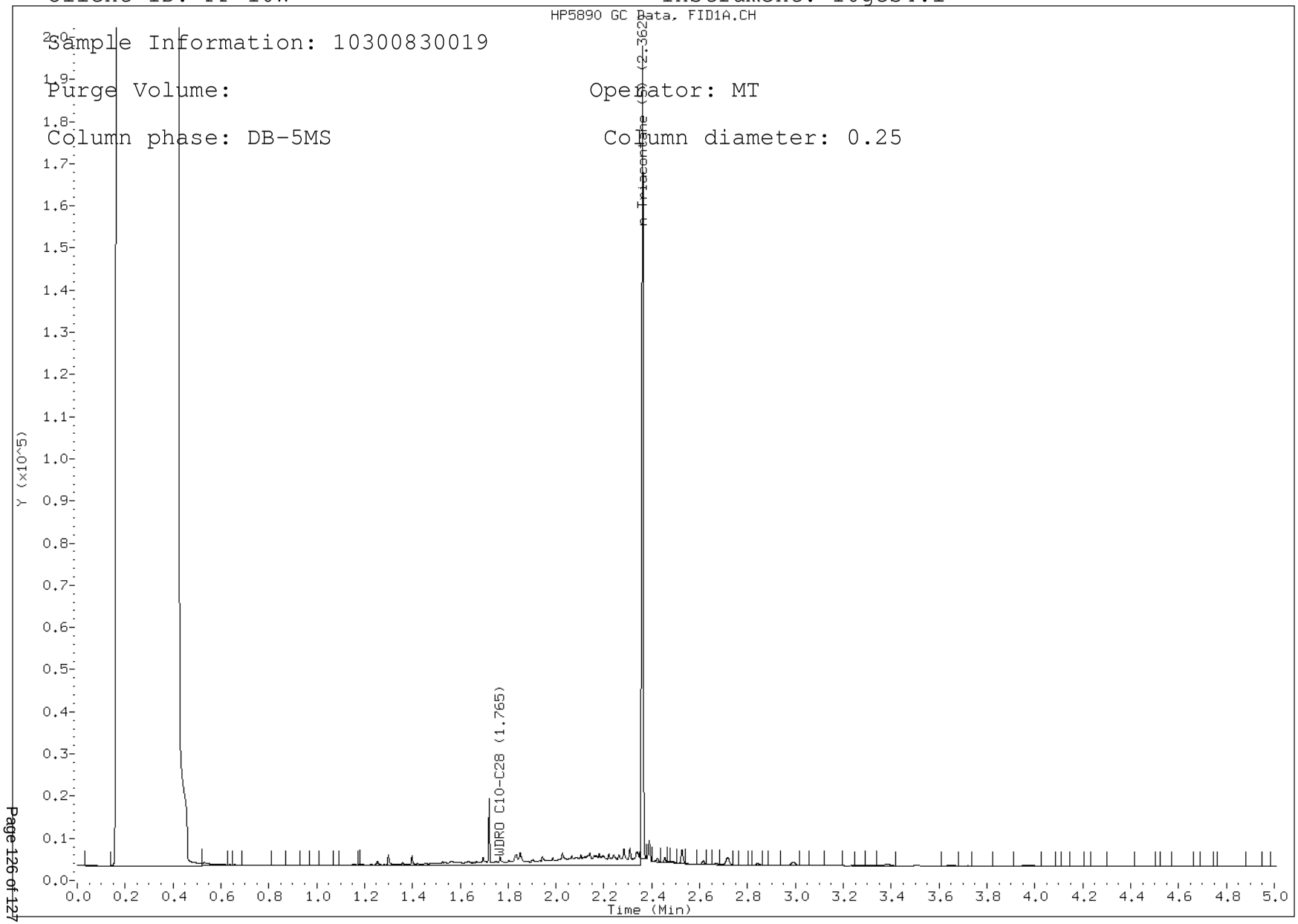
Sample ID: 10300830019

Client ID: PP-10W Instrument: 10gcs4.i

Sample Information: 10300830019

Purge Volume: Operator: MT

Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcs4.i\040115dro.b/04010025.D

Report Date: 04/02/2015

Sample ID: 10300830020

Client ID: HA-W

Instrument: 10gcs4.i

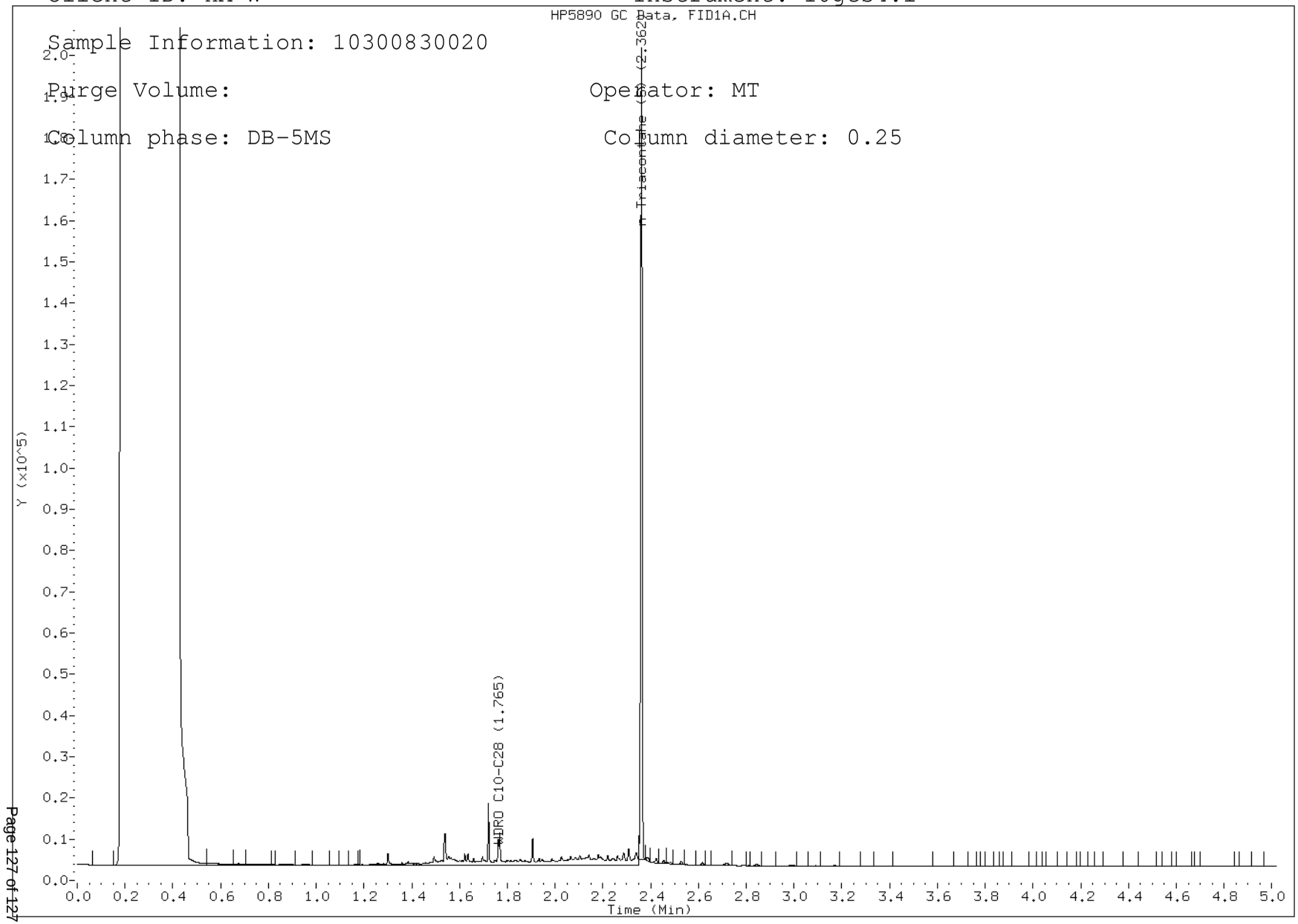
Sample Information: 10300830020

Purge Volume:

Operator: MT

Column phase: DB-5MS

Column diameter: 0.25



Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 02, 2015

Jeremy Hansen
Braun Intertec Corp.
11001 Hampshire Ave S
Minneapolis, MN 55438

RE: Project: B1500394 Roof Depot
Pace Project No.: 10300700

Dear Jeremy Hansen:
Enclosed are the analytical results for sample(s) received by the laboratory on March 26, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nathan Boberg
nathan.boberg@pacelabs.com
Project Manager

Enclosures

cc: Accounts Payable

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10300700001	**SV-1**	Air	03/25/15 13:15	03/26/15 12:10
10300700002	**SV-2**	Air	03/25/15 10:45	03/26/15 12:10
10300700003	**SSV-1**	Air	03/25/15 14:26	03/26/15 12:10
10300700004	**SSV-2**	Air	03/25/15 10:33	03/26/15 12:10
10300700005	**SSV-3**	Air	03/25/15 11:52	03/26/15 12:10

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10300700001	**SV-1**	TO-15	MLS	81
10300700002	**SV-2**	TO-15	MLS	81
10300700003	**SSV-1**	TO-15	MLS	80
10300700004	**SSV-2**	TO-15	MLS	81
10300700005	**SSV-3**	TO-15	MLS	81

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SV-1 **Lab ID: 10300700001** Collected: 03/25/15 13:15 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Acetone	**37.4**	ug/m3	3.2	1.34		03/30/15 21:20	67-64-1	L2
Benzene	**5.6**	ug/m3	0.44	1.34		03/30/15 21:20	71-43-2	
Benzyl chloride	ND	ug/m3	1.4	1.34		03/30/15 21:20	100-44-7	
Bromodichloromethane	ND	ug/m3	1.8	1.34		03/30/15 21:20	75-27-4	
Bromoform	ND	ug/m3	2.8	1.34		03/30/15 21:20	75-25-2	
Bromomethane	ND	ug/m3	1.1	1.34		03/30/15 21:20	74-83-9	
1,3-Butadiene	ND	ug/m3	0.60	1.34		03/30/15 21:20	106-99-0	
2-Butanone (MEK)	**12.6**	ug/m3	0.80	1.34		03/30/15 21:20	78-93-3	
Carbon disulfide	**0.88**	ug/m3	0.84	1.34		03/30/15 21:20	75-15-0	
Carbon tetrachloride	ND	ug/m3	0.86	1.34		03/30/15 21:20	56-23-5	
Chlorobenzene	ND	ug/m3	1.3	1.34		03/30/15 21:20	108-90-7	
Chloroethane	ND	ug/m3	0.72	1.34		03/30/15 21:20	75-00-3	
Chloroform	ND	ug/m3	0.66	1.34		03/30/15 21:20	67-66-3	
Chloromethane	**0.90**	ug/m3	0.56	1.34		03/30/15 21:20	74-87-3	
Cyclohexane	**2.8**	ug/m3	0.94	1.34		03/30/15 21:20	110-82-7	
Dibromochloromethane	ND	ug/m3	2.3	1.34		03/30/15 21:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.1	1.34		03/30/15 21:20	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.6	1.34		03/30/15 21:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.6	1.34		03/30/15 21:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.6	1.34		03/30/15 21:20	106-46-7	
Dichlorodifluoromethane	**2.1**	ug/m3	1.4	1.34		03/30/15 21:20	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.1	1.34		03/30/15 21:20	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.55	1.34		03/30/15 21:20	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.1	1.34		03/30/15 21:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	2.7	1.34		03/30/15 21:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.1	1.34		03/30/15 21:20	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.3	1.34		03/30/15 21:20	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.2	1.34		03/30/15 21:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.2	1.34		03/30/15 21:20	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	1.9	1.34		03/30/15 21:20	76-14-2	
Ethanol	**14.1**	ug/m3	1.3	1.34		03/30/15 21:20	64-17-5	
Ethyl acetate	ND	ug/m3	0.98	1.34		03/30/15 21:20	141-78-6	
Ethylbenzene	**2.3**	ug/m3	1.2	1.34		03/30/15 21:20	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.3	1.34		03/30/15 21:20	622-96-8	
n-Heptane	**9.4**	ug/m3	1.1	1.34		03/30/15 21:20	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	2.9	1.34		03/30/15 21:20	87-68-3	
n-Hexane	**10.2**	ug/m3	0.96	1.34		03/30/15 21:20	110-54-3	
2-Hexanone	ND	ug/m3	1.1	1.34		03/30/15 21:20	591-78-6	
Methylene Chloride	ND	ug/m3	4.7	1.34		03/30/15 21:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	2.8	1.34		03/30/15 21:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	0.98	1.34		03/30/15 21:20	1634-04-4	
Naphthalene	ND	ug/m3	3.6	1.34		03/30/15 21:20	91-20-3	
2-Propanol	ND	ug/m3	1.7	1.34		03/30/15 21:20	67-63-0	
Propylene	**37.3**	ug/m3	0.47	1.34		03/30/15 21:20	115-07-1	E
Styrene	ND	ug/m3	2.9	1.34		03/30/15 21:20	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	0.94	1.34		03/30/15 21:20	79-34-5	
Tetrachloroethene	ND	ug/m3	0.92	1.34		03/30/15 21:20	127-18-4	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SV-1 **Lab ID: 10300700001** Collected: 03/25/15 13:15 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Tetrahydrofuran	ND	ug/m3	0.80	1.34		03/30/15 21:20	109-99-9	
Toluene	**11.2**	ug/m3	1.0	1.34		03/30/15 21:20	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	2.0	1.34		03/30/15 21:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	0.94	1.34		03/30/15 21:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.74	1.34		03/30/15 21:20	79-00-5	
Trichloroethene	ND	ug/m3	0.73	1.34		03/30/15 21:20	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1.5	1.34		03/30/15 21:20	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2.1	1.34		03/30/15 21:20	76-13-1	
1,2,4-Trimethylbenzene	**2.0**	ug/m3	1.3	1.34		03/30/15 21:20	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.3	1.34		03/30/15 21:20	108-67-8	
Vinyl acetate	ND	ug/m3	0.96	1.34		03/30/15 21:20	108-05-4	
Vinyl chloride	ND	ug/m3	0.35	1.34		03/30/15 21:20	75-01-4	
m&p-Xylene	**5.9**	ug/m3	2.4	1.34		03/30/15 21:20	179601-23-1	
o-Xylene	**2.0**	ug/m3	1.2	1.34		03/30/15 21:20	95-47-6	
Tentatively Identified Compounds								
Unknown	**135**	ppbv		1.34		03/30/15 21:20		N
Unknown	**146**	ppbv		1.34		03/30/15 21:20		N
Cyclopropane, 1,1-dimeth	**2.4**	ppbv		1.34		03/30/15 21:20	1630-94-0	N
Pentane, 2-methyl-	**0.69**	ppbv		1.34		03/30/15 21:20	107-83-5	N
Unknown	**0.93**	ppbv		1.34		03/30/15 21:20		N
Unknown	**1.7**	ppbv		1.34		03/30/15 21:20		N
Heptane, 3-methylene-	**2.0**	ppbv		1.34		03/30/15 21:20	1632-16-2	N
Unknown	**5.3**	ppbv		1.34		03/30/15 21:20		N
Undecane, 3-methylene-	**0.95**	ppbv		1.34		03/30/15 21:20	71138-64-2	N
Unknown	**0.16**	ppbv		1.34		03/30/15 21:20		N
Unknown	**0.071**	ppbv		1.34		03/30/15 21:20		N
Unknown	**0.087**	ppbv		1.34		03/30/15 21:20		N
Nonane, 3-methylene-	**0.16**	ppbv		1.34		03/30/15 21:20	51655-64-2	N
2-Decene, (Z)-	**1.8**	ppbv		1.34		03/30/15 21:20	20348-51-0	N
Decane	**2.2**	ppbv		1.34		03/30/15 21:20	124-18-5	N
Unknown	**0.69**	ppbv		1.34		03/30/15 21:20		N
Unknown	**0.60**	ppbv		1.34		03/30/15 21:20		N
Unknown	**1.0**	ppbv		1.34		03/30/15 21:20		N
Unknown	**0.64**	ppbv		1.34		03/30/15 21:20		N
Undecane, 3-methyl-	**0.54**	ppbv		1.34		03/30/15 21:20	1002-43-3	N

Sample: SV-2 **Lab ID: 10300700002** Collected: 03/25/15 10:45 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Acetone	**24.3**	ug/m3	3.2	1.34		03/30/15 22:16	67-64-1	L2
Benzene	**4.2**	ug/m3	0.44	1.34		03/30/15 22:16	71-43-2	
Benzyl chloride	ND	ug/m3	1.4	1.34		03/30/15 22:16	100-44-7	
Bromodichloromethane	ND	ug/m3	1.8	1.34		03/30/15 22:16	75-27-4	
Bromoform	ND	ug/m3	2.8	1.34		03/30/15 22:16	75-25-2	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SV-2 **Lab ID: 10300700002** Collected: 03/25/15 10:45 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Bromomethane	ND	ug/m3	1.1	1.34		03/30/15 22:16	74-83-9	
1,3-Butadiene	ND	ug/m3	0.60	1.34		03/30/15 22:16	106-99-0	
2-Butanone (MEK)	**10.4**	ug/m3	0.80	1.34		03/30/15 22:16	78-93-3	
Carbon disulfide	**2.6**	ug/m3	0.84	1.34		03/30/15 22:16	75-15-0	
Carbon tetrachloride	ND	ug/m3	0.86	1.34		03/30/15 22:16	56-23-5	
Chlorobenzene	ND	ug/m3	1.3	1.34		03/30/15 22:16	108-90-7	
Chloroethane	ND	ug/m3	0.72	1.34		03/30/15 22:16	75-00-3	
Chloroform	ND	ug/m3	0.66	1.34		03/30/15 22:16	67-66-3	
Chloromethane	ND	ug/m3	0.56	1.34		03/30/15 22:16	74-87-3	
Cyclohexane	**3.1**	ug/m3	0.94	1.34		03/30/15 22:16	110-82-7	
Dibromochloromethane	ND	ug/m3	2.3	1.34		03/30/15 22:16	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.1	1.34		03/30/15 22:16	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.6	1.34		03/30/15 22:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.6	1.34		03/30/15 22:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.6	1.34		03/30/15 22:16	106-46-7	
Dichlorodifluoromethane	**2.1**	ug/m3	1.4	1.34		03/30/15 22:16	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.1	1.34		03/30/15 22:16	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.55	1.34		03/30/15 22:16	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.1	1.34		03/30/15 22:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	2.7	1.34		03/30/15 22:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.1	1.34		03/30/15 22:16	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.3	1.34		03/30/15 22:16	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.2	1.34		03/30/15 22:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.2	1.34		03/30/15 22:16	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	1.9	1.34		03/30/15 22:16	76-14-2	
Ethanol	**6.1**	ug/m3	1.3	1.34		03/30/15 22:16	64-17-5	
Ethyl acetate	ND	ug/m3	0.98	1.34		03/30/15 22:16	141-78-6	
Ethylbenzene	**3.2**	ug/m3	1.2	1.34		03/30/15 22:16	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.3	1.34		03/30/15 22:16	622-96-8	
n-Heptane	**10.0**	ug/m3	1.1	1.34		03/30/15 22:16	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	2.9	1.34		03/30/15 22:16	87-68-3	
n-Hexane	**10.7**	ug/m3	0.96	1.34		03/30/15 22:16	110-54-3	
2-Hexanone	ND	ug/m3	1.1	1.34		03/30/15 22:16	591-78-6	
Methylene Chloride	ND	ug/m3	4.7	1.34		03/30/15 22:16	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	2.8	1.34		03/30/15 22:16	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	0.98	1.34		03/30/15 22:16	1634-04-4	
Naphthalene	ND	ug/m3	3.6	1.34		03/30/15 22:16	91-20-3	
2-Propanol	ND	ug/m3	1.7	1.34		03/30/15 22:16	67-63-0	
Propylene	**38.2**	ug/m3	0.47	1.34		03/30/15 22:16	115-07-1	
Styrene	ND	ug/m3	2.9	1.34		03/30/15 22:16	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	0.94	1.34		03/30/15 22:16	79-34-5	
Tetrachloroethene	ND	ug/m3	0.92	1.34		03/30/15 22:16	127-18-4	
Tetrahydrofuran	ND	ug/m3	0.80	1.34		03/30/15 22:16	109-99-9	
Toluene	**9.8**	ug/m3	1.0	1.34		03/30/15 22:16	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	2.0	1.34		03/30/15 22:16	120-82-1	
1,1,1-Trichloroethane	**2.0**	ug/m3	0.94	1.34		03/30/15 22:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.74	1.34		03/30/15 22:16	79-00-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SV-2 **Lab ID: 10300700002** Collected: 03/25/15 10:45 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Trichloroethene	ND	ug/m3	0.73	1.34		03/30/15 22:16	79-01-6	
Trichlorofluoromethane	**1.7**	ug/m3	1.5	1.34		03/30/15 22:16	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2.1	1.34		03/30/15 22:16	76-13-1	
1,2,4-Trimethylbenzene	**2.7**	ug/m3	1.3	1.34		03/30/15 22:16	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.3	1.34		03/30/15 22:16	108-67-8	
Vinyl acetate	ND	ug/m3	0.96	1.34		03/30/15 22:16	108-05-4	
Vinyl chloride	ND	ug/m3	0.35	1.34		03/30/15 22:16	75-01-4	
m&p-Xylene	**7.7**	ug/m3	2.4	1.34		03/30/15 22:16	179601-23-1	
o-Xylene	**2.6**	ug/m3	1.2	1.34		03/30/15 22:16	95-47-6	
Tentatively Identified Compounds								
Unknown	**149**	ppbv		1.34		03/30/15 22:16		N
Unknown	**0.41**	ppbv		1.34		03/30/15 22:16		N
Pentane, 2-methyl-	**2.0**	ppbv		1.34		03/30/15 22:16	107-83-5	N
Unknown	**3.0**	ppbv		1.34		03/30/15 22:16		N
Unknown	**0.66**	ppbv		1.34		03/30/15 22:16		N
Unknown	**1.8**	ppbv		1.34		03/30/15 22:16		N
Heptane, 3-methylene-	**2.9**	ppbv		1.34		03/30/15 22:16	1632-16-2	N
Unknown	**2.9**	ppbv		1.34		03/30/15 22:16		N
Cyclotrisiloxane, hexame	**1.2**	ppbv		1.34		03/30/15 22:16	541-05-9	N
Unknown	**1.2**	ppbv		1.34		03/30/15 22:16		N
Unknown	**0.31**	ppbv		1.34		03/30/15 22:16		N
Unknown	**0.12**	ppbv		1.34		03/30/15 22:16		N
Unknown	**0.14**	ppbv		1.34		03/30/15 22:16		N
Nonane, 3-methylene-	**0.81**	ppbv		1.34		03/30/15 22:16	51655-64-2	N
1-Decene	**1.2**	ppbv		1.34		03/30/15 22:16	872-05-9	N
Decane	**1.7**	ppbv		1.34		03/30/15 22:16	124-18-5	N
1,4-Cyclohexadiene, 1-m	**0.52**	ppbv		1.34		03/30/15 22:16	99-85-4	N
Dodecane, 2,6,10-trimet	**0.36**	ppbv		1.34		03/30/15 22:16	3891-98-3	N
Unknown	**0.45**	ppbv		1.34		03/30/15 22:16		N
Unknown	**0.56**	ppbv		1.34		03/30/15 22:16		N

Sample: SSV-1 **Lab ID: 10300700003** Collected: 03/25/15 14:26 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Acetone	**24.6**	ug/m3	3.7	1.55		03/30/15 20:53	67-64-1	L2
Benzene	**1.0**	ug/m3	0.50	1.55		03/30/15 20:53	71-43-2	
Benzyl chloride	ND	ug/m3	1.6	1.55		03/30/15 20:53	100-44-7	
Bromodichloromethane	ND	ug/m3	2.1	1.55		03/30/15 20:53	75-27-4	
Bromoform	ND	ug/m3	3.3	1.55		03/30/15 20:53	75-25-2	
Bromomethane	ND	ug/m3	1.2	1.55		03/30/15 20:53	74-83-9	
1,3-Butadiene	ND	ug/m3	0.70	1.55		03/30/15 20:53	106-99-0	
2-Butanone (MEK)	**8.4**	ug/m3	0.93	1.55		03/30/15 20:53	78-93-3	
Carbon disulfide	**5.1**	ug/m3	0.98	1.55		03/30/15 20:53	75-15-0	
Carbon tetrachloride	ND	ug/m3	0.99	1.55		03/30/15 20:53	56-23-5	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SSV-1 **Lab ID: 10300700003** Collected: 03/25/15 14:26 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Chlorobenzene	ND	ug/m3	1.5	1.55		03/30/15 20:53	108-90-7	
Chloroethane	ND	ug/m3	0.84	1.55		03/30/15 20:53	75-00-3	
Chloroform	ND	ug/m3	0.77	1.55		03/30/15 20:53	67-66-3	
Chloromethane	ND	ug/m3	0.65	1.55		03/30/15 20:53	74-87-3	
Cyclohexane	**3.8**	ug/m3	1.1	1.55		03/30/15 20:53	110-82-7	
Dibromochloromethane	ND	ug/m3	2.7	1.55		03/30/15 20:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.4	1.55		03/30/15 20:53	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.9	1.55		03/30/15 20:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.9	1.55		03/30/15 20:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.9	1.55		03/30/15 20:53	106-46-7	
Dichlorodifluoromethane	**11.8**	ug/m3	1.6	1.55		03/30/15 20:53	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.3	1.55		03/30/15 20:53	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.64	1.55		03/30/15 20:53	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.3	1.55		03/30/15 20:53	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	3.1	1.55		03/30/15 20:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.3	1.55		03/30/15 20:53	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.5	1.55		03/30/15 20:53	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.4	1.55		03/30/15 20:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.4	1.55		03/30/15 20:53	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	2.2	1.55		03/30/15 20:53	76-14-2	
Ethanol	**9.3**	ug/m3	1.5	1.55		03/30/15 20:53	64-17-5	
Ethyl acetate	ND	ug/m3	1.1	1.55		03/30/15 20:53	141-78-6	
Ethylbenzene	ND	ug/m3	1.4	1.55		03/30/15 20:53	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.6	1.55		03/30/15 20:53	622-96-8	
n-Heptane	ND	ug/m3	1.3	1.55		03/30/15 20:53	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	3.4	1.55		03/30/15 20:53	87-68-3	
n-Hexane	**1.2**	ug/m3	1.1	1.55		03/30/15 20:53	110-54-3	
2-Hexanone	ND	ug/m3	1.3	1.55		03/30/15 20:53	591-78-6	
Methylene Chloride	ND	ug/m3	5.5	1.55		03/30/15 20:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	3.2	1.55		03/30/15 20:53	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	1.1	1.55		03/30/15 20:53	1634-04-4	
Naphthalene	ND	ug/m3	4.1	1.55		03/30/15 20:53	91-20-3	
2-Propanol	**4.7**	ug/m3	1.9	1.55		03/30/15 20:53	67-63-0	
Propylene	ND	ug/m3	0.54	1.55		03/30/15 20:53	115-07-1	
Styrene	ND	ug/m3	3.4	1.55		03/30/15 20:53	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	1.1	1.55		03/30/15 20:53	79-34-5	
Tetrachloroethene	**1.8**	ug/m3	1.1	1.55		03/30/15 20:53	127-18-4	
Tetrahydrofuran	ND	ug/m3	0.93	1.55		03/30/15 20:53	109-99-9	
Toluene	**3.7**	ug/m3	1.2	1.55		03/30/15 20:53	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	2.3	1.55		03/30/15 20:53	120-82-1	
1,1,1-Trichloroethane	**78.2**	ug/m3	1.1	1.55		03/30/15 20:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.86	1.55		03/30/15 20:53	79-00-5	
Trichloroethene	ND	ug/m3	0.85	1.55		03/30/15 20:53	79-01-6	
Trichlorofluoromethane	**13.9**	ug/m3	1.8	1.55		03/30/15 20:53	75-69-4	
1,1,2-Trichlorotrifluoroethane	**3.7**	ug/m3	2.5	1.55		03/30/15 20:53	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/m3	1.5	1.55		03/30/15 20:53	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.5	1.55		03/30/15 20:53	108-67-8	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SSV-1 **Lab ID: 10300700003** Collected: 03/25/15 14:26 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Vinyl acetate	ND	ug/m3	1.1	1.55		03/30/15 20:53	108-05-4	
Vinyl chloride	ND	ug/m3	0.40	1.55		03/30/15 20:53	75-01-4	
m&p-Xylene	ND	ug/m3	2.7	1.55		03/30/15 20:53	179601-23-1	
o-Xylene	ND	ug/m3	1.4	1.55		03/30/15 20:53	95-47-6	
Tentatively Identified Compounds								
Unknown	**0.46**	ppbv		1.55		03/30/15 20:53		N
Acetaldehyde	**47.0**	ppbv		1.55		03/30/15 20:53	75-07-0	N
Pentane, 2-methyl-	**0.86**	ppbv		1.55		03/30/15 20:53	107-83-5	N
Unknown	**0.32**	ppbv		1.55		03/30/15 20:53		N
Cyclopentane, methyl-	**0.78**	ppbv		1.55		03/30/15 20:53	96-37-7	N
Unknown	**0.34**	ppbv		1.55		03/30/15 20:53		N
Pentanal	**3.1**	ppbv		1.55		03/30/15 20:53	110-62-3	N
Unknown	**0.19**	ppbv		1.55		03/30/15 20:53		N
Cyclohexane, 1,4-dimethy	**0.54**	ppbv		1.55		03/30/15 20:53	624-29-3	N
Hexanal	**1.1**	ppbv		1.55		03/30/15 20:53	66-25-1	N
Cyclotrisiloxane, hexame	**0.73**	ppbv		1.55		03/30/15 20:53	541-05-9	N
Unknown	**0.36**	ppbv		1.55		03/30/15 20:53		N
Heptanal	**0.53**	ppbv		1.55		03/30/15 20:53	111-71-7	N
Unknown	**0.12**	ppbv		1.55		03/30/15 20:53		N
Unknown	**0.40**	ppbv		1.55		03/30/15 20:53		N
Unknown	**2.6**	ppbv		1.55		03/30/15 20:53		N
Unknown	**2.3**	ppbv		1.55		03/30/15 20:53		N
Unknown	**0.74**	ppbv		1.55		03/30/15 20:53		N
Unknown	**0.38**	ppbv		1.55		03/30/15 20:53		N

Sample: SSV-2 **Lab ID: 10300700004** Collected: 03/25/15 10:33 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Acetone	**80.9**	ug/m3	18.0	7.45		03/31/15 16:15	67-64-1	L2
Benzene	**2.9**	ug/m3	0.48	1.49		03/30/15 20:25	71-43-2	
Benzyl chloride	ND	ug/m3	1.6	1.49		03/30/15 20:25	100-44-7	
Bromodichloromethane	ND	ug/m3	2.0	1.49		03/30/15 20:25	75-27-4	
Bromoform	ND	ug/m3	3.1	1.49		03/30/15 20:25	75-25-2	
Bromomethane	ND	ug/m3	1.2	1.49		03/30/15 20:25	74-83-9	
1,3-Butadiene	ND	ug/m3	0.67	1.49		03/30/15 20:25	106-99-0	
2-Butanone (MEK)	**22.6**	ug/m3	0.89	1.49		03/30/15 20:25	78-93-3	
Carbon disulfide	**9.3**	ug/m3	0.94	1.49		03/30/15 20:25	75-15-0	
Carbon tetrachloride	ND	ug/m3	0.95	1.49		03/30/15 20:25	56-23-5	
Chlorobenzene	ND	ug/m3	1.4	1.49		03/30/15 20:25	108-90-7	
Chloroethane	ND	ug/m3	0.80	1.49		03/30/15 20:25	75-00-3	
Chloroform	ND	ug/m3	0.74	1.49		03/30/15 20:25	67-66-3	
Chloromethane	ND	ug/m3	0.63	1.49		03/30/15 20:25	74-87-3	
Cyclohexane	**15.3**	ug/m3	1.0	1.49		03/30/15 20:25	110-82-7	
Dibromochloromethane	ND	ug/m3	2.6	1.49		03/30/15 20:25	124-48-1	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SSV-2 **Lab ID: 10300700004** Collected: 03/25/15 10:33 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
1,2-Dibromoethane (EDB)	ND	ug/m3	2.3	1.49		03/30/15 20:25	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.8	1.49		03/30/15 20:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.8	1.49		03/30/15 20:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.8	1.49		03/30/15 20:25	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	1.5	1.49		03/30/15 20:25	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.2	1.49		03/30/15 20:25	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.61	1.49		03/30/15 20:25	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.2	1.49		03/30/15 20:25	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	3.0	1.49		03/30/15 20:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.2	1.49		03/30/15 20:25	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.4	1.49		03/30/15 20:25	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.4	1.49		03/30/15 20:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.4	1.49		03/30/15 20:25	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	2.1	1.49		03/30/15 20:25	76-14-2	
Ethanol	**20.2**	ug/m3	1.4	1.49		03/30/15 20:25	64-17-5	
Ethyl acetate	**7.4**	ug/m3	1.1	1.49		03/30/15 20:25	141-78-6	
Ethylbenzene	**2.4**	ug/m3	1.3	1.49		03/30/15 20:25	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.5	1.49		03/30/15 20:25	622-96-8	
n-Heptane	**10.1**	ug/m3	1.2	1.49		03/30/15 20:25	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	3.3	1.49		03/30/15 20:25	87-68-3	
n-Hexane	**35.7**	ug/m3	1.1	1.49		03/30/15 20:25	110-54-3	
2-Hexanone	ND	ug/m3	1.2	1.49		03/30/15 20:25	591-78-6	
Methylene Chloride	**32.0**	ug/m3	5.3	1.49		03/30/15 20:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	3.1	1.49		03/30/15 20:25	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	1.1	1.49		03/30/15 20:25	1634-04-4	
Naphthalene	ND	ug/m3	4.0	1.49		03/30/15 20:25	91-20-3	
2-Propanol	ND	ug/m3	1.9	1.49		03/30/15 20:25	67-63-0	
Propylene	**30.5**	ug/m3	2.6	7.45		03/31/15 16:15	115-07-1	
Styrene	ND	ug/m3	3.2	1.49		03/30/15 20:25	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	1.0	1.49		03/30/15 20:25	79-34-5	
Tetrachloroethene	ND	ug/m3	1.0	1.49		03/30/15 20:25	127-18-4	
Tetrahydrofuran	ND	ug/m3	0.89	1.49		03/30/15 20:25	109-99-9	
Toluene	**52.0**	ug/m3	5.7	7.45		03/31/15 16:15	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	2.2	1.49		03/30/15 20:25	120-82-1	
1,1,1-Trichloroethane	**2.9**	ug/m3	1.0	1.49		03/30/15 20:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.83	1.49		03/30/15 20:25	79-00-5	
Trichloroethene	ND	ug/m3	0.81	1.49		03/30/15 20:25	79-01-6	
Trichlorofluoromethane	**27.3**	ug/m3	1.7	1.49		03/30/15 20:25	75-69-4	
1,1,2-Trichlorotrifluoroethane	**6.4**	ug/m3	2.4	1.49		03/30/15 20:25	76-13-1	
1,2,4-Trimethylbenzene	**2.1**	ug/m3	1.5	1.49		03/30/15 20:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.5	1.49		03/30/15 20:25	108-67-8	
Vinyl acetate	ND	ug/m3	1.1	1.49		03/30/15 20:25	108-05-4	
Vinyl chloride	ND	ug/m3	0.39	1.49		03/30/15 20:25	75-01-4	
m&p-Xylene	**9.4**	ug/m3	2.6	1.49		03/30/15 20:25	179601-23-1	
o-Xylene	**3.2**	ug/m3	1.3	1.49		03/30/15 20:25	95-47-6	
Tentatively Identified Compounds								
Unknown	**13.4**	ppbv		1.49		03/30/15 20:25		N

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SSV-2 **Lab ID: 10300700004** Collected: 03/25/15 10:33 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Tentatively Identified Compounds								
Unknown	**0.63**	ppbv		1.49		03/30/15 20:25		N
Pentane, 2-methyl-	**7.2**	ppbv		1.49		03/30/15 20:25	107-83-5	N
Cyclopentane, methyl-	**2.6**	ppbv		1.49		03/30/15 20:25	96-37-7	N
Hexane, 2-methyl-	**0.34**	ppbv		1.49		03/30/15 20:25	591-76-4	N
Unknown	**0.43**	ppbv		1.49		03/30/15 20:25		N
Cyclohexane, 1,3-dimethy	**0.53**	ppbv		1.49		03/30/15 20:25	638-04-0	N
Unknown	**0.96**	ppbv		1.49		03/30/15 20:25		N
Cyclotrisiloxane, hexame	**0.74**	ppbv		1.49		03/30/15 20:25	541-05-9	N
Unknown	**0.97**	ppbv		1.49		03/30/15 20:25		N
Cyclohexane, 1,1,3-trime	**1.6**	ppbv		1.49		03/30/15 20:25	3073-66-3	N
.alpha.-Pinene	**3.3**	ppbv		1.49		03/30/15 20:25	80-56-8	N
Unknown	**0.46**	ppbv		1.49		03/30/15 20:25		N
Benzene, 1-ethyl-2-methy	**0.51**	ppbv		1.49		03/30/15 20:25	611-14-3	N
Bicyclo[3.1.1]heptane,	**0.90**	ppbv		1.49		03/30/15 20:25	18172-67-3	N
Decane	**0.96**	ppbv		1.49		03/30/15 20:25	124-18-5	N
Unknown	**2.3**	ppbv		1.49		03/30/15 20:25		N
Unknown	**2.6**	ppbv		1.49		03/30/15 20:25		N
Dodecane	**3.8**	ppbv		1.49		03/30/15 20:25	112-40-3	N
Dodecane	**3.1**	ppbv		1.49		03/30/15 20:25	112-40-3	N

Sample: SSV-3 **Lab ID: 10300700005** Collected: 03/25/15 11:52 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Acetone	**32.4**	ug/m3	3.0	1.26		03/30/15 21:48	67-64-1	L2
Benzene	**0.98**	ug/m3	0.41	1.26		03/30/15 21:48	71-43-2	
Benzyl chloride	ND	ug/m3	1.3	1.26		03/30/15 21:48	100-44-7	
Bromodichloromethane	ND	ug/m3	1.7	1.26		03/30/15 21:48	75-27-4	
Bromoform	ND	ug/m3	2.6	1.26		03/30/15 21:48	75-25-2	
Bromomethane	ND	ug/m3	1.0	1.26		03/30/15 21:48	74-83-9	
1,3-Butadiene	ND	ug/m3	0.57	1.26		03/30/15 21:48	106-99-0	
2-Butanone (MEK)	**10.1**	ug/m3	0.76	1.26		03/30/15 21:48	78-93-3	
Carbon disulfide	**4.8**	ug/m3	0.79	1.26		03/30/15 21:48	75-15-0	
Carbon tetrachloride	ND	ug/m3	0.81	1.26		03/30/15 21:48	56-23-5	
Chlorobenzene	ND	ug/m3	1.2	1.26		03/30/15 21:48	108-90-7	
Chloroethane	ND	ug/m3	0.68	1.26		03/30/15 21:48	75-00-3	
Chloroform	ND	ug/m3	0.62	1.26		03/30/15 21:48	67-66-3	
Chloromethane	ND	ug/m3	0.53	1.26		03/30/15 21:48	74-87-3	
Cyclohexane	**5.4**	ug/m3	0.88	1.26		03/30/15 21:48	110-82-7	
Dibromochloromethane	ND	ug/m3	2.2	1.26		03/30/15 21:48	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.0	1.26		03/30/15 21:48	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.5	1.26		03/30/15 21:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.5	1.26		03/30/15 21:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.5	1.26		03/30/15 21:48	106-46-7	

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SSV-3 **Lab ID: 10300700005** Collected: 03/25/15 11:52 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Dichlorodifluoromethane	**2.5**	ug/m3	1.3	1.26		03/30/15 21:48	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.0	1.26		03/30/15 21:48	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.52	1.26		03/30/15 21:48	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.0	1.26		03/30/15 21:48	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	2.5	1.26		03/30/15 21:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.0	1.26		03/30/15 21:48	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.2	1.26		03/30/15 21:48	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.2	1.26		03/30/15 21:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.2	1.26		03/30/15 21:48	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	1.8	1.26		03/30/15 21:48	76-14-2	
Ethanol	**6.6**	ug/m3	1.2	1.26		03/30/15 21:48	64-17-5	
Ethyl acetate	**2.5**	ug/m3	0.92	1.26		03/30/15 21:48	141-78-6	
Ethylbenzene	ND	ug/m3	1.1	1.26		03/30/15 21:48	100-41-4	
4-Ethyltoluene	ND	ug/m3	1.3	1.26		03/30/15 21:48	622-96-8	
n-Heptane	**3.2**	ug/m3	1.0	1.26		03/30/15 21:48	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	2.8	1.26		03/30/15 21:48	87-68-3	
n-Hexane	**5.6**	ug/m3	0.91	1.26		03/30/15 21:48	110-54-3	
2-Hexanone	ND	ug/m3	1.0	1.26		03/30/15 21:48	591-78-6	
Methylene Chloride	ND	ug/m3	4.4	1.26		03/30/15 21:48	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	2.6	1.26		03/30/15 21:48	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	0.92	1.26		03/30/15 21:48	1634-04-4	
Naphthalene	ND	ug/m3	3.4	1.26		03/30/15 21:48	91-20-3	
2-Propanol	**4.0**	ug/m3	1.6	1.26		03/30/15 21:48	67-63-0	
Propylene	ND	ug/m3	0.44	1.26		03/30/15 21:48	115-07-1	
Styrene	ND	ug/m3	2.7	1.26		03/30/15 21:48	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	0.88	1.26		03/30/15 21:48	79-34-5	
Tetrachloroethene	ND	ug/m3	0.87	1.26		03/30/15 21:48	127-18-4	
Tetrahydrofuran	ND	ug/m3	0.76	1.26		03/30/15 21:48	109-99-9	
Toluene	**16.8**	ug/m3	0.97	1.26		03/30/15 21:48	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	1.9	1.26		03/30/15 21:48	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	0.88	1.26		03/30/15 21:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.70	1.26		03/30/15 21:48	79-00-5	
Trichloroethene	ND	ug/m3	0.69	1.26		03/30/15 21:48	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1.4	1.26		03/30/15 21:48	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2.0	1.26		03/30/15 21:48	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/m3	1.3	1.26		03/30/15 21:48	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/m3	1.3	1.26		03/30/15 21:48	108-67-8	
Vinyl acetate	ND	ug/m3	0.90	1.26		03/30/15 21:48	108-05-4	
Vinyl chloride	ND	ug/m3	0.33	1.26		03/30/15 21:48	75-01-4	
m&p-Xylene	**2.5**	ug/m3	2.2	1.26		03/30/15 21:48	179601-23-1	
o-Xylene	ND	ug/m3	1.1	1.26		03/30/15 21:48	95-47-6	
Tentatively Identified Compounds								
Unknown	**6.5**	ppbv		1.26		03/30/15 21:48		N
Unknown	**0.26**	ppbv		1.26		03/30/15 21:48		N
Unknown	**0.82**	ppbv		1.26		03/30/15 21:48		N
Pentane, 2-methyl-	**1.6**	ppbv		1.26		03/30/15 21:48	107-83-5	N
Cyclopentane, methyl-	**1.2**	ppbv		1.26		03/30/15 21:48	96-37-7	N

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ANALYTICAL RESULTS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Sample: SSV-3 **Lab ID: 10300700005** Collected: 03/25/15 11:52 Received: 03/26/15 12:10 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR (TICS)	Analytical Method: TO-15							
Tentatively Identified Compounds								
Unknown	**0.49**	ppbv		1.26		03/30/15 21:48		N
Unknown	**0.67**	ppbv		1.26		03/30/15 21:48		N
Cyclohexane, 1,3-dimethy	**0.41**	ppbv		1.26		03/30/15 21:48	638-04-0	N
Unknown	**0.69**	ppbv		1.26		03/30/15 21:48		N
Cyclotrisiloxane, hexame	**1.6**	ppbv		1.26		03/30/15 21:48	541-05-9	N
Cyclohexane, 1,1,3-trime	**0.94**	ppbv		1.26		03/30/15 21:48	3073-66-3	N
Unknown	**0.42**	ppbv		1.26		03/30/15 21:48		N
.alpha.-Pinene	**0.68**	ppbv		1.26		03/30/15 21:48	80-56-8	N
Unknown	**0.87**	ppbv		1.26		03/30/15 21:48		N
Unknown	**1.2**	ppbv		1.26		03/30/15 21:48		N
Unknown	**1.2**	ppbv		1.26		03/30/15 21:48		N
Hydroxylamine, O-decyl-	**1.7**	ppbv		1.26		03/30/15 21:48	29812-79-1	N
Unknown	**1.1**	ppbv		1.26		03/30/15 21:48		N
Heptadecane	**2.0**	ppbv		1.26		03/30/15 21:48	629-78-7	N
Unknown	**1.2**	ppbv		1.26		03/30/15 21:48		N

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300700

QC Batch: AIR/22879 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10300700001, 10300700002, 10300700003, 10300700004, 10300700005

METHOD BLANK: 1928388 Matrix: Air
Associated Lab Samples: 10300700001, 10300700002, 10300700003, 10300700004, 10300700005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	0.70	03/30/15 18:06	
1,1,2,2-Tetrachloroethane	ug/m3	ND	0.70	03/30/15 18:06	
1,1,2-Trichloroethane	ug/m3	ND	0.56	03/30/15 18:06	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	1.6	03/30/15 18:06	
1,1-Dichloroethane	ug/m3	ND	0.82	03/30/15 18:06	
1,1-Dichloroethene	ug/m3	ND	0.81	03/30/15 18:06	
1,2,4-Trichlorobenzene	ug/m3	ND	1.5	03/30/15 18:06	
1,2,4-Trimethylbenzene	ug/m3	ND	1.0	03/30/15 18:06	
1,2-Dibromoethane (EDB)	ug/m3	ND	1.6	03/30/15 18:06	
1,2-Dichlorobenzene	ug/m3	ND	1.2	03/30/15 18:06	
1,2-Dichloroethane	ug/m3	ND	0.41	03/30/15 18:06	
1,2-Dichloropropane	ug/m3	ND	0.94	03/30/15 18:06	
1,3,5-Trimethylbenzene	ug/m3	ND	1.0	03/30/15 18:06	
1,3-Butadiene	ug/m3	ND	0.45	03/30/15 18:06	
1,3-Dichlorobenzene	ug/m3	ND	1.2	03/30/15 18:06	
1,4-Dichlorobenzene	ug/m3	ND	1.2	03/30/15 18:06	
2-Butanone (MEK)	ug/m3	ND	0.60	03/30/15 18:06	
2-Hexanone	ug/m3	ND	0.83	03/30/15 18:06	
2-Propanol	ug/m3	ND	1.2	03/30/15 18:06	
4-Ethyltoluene	ug/m3	ND	1.0	03/30/15 18:06	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	2.1	03/30/15 18:06	
Acetone	ug/m3	ND	2.4	03/30/15 18:06	L2
Benzene	ug/m3	ND	0.32	03/30/15 18:06	
Benzyl chloride	ug/m3	ND	1.0	03/30/15 18:06	
Bromodichloromethane	ug/m3	ND	1.4	03/30/15 18:06	
Bromoform	ug/m3	ND	2.1	03/30/15 18:06	
Bromomethane	ug/m3	ND	0.79	03/30/15 18:06	
Carbon disulfide	ug/m3	ND	0.63	03/30/15 18:06	
Carbon tetrachloride	ug/m3	ND	0.64	03/30/15 18:06	
Chlorobenzene	ug/m3	ND	0.94	03/30/15 18:06	
Chloroethane	ug/m3	ND	0.54	03/30/15 18:06	
Chloroform	ug/m3	ND	0.50	03/30/15 18:06	
Chloromethane	ug/m3	ND	0.42	03/30/15 18:06	
cis-1,2-Dichloroethene	ug/m3	ND	2.0	03/30/15 18:06	
cis-1,3-Dichloropropene	ug/m3	ND	0.92	03/30/15 18:06	
Cyclohexane	ug/m3	ND	0.70	03/30/15 18:06	
Dibromochloromethane	ug/m3	ND	1.7	03/30/15 18:06	
Dichlorodifluoromethane	ug/m3	ND	1.0	03/30/15 18:06	
Dichlorotetrafluoroethane	ug/m3	ND	1.4	03/30/15 18:06	
Ethanol	ug/m3	ND	0.96	03/30/15 18:06	
Ethyl acetate	ug/m3	ND	0.73	03/30/15 18:06	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300700

METHOD BLANK: 1928388 Matrix: Air
Associated Lab Samples: 10300700001, 10300700002, 10300700003, 10300700004, 10300700005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/m3	ND	0.88	03/30/15 18:06	
Hexachloro-1,3-butadiene	ug/m3	ND	2.2	03/30/15 18:06	
m&p-Xylene	ug/m3	ND	1.8	03/30/15 18:06	
Methyl-tert-butyl ether	ug/m3	ND	0.73	03/30/15 18:06	
Methylene Chloride	ug/m3	ND	3.5	03/30/15 18:06	
n-Heptane	ug/m3	ND	0.83	03/30/15 18:06	
n-Hexane	ug/m3	ND	0.72	03/30/15 18:06	
Naphthalene	ug/m3	ND	2.7	03/30/15 18:06	
o-Xylene	ug/m3	ND	0.88	03/30/15 18:06	
Propylene	ug/m3	ND	0.35	03/30/15 18:06	
Styrene	ug/m3	ND	2.2	03/30/15 18:06	
Tetrachloroethene	ug/m3	ND	0.69	03/30/15 18:06	
Tetrahydrofuran	ug/m3	ND	0.60	03/30/15 18:06	
Toluene	ug/m3	ND	0.77	03/30/15 18:06	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	03/30/15 18:06	
trans-1,3-Dichloropropene	ug/m3	ND	0.92	03/30/15 18:06	
Trichloroethene	ug/m3	ND	0.55	03/30/15 18:06	
Trichlorofluoromethane	ug/m3	ND	1.1	03/30/15 18:06	
Vinyl acetate	ug/m3	ND	0.72	03/30/15 18:06	
Vinyl chloride	ug/m3	ND	0.26	03/30/15 18:06	

LABORATORY CONTROL SAMPLE: 1928389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	49.3	89	72-140	
1,1,2,2-Tetrachloroethane	ug/m3	69.8	57.7	83	68-137	
1,1,2-Trichloroethane	ug/m3	55.5	50.4	91	66-138	
1,1,2-Trichlorotrifluoroethane	ug/m3	77.9	67.2	86	70-132	
1,1-Dichloroethane	ug/m3	41.2	35.2	85	68-137	
1,1-Dichloroethene	ug/m3	40.3	32.9	82	73-138	
1,2,4-Trichlorobenzene	ug/m3	75.5	95.1	126	48-150	
1,2,4-Trimethylbenzene	ug/m3	50	61.4	123	75-134	
1,2-Dibromoethane (EDB)	ug/m3	78.1	76.1	97	75-132	
1,2-Dichlorobenzene	ug/m3	61.2	74.9	122	71-129	
1,2-Dichloroethane	ug/m3	41.2	30.8	75	73-139	
1,2-Dichloropropane	ug/m3	47	44.3	94	70-130	
1,3,5-Trimethylbenzene	ug/m3	50	62.3	125	75-133	
1,3-Butadiene	ug/m3	22.5	19.2	85	66-135	
1,3-Dichlorobenzene	ug/m3	61.2	75.0	123	75-131	
1,4-Dichlorobenzene	ug/m3	61.2	67.3	110	69-135	
2-Butanone (MEK)	ug/m3	30	27.6	92	67-131	
2-Hexanone	ug/m3	41.7	41.2	99	72-130	
2-Propanol	ug/m3	25	20.7	83	66-133	
4-Ethyltoluene	ug/m3	50	57.9	116	75-130	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300700

LABORATORY CONTROL SAMPLE: 1928389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Methyl-2-pentanone (MIBK)	ug/m3	41.7	40.6	97	68-134	
Acetone	ug/m3	24.2	15.0	62	63-144	L2
Benzene	ug/m3	32.5	30.6	94	64-139	
Benzyl chloride	ug/m3	52.5	52.5	100	75-129	
Bromodichloromethane	ug/m3	68.2	62.3	91	75-134	
Bromoform	ug/m3	105	114	109	72-130	
Bromomethane	ug/m3	39.5	31.4	79	71-132	
Carbon disulfide	ug/m3	31.7	26.7	84	56-139	
Carbon tetrachloride	ug/m3	64	62.8	98	75-150	
Chlorobenzene	ug/m3	46.8	42.8	91	71-132	
Chloroethane	ug/m3	26.8	21.7	81	71-129	
Chloroform	ug/m3	49.7	40.1	81	73-136	
Chloromethane	ug/m3	21	16.0	76	52-143	
cis-1,2-Dichloroethene	ug/m3	40.3	36.2	90	64-137	
cis-1,3-Dichloropropene	ug/m3	46.2	54.2	117	75-128	
Cyclohexane	ug/m3	35	32.8	94	62-143	
Dibromochloromethane	ug/m3	86.6	86.4	100	75-136	
Dichlorodifluoromethane	ug/m3	50.3	41.5	83	70-141	
Dichlorotetrafluoroethane	ug/m3	71.1	56.2	79	71-139	
Ethanol	ug/m3	19.2	17.5	91	60-144	
Ethyl acetate	ug/m3	36.6	27.8	76	64-137	
Ethylbenzene	ug/m3	44.2	49.8	113	71-136	
Hexachloro-1,3-butadiene	ug/m3	108	90.8	84	51-150	
m&p-Xylene	ug/m3	44.2	47.2	107	71-134	
Methyl-tert-butyl ether	ug/m3	36.7	42.2	115	73-134	
Methylene Chloride	ug/m3	35.3	26.8	76	64-130	
n-Heptane	ug/m3	41.7	39.2	94	63-135	
n-Hexane	ug/m3	35.8	29.8	83	69-135	
Naphthalene	ug/m3	53.3	68.2	128	43-150	
o-Xylene	ug/m3	44.2	47.6	108	75-134	
Propylene	ug/m3	17.5	13.4	77	58-135	
Styrene	ug/m3	43.3	40.9	94	75-133	
Tetrachloroethene	ug/m3	69	69.4	101	66-137	
Tetrahydrofuran	ug/m3	30	25.0	83	58-135	
Toluene	ug/m3	38.3	37.2	97	70-129	
trans-1,2-Dichloroethene	ug/m3	40.3	34.0	84	61-140	
trans-1,3-Dichloropropene	ug/m3	46.2	40.6	88	75-134	
Trichloroethene	ug/m3	54.6	55.8	102	70-134	
Trichlorofluoromethane	ug/m3	57.1	43.8	77	67-140	
Vinyl acetate	ug/m3	35.8	31.8	89	60-139	
Vinyl chloride	ug/m3	26	21.9	84	72-129	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300700

SAMPLE DUPLICATE: 1928954

Parameter	Units	10300883002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	
1,2,4-Trimethylbenzene	ug/m3	2.1	2.1	1	25	
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		25	
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	ND		25	
1,4-Dichlorobenzene	ug/m3	ND	ND		25	
2-Butanone (MEK)	ug/m3	2.0	2.0	2	25	
2-Hexanone	ug/m3	ND	ND		25	
2-Propanol	ug/m3	12.7	12.7	0	25	
4-Ethyltoluene	ug/m3	ND	.77J		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	ND		25	
Acetone	ug/m3	9.1	8.6	6	25	L2
Benzene	ug/m3	4.3	4.2	2	25	
Benzyl chloride	ug/m3	ND	ND		25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	ND	ND		25	
Carbon tetrachloride	ug/m3	ND	ND		25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	ND	ND		25	
Chloromethane	ug/m3	ND	ND		25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	4.8	4.7	1	25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	1.7	1.6	6	25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	2.8	2.8	2	25	
Ethyl acetate	ug/m3	ND	ND		25	
Ethylbenzene	ug/m3	17.3	17.0	2	25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	45.6	44.9	2	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	ND	ND		25	
n-Heptane	ug/m3	7.0	6.8	3	25	

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QUALITY CONTROL DATA

Project: B1500394 Roof Depot
Pace Project No.: 10300700

SAMPLE DUPLICATE: 1928954

Parameter	Units	10300883002 Result	Dup Result	RPD	Max RPD	Qualifiers
n-Hexane	ug/m3	9.3	8.7	6	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	14.2	14.0	1	25	
Propylene	ug/m3	ND	ND		25	
Styrene	ug/m3	ND	ND		25	
Tetrachloroethene	ug/m3	ND	ND		25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	12.0	11.8	2	25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	ND	.86J		25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: B1500394 Roof Depot
Pace Project No.: 10300700

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.
N	Tentatively identified compound (TIC) based on mass spectral library search

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: B1500394 Roof Depot
Pace Project No.: 10300700

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300700001	**SV-1**	TO-15	AIR/22879		
10300700002	**SV-2**	TO-15	AIR/22879		
10300700003	**SSV-1**	TO-15	AIR/22879		
10300700004	**SSV-2**	TO-15	AIR/22879		
10300700005	**SSV-3**	TO-15	AIR/22879		

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10300 TOC

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www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

14460

Page: of

Section A Required Client Information:

Company: Braun Intertec
Address: 11001 Hampshire Ave S.
Bloomington, MN 55438
Email To: jhansen@braunintertec.com
Phone: 952.995.2464 Fax: 952.995.2020
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Jeremy Hansen
Copy To:
Purchase Order No.:
Project Name: Root Depot
Project Number: ~~PO 00734~~ 815003941

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager/Sales Rep.
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other____

Location of Sampling by State _____

Reporting Units: ug/m³___ mg/m³___ PPBV___ PPMV___ Other___

Report Level II.___ III.___ IV.___ Other_____

Method: PM10 / 3C- Fixed Gas (%) / TO-3 / TO-3M (Methane) / TO-4 (PCBs) / TO-13 (PAH) / TO-14 / TO-15 / TO15 Short List*

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	Section D Required Client Information: AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COLLECTED Composite Start End/Grab DATE	TIME	Composite - DATE	TIME	Canister Pressure (Initial Field - psig)	Canister Pressure (Final Field - psig)	Summa Can Number	Flow Control Number	TO-14	Pace Lab ID
1	SV-1		0.7	3-25-15	1315			-29	0	2059		X	001
2	SV-2		0.3	3-25-15	1045			-27	0	2040		X	002
3	SSV-1		0.8	3-25-15	1426			-28	-4	2690		X	003
4	SSV-2		0.8	3-25-15	1033			-22	-4	987		X	004
5	SSV-3		0.0	3-25-15	1152			-28	-0	2026		X	005
6													
7													
8													
9													
10													
11													
12													

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Jake Friederichs / Braun	3-25-15		Pace BL	3/25/15	1610
Pace DL	3/25/15	1630		3/26/15	1000
	3/26/15	1210	Pace	3/26/15	1210

SAMPLE CONDITIONS

Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
21	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
AMB	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jake Friederichs

SIGNATURE of SAMPLER:

DATE Signed (MM / DD / YY): 3-25-15

ORIGINAL

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 26Dec2013 Page 1 of 1
	Document No.: F-MN-A-106-rev.09	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: Braun Intertec

Project #: WO#: 10300700

10300700

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ Foam ☑ None ☐ Other: _____ **Temp Blank rec:** ☐ Yes ☑ No

Temp. (TO17 and TO13 samples only) (°C): ✓ **Corrected Temp (°C):** ✓ **Thermom. Used:** ☐ B88A912167504 ☐ B88A9132521491 ☐ 72337080 ☐ 80512447

Temp should be above freezing to 6°C **Correction Factor:** ✓ **Date & Initials of Person Examining Contents:** ✓ 32615

Type of ice Received ☐ Blue ☐ Wet ☑ None

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Media: air can				11.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.

Samples Received: rec 2 gauges

Canisters		Flow Controllers		Stand Alone G	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID
SV-1	2059				
SV-2	2040				
SSV-1	2690				
SSV-2	0947				
SSV-3	2026				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [signature] **Date:** 3/26/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Siting Public Facilities

A guide for the City of Minneapolis

Prepared by the Department of Community Planning and
Economic Development
in coordination with Property Services
September, 2011

Minneapolis
City of Lakes

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MPLS PLAN

Introduction

Public facilities are an essential component of a well functioning urban setting. The needs of residential, commercial, and industrial land uses are all supported in some way or another by public services. Many of these services require publicly owned and operated real property for delivery. This document intends to serve the City of Minneapolis by outlining key steps in public facility siting as well as recommending tools for streamlining an effective decision making process.

The siting of essential public facilities is often met with a variety of public opinion. Uses such as state education facilities, state or regional transportation facilities, state and local correctional facilities, solid waste handling facilities, storage or staging facilities can be particularly difficult to site. Other essential public facilities can be less difficult to site such as police, fire and service facilities. Some facilities are generally seen as amenities that garner broader community support but immediately adjoining neighbors may be reluctant to accept such as schools, libraries and community centers.

No single successful siting process exists that will serve all situations. There are, however, certain elements common to all siting processes. The following steps are a guide for determining where essential public facilities could be located. Each heading in this document identifies a critical element of the siting process which should be addressed.

- Determining Need
- Identifying Potential Sites
- Community Engagement
- Evaluation Methods

The identified steps are intended to create efficiencies and avoid duplication throughout the siting and approval process while considering the long-term as well as short-term costs, providing for effective public review, and emphasizing reasonable compatibility with neighboring land uses.

Guiding Principles

The following guiding principles are based on policies found in the Minneapolis Plan for Sustainable Growth. They are intended to establish a framework and assist the reader in identifying key evaluative criteria to consider while using this document.

- Public facilities are essential to enhancing the quality of life in the City.

- The City must continue to strive for resource efficiency by maintaining and providing public facilities in an efficient and cost effective manner.

- Capital facilities planning must be integrated with fiscal and economic impact analysis to determine optimal funding capabilities.

- Siting decisions for public facilities should balance Citywide needs against local impacts to maximize the benefits and minimize the negative impacts of these facilities.

- Equitable geographic distribution of public facilities should be considered, so that one area of the City does not benefit or suffer from a greater proportion of the impacts associated with public facilities.

- Public facility sites must be designed to minimize impact by providing visual, noise and other relief measures to mitigate adverse impacts on existing or planned development.

The Minneapolis Plan for Sustainable Growth provides the basis for these guiding principles through adopted City policy. The following policies were identified and used as the basis for the work found in this report.

1.8.3: "Direct uses that serve as neighborhood focal points such as libraries, schools, and cultural institutions to designated land use features."

1.14: "Maintain industrial employment districts to provide appropriate locations for industrial land uses."

1.14.5: "Encourage and implement buffering through the site plan review process to mitigate potential conflicts between industrial uses and adjacent other uses."

5.1: "Coordinate facility planning among City departments and public institutions."

5.1.1: "Encourage communication and coordination among City departments, Hennepin County, Minneapolis Park and Recreation Board, and Minneapolis Public Schools to share use of facilities."

5.1.2: "Explore opportunities for co-location of public facilities where appropriate."

5.1.3: "Work with all partner agencies including City departments to ensure that facility planning is consistent with land use policies of The Minneapolis Plan."

5.1.4: "Develop cooperative programming that takes advantage of the resources and missions of various public institutions."

Policy 5.6 addresses safety and security stating: "Improve the safety and security of residents, workers, and visitors." More specifically 5.6.4 states: "Maintain and enhance a public safety infrastructure that improves response time to police and fire calls, implements new technologies, provides operation and training opportunities and facilities and improves communication among public safety agencies."

5.8: "Make City government more responsive to the needs of people who use its services."

5.8.3: "Effectively engage the public when making decisions that create, remove, or change a City service, project or policy."

These policies help to establish the guidelines outlined herein as City departments move forward siting public facilities.

Determining Need

A facility siting process should have a list of benchmarks that are identified with every project. However, there are unique attributes of some projects that will require additional work on the part of the City, or the public agency leading the siting process. To determine the scope of a siting process the lead public agency must be identified early on. A local municipality is going to have a set of needs and requirements that are somewhat different from a state or federal agency. When larger systems are at play, such as a regional transportation network, the geographic scope for facility site selection as well as public outreach widens accordingly.

Project managers should spend time at the beginning of a facility planning process by answering the following questions. Is the service provided by the facility needed by City constituents? Is the City is the appropriate entity to deliver that service? Research done to answer these questions is necessary for completing the public engagement and approval process.

The City eventually needs to convey to residents and property owners that public facilities are essential to enhancing the quality of life in the City. An important element of communicating this reality is to document the need for a given facility. At minimum the following should be done to address this need:

- An inventory of existing facilities, their condition, capacity and needed improvements
- Projection of future demand
- Comparison to other cities, agencies
- Discussion of options and alternatives
- Possible return on City investment

The proper fiscal and operative functions of the City must be based in facts and presented with alternatives. Without this work on the front end of a project, obtaining public and political support will be exceedingly difficult. In a time of shrinking budgets and demand for greater service efficiency, constituents are questioning whether the City can or should continue to deliver services in the same way as has been done in the past. Without justification of such need, the siting process can become bogged down not because of siting requirements and impact concerns but because of arguments of whether such a facility is even required.

An excellent example of a thorough needs analysis is Public Works' Relocation Study for Public Works Operations Linden Yards and the Impound Lot for the Basset Creek Redevelopment Plan completed in November 2009. The evaluation clearly details how the existing facilities function, whether they could be accommodated on smaller tracts, alternative means of delivering service, and estimated cost of alternatives.

Identified City Needs

Several public facilities are identified for investment in the near to mid-term future. Each project has received varied amounts of technical assessment to determine their need. While some of these projects may not reach the stage of implementation, their inclusion in this list is intended to serve as an example of the type of facilities the City considers siting.

MPD Property and Evidence Storage Unit
Long term and near term storage of evidence collected by the Minneapolis Police Department.

Impound Lot (15-23 Acres)
A relocation analysis has been performed for the current Minneapolis impound lot, and several scenarios have been explored. Most concepts concentrate on the opportunity to redevelop the current impound lot.

Public Works Storage Yards (18 acres)
Located in the same area as the Impound Lot and Concrete Crushing Operations, options are limited for relocation considering the large acreage required for siting these facilities. An exclusive redevelopment contract is in place for these sites that is set to expire in 2014. Until then, relocation of these uses will likely only take place as part of a coordination redevelopment effort on the part of the developer under contract. At one time Minneapolis-St. Paul (MSP) International Airport employed a concrete crushing operation. When the time comes to relocate this City use, an effort should be made to determine whether or not the MSP operation could accommodate the City's needs.

Public Works Concrete Crushing Operation (7-10 Acres)
The City's current crushing facility is located adjacent to the impound lot. Minneapolis has not always been in the business of concrete crushing. This service is a perfect opportunity for exploring alternate business practices, such as private contracting or an intergovernmental partnership (MSP-International).

Mounted Patrol Stable and Pasture (5+ Acres)
This project at one time was seen as a possible joint venture between the City of St. Paul, the City of Minneapolis, and the University of Minnesota. However, at this time, the project is indefinitely on hold. Co-location with waterworks facilities on the northern boundary of the City is a possibility.

Law and Safety Center
The need for Law and Safety Center space is being met largely within the footprint

of existing City buildings. Renovation of various spaces, along with relocation and consolidation of offices is serving to address this need.

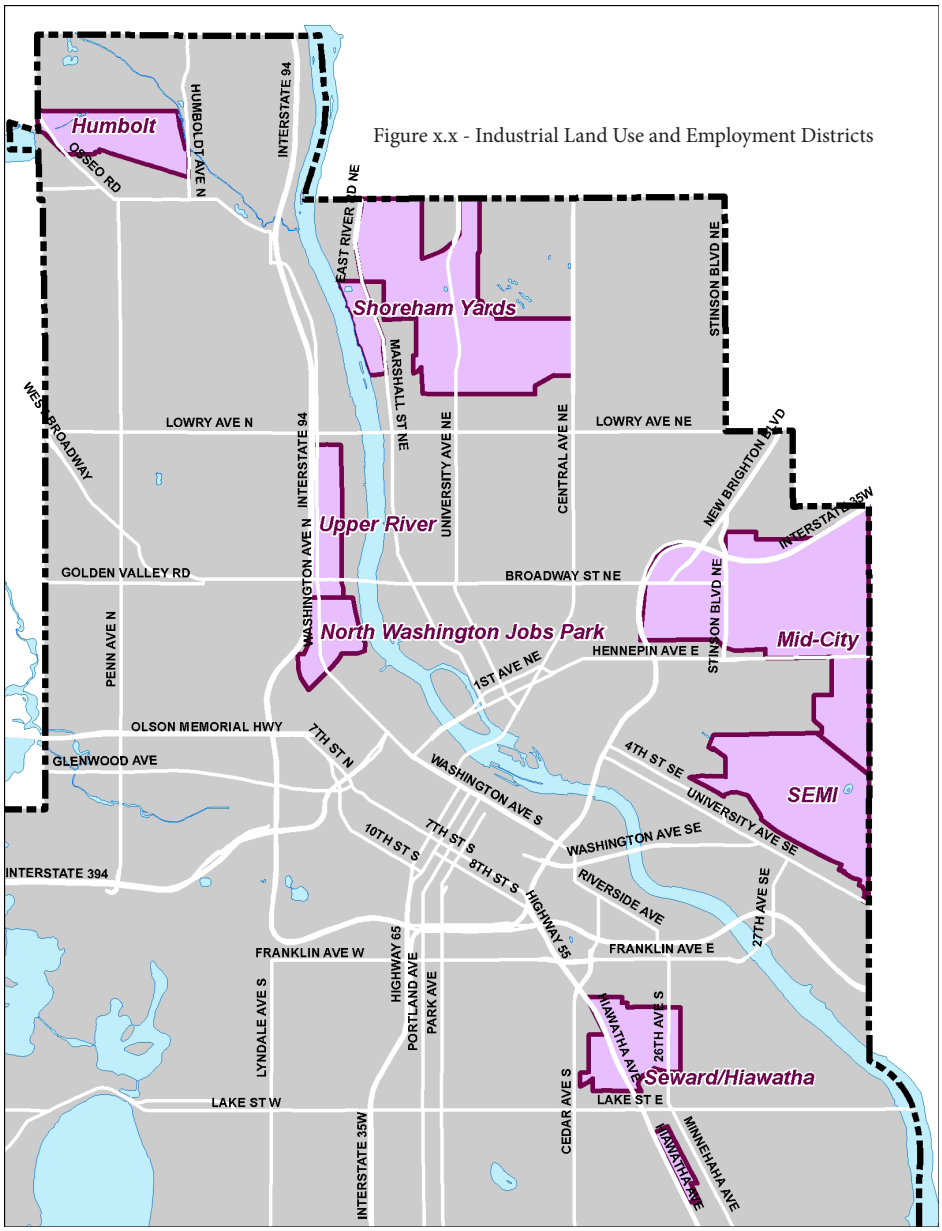
Core Business Center
For many years, the City has identified the need to consolidate professional office employees in a single location in downtown. Reports have identified various options, but a specific route has not been chosen at this time. Currently, a new study is in progress that narrows down the alternatives. With several leases expiring in the coming years, and deferred maintenance of existing facilities becoming more important, a decision is likely needed soon on how to move forward. All alternatives identified thus far indicate the best option moving forward is to supplement City Hall space with one additional consolidated office location in close proximity.

Fire Department Station #11
Consolidation of services provided by Stations #11 and #15 into a new facility called Station #11.

As is evident from the facility list above, a significant amount of acreage must be identified to locate these facilities. Even more challenging is that many of these need to be sited on industrially zoned land. In 2006, the City adopted the Industrial Land Use and Employment Policy Plan. The main purpose of this plan was to identify potential for industrial land use change and job growth in the City over the long term. A policy recommendation in this plan resulted in the creation of seven Industrial Employment Districts. Listed below, they are intended as areas where industrial uses will remain for the foreseeable future, and where encroachment of non-industrial uses should be discouraged.

Industrial Land Use and Employment Districts

- Humboldt
- Mid-City
- North Washington Jobs Park
- SEMI
- Seward/Hiawatha
- Shoreham Yards
- Upper River



While these areas appear to be a prime opportunity for the location of future public facilities, policy direction is not entirely clear on how such a proposal should be treated. Policy in the Industrial Land Use and Employment Policy Plan is largely silent on the topic of public facilities. The document stresses that tax generating job intensive uses be located in employment districts. It should also be noted that there are limited numbers of large acreage parcels in employment districts, and those that do exist are likely prime sites for private sector redevelopment. As facilities are proposed, it is best that they be considered on a case by case basis, unless programmed in a more comprehensive manner.

Identifying Potential Sites

In a broad sense, there are two primary methods to identify potential sites for any project. The first method is a targeted approach whereby, specific site characteristics are firmly established such as site size, site configuration, type of zoning required, road access, etc. The second method starts with a broader exclusionary approach eliminating areas where a particular use would not be suitable. Perhaps the particular facility could be located in a number of different zoning districts, buffering of adjacent land uses may not be required, proximity to transit routes is necessary, etc. Identifying as many of the site characteristics as possible allows for either method to be utilized more effectively.

The following locational issues should be taken into consideration when essential public facilities are proposed to be sited:

- Equitable distribution of public facilities should occur so that no one area assumes more than their fair share.

- Siting issues and potential facility sharing among Cities, the County, the State, and Federal agencies need to be explored and coordinated to eliminate duplication, or simply to avoid untimely reviews and delays.

- The siting of some essential public facilities is limited by the nature of the facilities' operational requirements and specified state or federal siting restrictions e.g. landfills, solid waste transfer stations, etc.

- Specific siting needs for each type of facility and a need to identify design

requirements and reasonable mitigation techniques should be stated as part of any siting decision.

- The service area the particular facility is intended to serve should be defined so that consideration can be given to user proximity, trip requirements for a given service, access to all parts of the service area or other criteria which would be important.

Identifying which method to use generally is dependent on how challenging the facility will be to locate. A targeted approach makes sense when there are some key constraints that will only allow a facility to be located in a limited number of areas. For example, the City's concrete crushing operation can only be located in an I3 zoning district and has to be accessible from heavy truck routes. As shown below, there are few areas of the City where these criteria can be met. If the search would be extended beyond I3 districts, a further criterion might be considered such as finding a large enough I2 district which would allow for a portion to be rezoned to I3 and yet provide adequate buffering around it with I2 zoning.

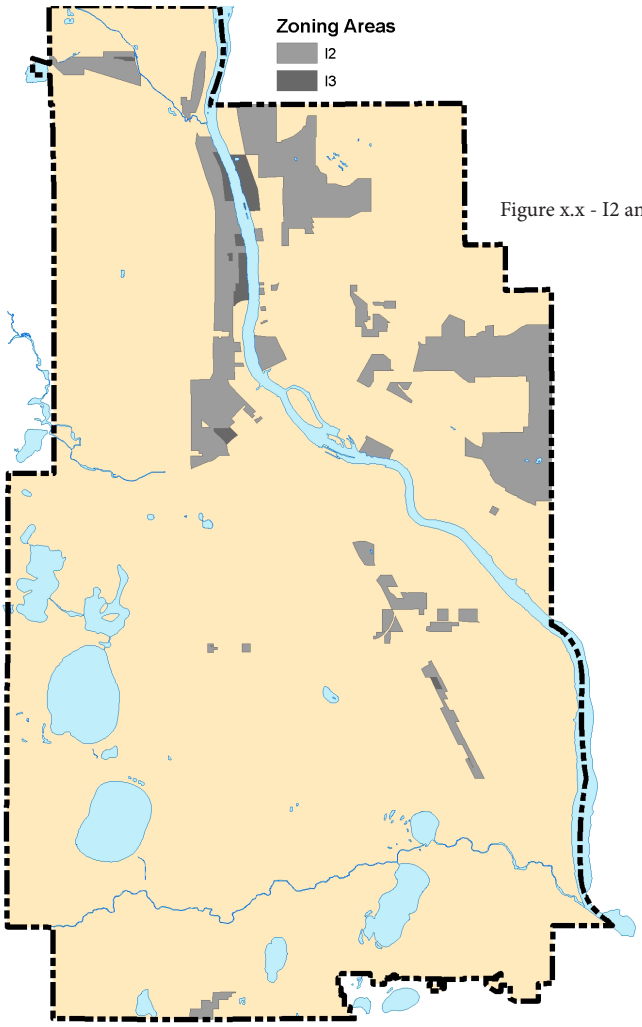


Figure x.x - I2 and I3 Zoning in Minneapolis

The exclusionary method would be better warranted on those facilities which may be considered amenities or certainly those which would be more readily accepted in the community. These facilities would include schools, libraries, police facilities or administrative offices. Typically these types of facilities would be serving a specific area of the City and thus would be applied within a specific geographic service area. Once that area has been defined, criteria such as proximity to transit, parcel size for the necessary facility, and any other requirements to narrow the possible search area can be applied.

Both of these methods allow a user to identify areas of efficient proximity and service coverage. By narrowing the scope of a site search to an area where there is a known service gap, the possible field of properties can be winnowed quickly. Conversely, in a case where proximity to existing facilities is important, the scope of the site search can be narrowed accordingly as well.

Site Requirements

What are the key factors in locating facility types? The attributes listed below are the most often cited in facility location decision processes. Again, these attributes reiterate the apparent conflict between public and private development. Many private developers analyze the same attributes that are listed below; a site that is desirable for a public facility is almost always going to be desirable to the private sector. This makes demonstrating need for a given project all the more important.

Site size
Site configuration
Characteristics that make it difficult to site
Infrastructure needs
Land use issues
Zoning
Environmental issues
Transportation issues
Economic issues
Social/political acceptance
Cost

The table on *page 16* from the Industrial Land Use Study is an example of identifying transportation access associated with the various industrial employment districts. As is readily apparent each industrial area has its own unique transportation access advantages. From a technical standpoint, by clearly identifying the characteristics required for a facility, the earlier candidate sites can be identified or eliminated from consideration.

Figure x.x - Transportation Access Example

Figure 2.3.2
Access at Industrial Sites
Minneapolis, Minnesota

Study Area	Transport Routes		Metro Area Arterials
I- Humboldt	Brooklyn Blvd. 49th Ave.	Connect To/Serve Collector Traffic	Hwy 100 I-94
II - Near North/Upper River	Washington Ave. W. Broadway Ave. 49th Ave. Dowling Ave. Hennepin Ave.		I-94 I-94 I-94 I-94 I-94/I-394
III - Mid-City/SEMI	Stinson Ave. Industrial Blvd. E. Hennepin Ave. Como Ave. University Ave.		I-35W I-35W I-35W/Hwy 280 Hwy 280 Hwy 280
IV - Hiawatha/Midtown Corridor	--- Minnehaha Ave. Lake St. 38th St.		Hwy 55 Hwy 55 Hwy 55 Hwy 55

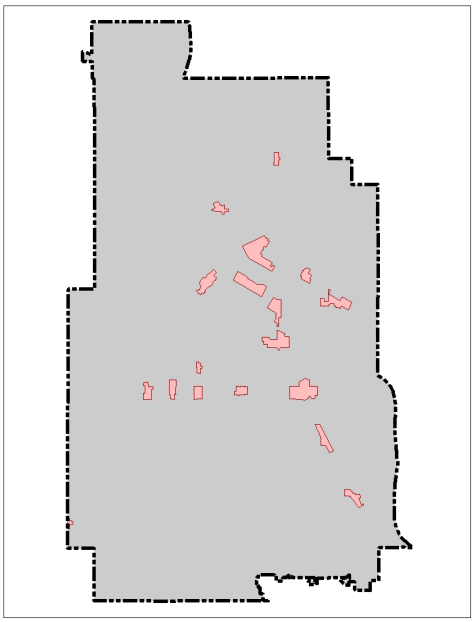
Source: Maxfield Research Inc.

Targeted Process

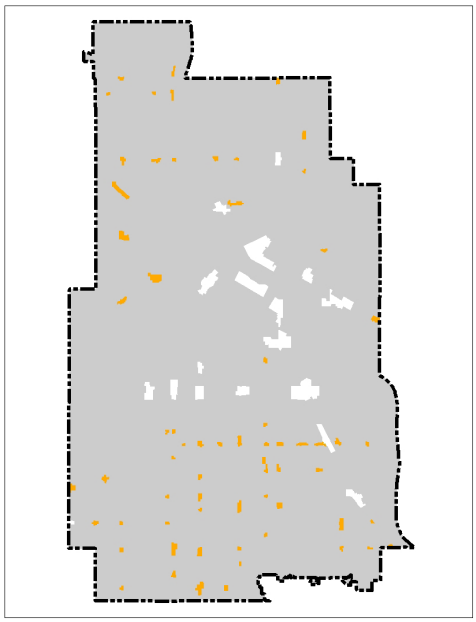
This methodology requires that the site characteristics are determined to a certain level of specificity such that it reduces the number of possible sites to a manageable number for more in-depth review. Most likely, the key determinants are going to be site size, existing zoning, surrounding land use, future development plans and transportation access. The outcome of the first round of analysis, however, simply suggests that the sites may be suited to the particular proposed development. It doesn't yield a final outcome. Illustrated below is an example of this process, focusing on future land use criteria found in the City's Comprehensive Plan.

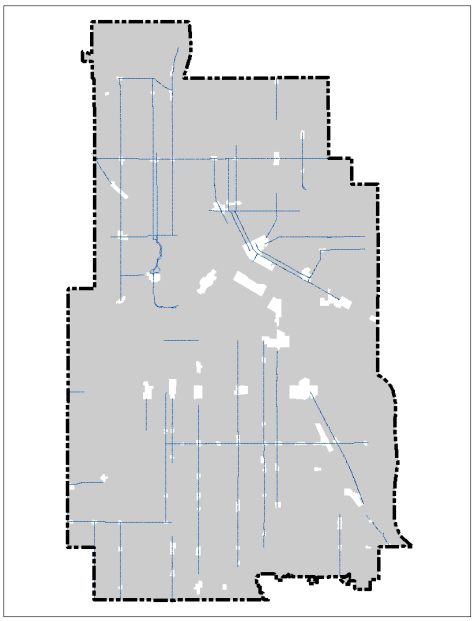
Imagine that for this exercise we are attempting to locate a use that has minimal negative external impacts, and needs to be easily accessible to the public. Perhaps you would start by identifying lands that are...

In Activity Centers...

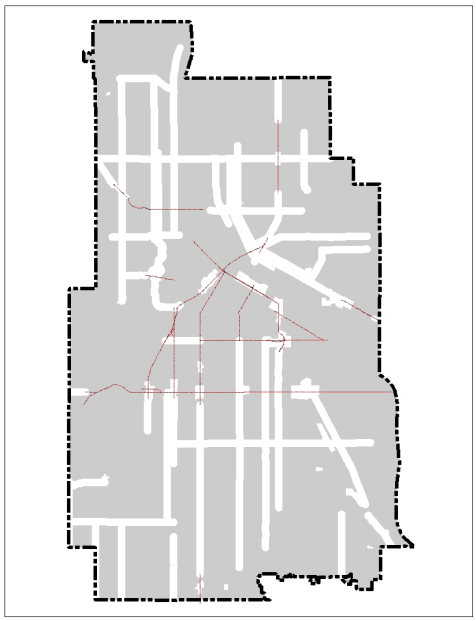


In Neighborhood Commercial Nodes...





Along Community Corridors...



Along Commercial Corridors...

The end result is an eligible area to start a search for land acquisition, shown below in white.

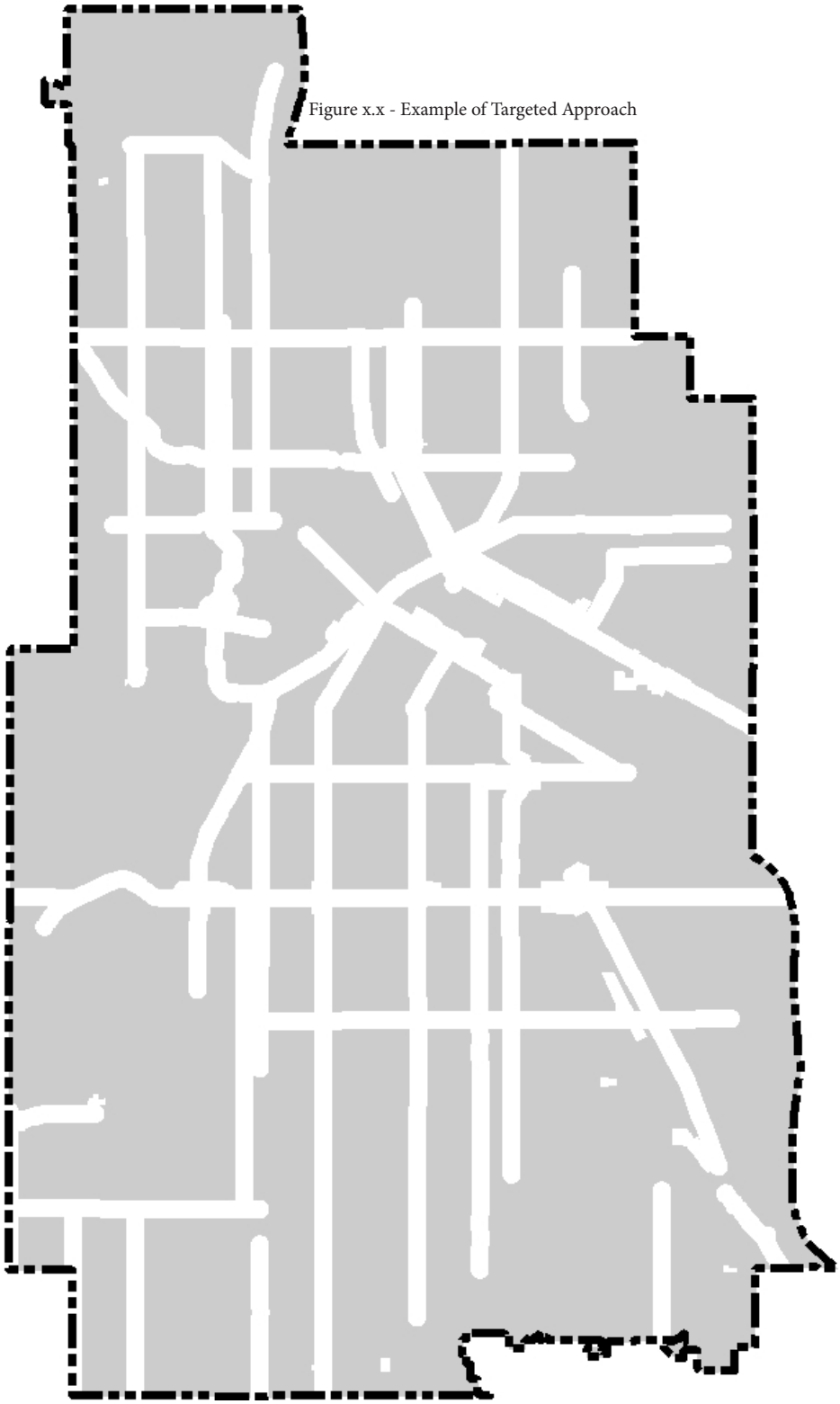


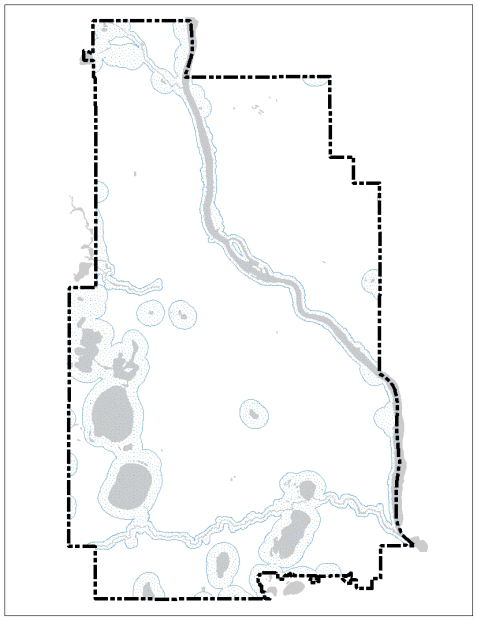
Figure x.x - Example of Targeted Approach

Exclusionary Process

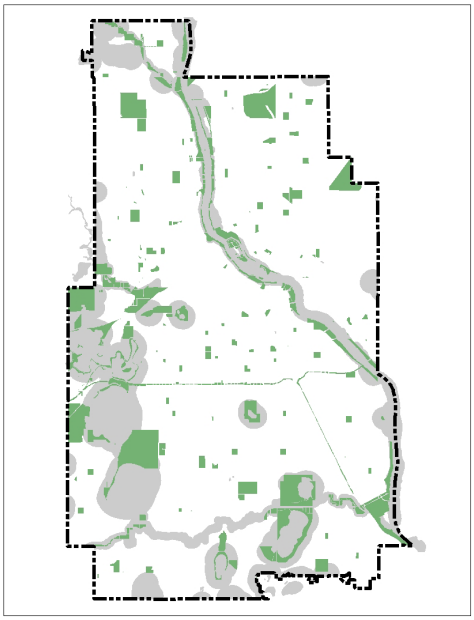
Dependent on the type of facility being sited there are numerous exclusionary factors that can limit a search area. These may include floodplains, wetlands, shoreland areas, steep slopes, critical areas, land uses, and population density as well as other criteria. At times, exclusionary criteria might include proximity to schools, parks or other amenities. Similarly, a facility may need to be sited in close proximity to public transit or unique utility system elements. The key is to eliminate as much unsuitable land as possible from the search area. Thus, defining site considerations and especially exclusionary siting factors as early as possible can save both time and resources.

If a site is being selected for an industrial use, such as short term storage, this method will likely result in a larger number of initial sites for consideration than using a targeted approach. An example of the approach is illustrated below. You might start by excluding...

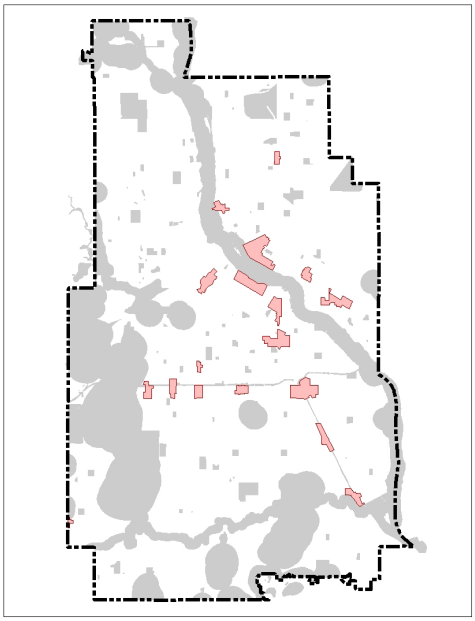
Bodies of Water and Adjacent Areas...



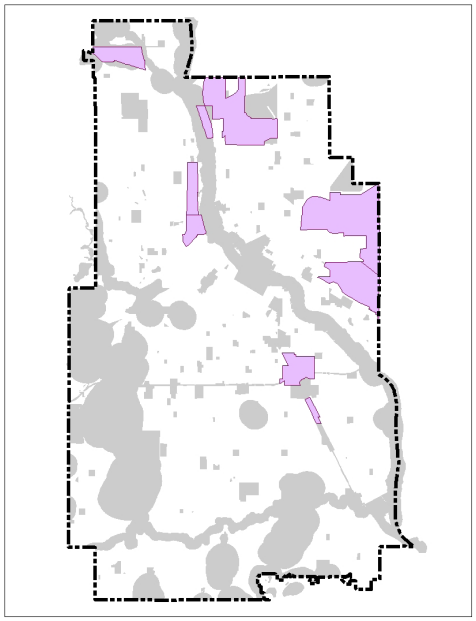
Park and Open Space...



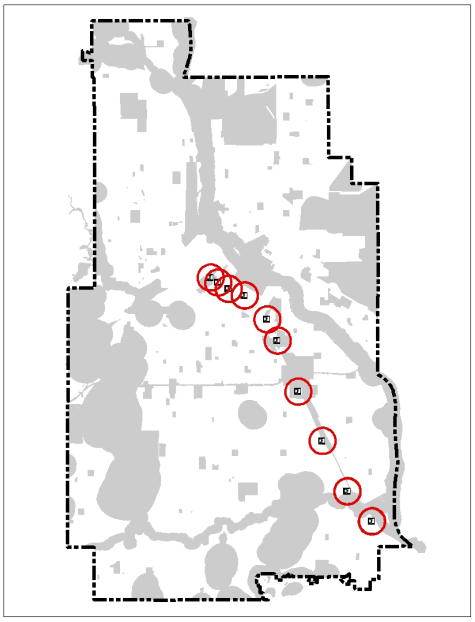
Activity Centers...



Industrial Employment Districts...



Transit Station Areas...



The end result can then be mapped against all remaining Industrial Zoning in the City, as seen on the opposite page.

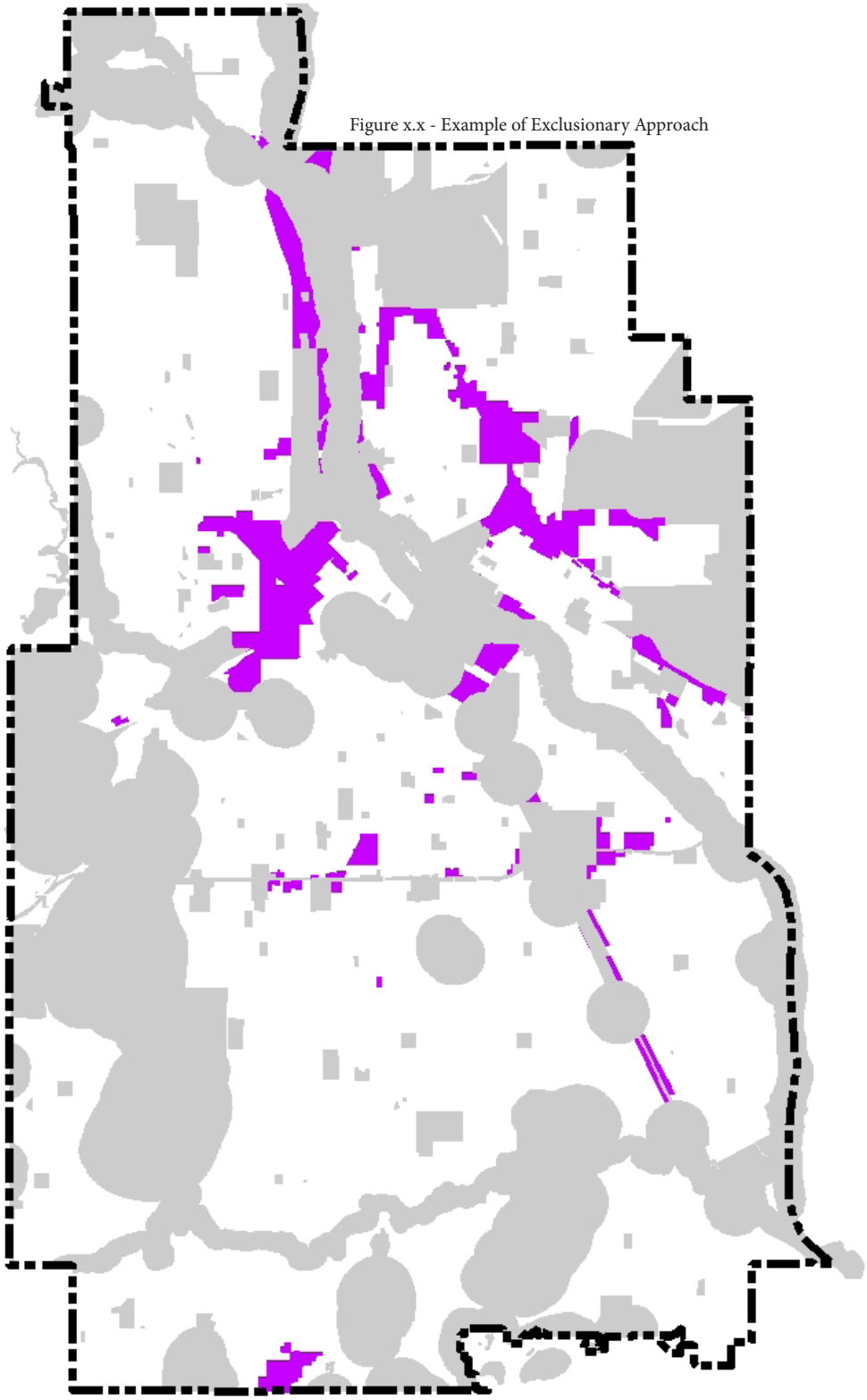


Figure x.x - Example of Exclusionary Approach

Assessing Available Inventory

City staff and consultants have periodically attempted to compile a comprehensive database of City and/or publicly owned property. The most recent evaluation, City of Minneapolis Urban Land Capacity, completed in 2010 identifies 196 acres of vacant industrial land. Of these there are 326 parcels identified as being larger than 20,000 square feet.

Figure x.x - Royalston Maintenance Facility - Courtesy of archalliance.com

The Near North/Upper River and Mid-City/SEMI areas each have approximately 214 acres of vacant industrial land. It can be expected that any site selection process looking for industrially zoned land of any significant parcel size will yield a greater number of potential sites in these areas. Selecting one site after another in these districts, however, could be received negatively. Realistically though, this is simply the likely result of a search with large lot size and industrial zoning requirements. If it is desirable to avoid concentrating all future large scale services in these areas, a greater investment in site agglomeration should be considered.

Many of the sites identified as vacant in these areas are actually likely used for outdoor storage or similar uses. To be clear, there are very limited quantities of vacant land in these areas, and what does exist is in scattered sites. Land acquired for public use in these locations, and for the most part throughout the City, will likely need to displace current productive uses. This of course should occur within the parameters identified in this document.

In an earlier 2006 Industrial Land Use Study and Employment Policy Plan, the Minneapolis Assessor's office and GIS Services generated a database indicating that there are 3,984 acres of industrial zoned land in the City of which 631 acres are vacant. This study further identified publicly owned industrially zoned land

within the City. The combined total acreage of industrial zoned land held by all public entities is 273 acres of which 127 acres are owned by the City.

It is apparent from the large discrepancy between the two studies, 631 acres vacant industrial vs. 196 acres, that different methodologies were used to create each land use inventory. It is likely that the 2006 evaluation includes zoned areas that are not generally included in parcel area (such as rail and road rights of way), or properties that are actively used for outdoor storage but are listed by the assessor's office as vacant. The actual useable inventory is likely very close to the 2010 land capacity project. What this shows is that our industrial areas are well served with ample transportation options, but overall, the opportunity for ongoing industrial redevelopment is fairly limited.

There are always other attributes to consider, but for the most part City needs for siting public facilities can generally be categorized by site size:

1-2 acre sites	libraries, police precincts, fire stations
2.5-5 acres	equipment, materials storage
5-10 acres	parks, co-located facilities, storage, stable
10+ acres	impound lot, railcar storage

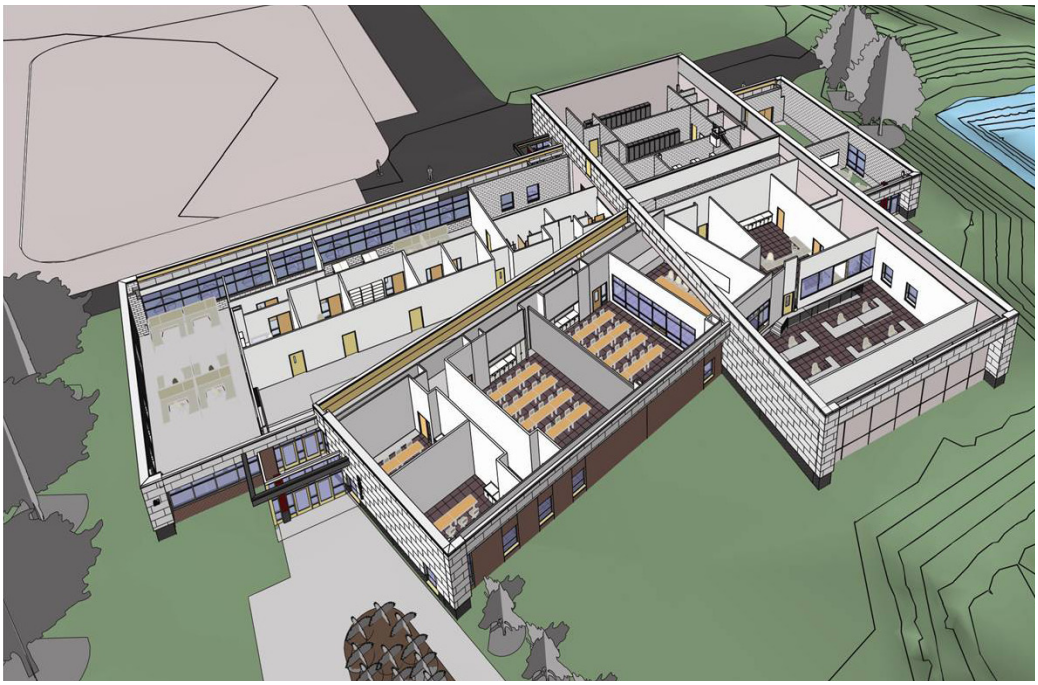
Certain uses will only be located within certain zoning districts. Equipment and materials storage will be relegated to industrial districts. Larger projects such as impound lots and railcar storage will most likely occur in industrial districts as well. Libraries, parks, and other amenity types of facilities can be sited in a wide variety of settings and zoning districts. In each instance, large tracts of land can either be eliminated or targeted dependent on the type of facility being sited.

While zoning is indeed an important determinant in siting decisions, it should be noted that there are areas of the City that may have land use policy that is either in conflict with existing zoning or supports zoning that currently does not exist on a given property. This further complicates site identification, but is a consideration that should be present nonetheless, especially if existing stock of properties with a given zoning designation are not easily acquired.

What About a Different Approach?

In the process of developing these guidelines, it became evident that finding suitable properties of industrial zoned land would be challenging. It also was apparent that obtaining an equitable distribution of properties would be difficult. Lastly, looking for individual properties to relocate facilities one at a time was not going to be very cost effective.

It also became apparent that some advantages would be gained if the City (and partners) could acquire and develop an institutional campus to accommodate future facilities and at the same time design and develop the site such that some less intrusive uses may serve to buffer less desirable uses. This may take more than one campus since requirements for public works storage and an impound lot would be somewhat different. A materials storage facility, for example, would not have to be located near a transit route while this would be extremely important for an impound lot.



An added advantage is that the City could begin acquiring parcels over time and thus have available appropriately zoned land when needed. A conceptual site plan could be designed to best situate given facilities so that impacts to surrounding land uses would be mitigated to the greatest extent possible. This approach requires a funding mechanism that currently does not exist at the City of Minneapolis. Acquiring land ahead of forecasted facility expansion needs should be weighed against the future cost of land and the interim reduction in tax revenue lost through public ownership of that land.

Surplus Properties

Since it can be difficult to find property for various public facility needs, the City must consider whether to retain existing property even though the current facility on the parcel may be obsolete, difficult to maintain or inadequate for current needs. The City may elect to demolish the current structure if it can't be rehabbed to fit current requirements. On the other hand, the City may wish to explore the viability of short to mid-term leasing of these properties until the property is required for an alternative public use.

The City should develop a set of criteria to evaluate whether the property may in fact be repurposed or whether it makes more sense to sell and reintroduce the property to the tax rolls. The criteria used for site selection outline in this document could be used as a model for making such decision. This effort should take place in the form of a comprehensive evaluation of publicly owned properties and facilities. Improve intergovernmental coordination would go a long way toward reducing development and operating costs for real property, especially in the Minneapolis area, where the number of local government entities is higher and more concentrated than in many other major metropolitan areas. This work also serves to answer the first and most important step of a siting process – determining the need for a given service and/or facility.

A collaborative departmental relationship should continue to address the long-term use of surplus property. While properties should be considered for future use as public facility sites, opportunities for returning publicly owned property to the private sector should be strongly considered. Public Works and CPED have worked together on these situations in the past. Examples include 165 Glenwood and Snelling Yards properties. An additional opportunity for redevelopment of current public property exists at the Old Fire Station 14 site in North Minneapolis.

Community Engagement

Despite the unpopularity of many types of public facilities, early public involvement is more likely to lead to a successful outcome. If the public is convinced that a facility is needed and that it must be located or relocated in the community, the actual siting process may be less subject to delays.

The extent of community involvement may vary depending on the level of interest. Relatively low impact facilities such as office space may not demand a great deal of community input. Other more controversial facilities may require more extensive input, first on recognizing the need, defining citizens concerns, identifying alternatives, defining site criteria, and perhaps developing suitable mitigation strategies.

Even with human resources in house who have the technical capabilities, there may be times that an outside consultant should be hired to bring an atmosphere of objectivity to the siting process. Such an action obviously requires funding which may or may not be available.

When there is an expectation that a given facility may be difficult to site a common approach is to form a siting committee which includes stakeholders from the various City departments, the specific community being served, different jurisdictions involved and members of the public. Such a committee could define necessary site features or exclusionary criteria, weight ranking criteria and rank sites. The existing Capital Long Range Improvement Committee (CLIC) at the City of Minneapolis could serve in this capacity for most projects, perhaps meeting as a sub-committee with representatives from geographically diverse areas. In addition, the City's Facilities, Space, and Asset Management Committee should play an of-

The City has adopted Guidelines for Community Engagement that should be consulted and adhered to throughout the process. (http://www.ci.minneapolis.mn.us/ncr/docs/2011FinalCPPGuidelines.pdf)

ficial role in the public process, perhaps acting to make official recommendations to the CLIC sub-committee.

In any event the public participants should have a chance to be actively involved. Members should be encouraged to discuss relevant concerns, raise questions or objections freely, pose alternatives and help set priorities. Members should also be regularly provided with detailed and timely information, and be allowed and encouraged to share results of each meeting with their constituents both to disseminate information and to encourage wider participation.

Committee members should be selected to provide a geographic balance across the area being served by the facility. As in all undertakings the composition should reflect the stakeholders of interest and should represent a balance by gender, race, culture, community and agency personnel.

Ideally, the public participation process should allow for at least three public meetings. The first would clearly identify the problem, the need for a facility and the process being used to identify a site. However, without identifying specific areas or sites themselves, participation from the community is likely to be light. By first selecting smaller search areas determined by the previously outlined targeted and/or exclusionary approach, participation may be more robust.

The second meeting should focus on discussing a number of alternative sites and explain how they were identified. Stakeholders should leave this meeting understanding the criteria used to identify sites, and how City staff will continue to winnow the list of possible locations. As the selection process becomes more geographically specific, it may be necessary to host multiple meetings for each step of the process. Neutral site meetings may give neighborhoods with greater resources an advantage in voicing their opinion on a given project. Meeting with neighborhoods on their own terms and locations is advisable at this point. Still, with dwindling staff resources, opportunities to combine these meetings should be explored.

The final meeting should announce the preferred final candidate site(s). Further reiteration of the approval process is important at this time. While staff should explain in detail the approval process at all stages of the siting process, it becomes more important as the process reaches its end. Ultimately there will be varying degrees of success in gaining stakeholder support for a project, but following a robust community engagement process, remaining issues should be clearly identified and easier to present to decision makers.

Mitigation Measures for Host Neighborhoods

Many of the facilities that Minneapolis needs to site are unwelcomed in neighborhoods. Considering the need for Industrial zoned land and the geographic distribution of such land, the City may need to consider entering into neighborhood host agreements or offer offsetting amenities. Minimally, provisions will need to address operating hours, restrictions on vehicle access routes, patrolling of access routes for any litter or other problems – these are issues that are usually already required by the Minneapolis Zoning Ordinance. These provisions may also call for specific site plan and design measures such as additional landscaping, additional site buffering, noise walls or other site specific design measures which would help to alleviate negative or perceived negative aspects of a facility. The most recent example of this approach in action is at the newly completed Hiawatha Maintenance Facility, which incorporates public art into the site design.

In private development projects throughout the City of Minneapolis, public assistance is often accompanied by a development agreement that outlines local benefits required of a developer. A similar outcome and arrangement could be had for public projects. For example, consideration might be given to support neighborhood safety initiatives, or the City may also evaluate whether preference could be given to neighborhood applicants for internships, job training or employment opportunities at a given facility.

Both of these approaches could potentially add costs to a given project. Consideration should be given to whether or not these investments might reduce future City costs related to investigating complaints about a given public facility. Of course direct neighborhood compensation does not have to be the first step in negotiation. There are mitigation measures that have a positive impact on fiscal solvency, such as reasonable hours of operation, and one time investments in screening of noxious activities.

Evaluation Methods

Regardless of which method is applied to initiate a site search, the ultimate goal is to reduce the number of sites for further evaluation to a manageable number. Typically a numeric ranking system would then be employed to differentiate the capabilities and suitability of the various parcels. Not all criteria are necessarily going to be equal in importance so consideration should be given to weighting the criteria used in evaluation and ranking.

Evaluation of sites for any given facility or use is usually based on assigning weighting factors to each essential site element. The assignment of values to each factor may be done by a selection committee, staff, or combination of citizens, staff and technical experts. Determining the importance of each factor can be accomplished through public meetings, surveys, websites and other forums for developing consensus among the various stakeholders. A possible scale might be as follows:

1 = not very important
2 = somewhat important
3 = important
4 = very important
5 = essential

Each selection factor should be evaluated according to established criteria and ranked on a simple scale. Such ranking scores may be:

0= unacceptable
1= poor
2= fair
3=good
4= excellent

By then using a site evaluation matrix a score can be rendered for each site dependent on the importance of the criteria and by the extent of its assigned importance. The highest score would indicate the most desirable site for the facility.

It is worth noting that a selection process may want to stop short of identifying a particular site or top sites and identify perhaps somewhere between 6-10 sites that may be suited and need further exploration at a later time. This would be particularly true if a study is done in a time frame where actual selection and acquisition is still several years away. Identifying a top site(s) prematurely could lead to development speculation and ultimately drive acquisition costs significantly higher than would otherwise occur.

For the public to be able to review and comment on proposed essential public facility location, construction, and operation, a certain amount of quantifiable information needs to be in the hands of the public. The following is a suggested minimum list of evaluation criteria needed for public consumption. More detailed and specific information may be needed depending on the type of public facility being proposed.

Evaluation criteria should be consistent in the treatment of siting essential public facilities and should recognize the need for compliance with local, state, and federal regulation. Evaluation criteria should consider more than one site.

Evaluation criteria should include impacts on:

- Natural features and critical areas
- Existing land use and development in adjacent and surrounding areas
- Existing Comprehensive Plan designations for surrounding areas
- Existing Small Area Plans
- Present and proposed population density of surrounding areas
- Environmental impacts and opportunities to mitigate environmental impacts
- Availability of needed infrastructure (i.e.; roads, power, sewer, etc.)
- Spin-off (secondary and tertiary) impacts
- Effect on the likelihood of associated development being induced or precluded by the siting of the facility.
- Acquisition/demolition/rehab costs
- Buffering of various land uses
- Adjacent property during construction
- Traffic
- Other criteria specific to the facility

This information can be used for a variety of purposes throughout the site selection process, and it should be considered a top priority to collect this information to guide and inform all stakeholders.

Implementation

Given the many land use, fiscal, political, and procedural issues that the public facility siting process encounters, the following steps should be considered to improve efficiency and effectiveness of City efforts in both the long and short term.

> ***Integrate a robust fiscal impact analysis when programming for capital facilities. Determine costs and impacts early on in the siting process to demonstrate the project's impact on the City's bottom line.***

Often times the City's siting process is not allowed to fully demonstrate the cost of providing services to the public. While this recommendation is not necessarily intended to encourage or discourage development of a given site, it is rather intended to demonstrate to the public and elected officials the true cost of providing a service. By addressing this issue early in the process, questions about fiscal responsibility can be answered easily as the project progresses.

> ***The location of planned public facilities must be guided to where they will be compatible with adjacent land uses and accessible to the public as appropriate.***

By following the basic land use and zoning evaluation described in this document on the front end of a project, this step should be fairly simple to implement. This does not guarantee an easy time identifying appropriate properties, but it will help in public engagement and review by elected officials if the site selection process is soundly grounded in adopted City policies and regulations.

> ***Public facility sites must be designed to reduce impact on adjacent properties by providing visual, noise and other relief measures to mitigate adverse impacts on existing or planned development.***

This should be standard practice in facility development, and for the most part is done very well by the City. Communicating these efforts to stakeholders is also important, especially in an effort to demonstrate the positive aspects of being located near a public facility. Business districts in particular can benefit greatly from the increase in employment and traffic brought by public facilities.

The City should begin a proactive acquisition strategy to reserve and acquire land for future facility needs in anticipation of long term demand preferably through outright purchase or through long term lease agreements. New funding mechanisms should be explored and implemented.

The City has a list of known facilities that it wishes to locate or relocate within a certain time frame. While reluctant to take private land off the tax roles prematurely and also creating a larger problem of property maintenance and management, the City will need to evaluate whether some of this acreage should be acquired while it still is available. Given the distribution of industrial land within the City, and the need for future site locations, a major challenge is achieving geographic fairness so no one area of the community bears the burden of negative impacts related to public facilities.

While determining sites for facility location can be challenging, the larger challenge can be the length of time that a candidate site may be available. If the site is already under public ownership, that tends to be less of a concern. Unfortunately, the City doesn't have a lot of vacant acreage in inventory waiting for public facilities to be relocated on. The City often finds itself in the position of looking at sites in private ownership. The need for relocating a facility may not match the availability of funds at a particular time. Thus, a siting process may identify a site but it may not be available by the time funding is available for acquisition.

The City should evaluate whether or not to create a funding mechanism for acquisition and initial site planning for public facilities. Such a fund might be constructed as a revolving loan strictly limited to site selection, preliminary site development schematics, site evaluation and earnest money deposits to initiate real estate acquisition. The state of Delaware has such a program (Advanced Planning and Real Estate Acquisition Fund) allowing for initiating projects for state facilities. Once capital funds are appropriated for the project, the advance funds are then paid back to the revolving fund. MnDOT Aeronautics has a similar fund set up for construction of hangars at general aviation airports providing low cost loans to communities with funds paid back to the revolving account over a 20 year period. MnDOT highways has an advance funding program whereby state and local funds can be used for advanced construction prior to receipt of federal funds. Once federal funds are received the advance funds are then paid back.

Expand computerized inventories of materials stored, length of storage time and expand capabilities whenever possible to perform online transactions for all public service transactions in order to reduce physical facility needs.

Strengthening the City's public land inventory process should result in better service delivery for a number of departments. This effort will fall short however if other public agencies do not also participate. Any facility siting process should include an analysis of publicly owned property that would be appropriate for a particular facility's use. Standard naming conventions, searchable attributes, and programming plans are essential for making this tool useful.

Facilities Siting Checklist

The follwing items should be completed and documented as necessary when initiating and completing a public facility siting process.

	TASK
	Determine and demonstrate need
	• Will the facility fill an existing service gap?
	• What is the appropriate entity to deliver this service?
	• Project future demand
	• Consult with other government agencies for potential service overlap
	• Determine service area
	• Develop alternatives to public delivery of the service through cost-benefit analysis.
	• Conduct Fiscal Impact Analysis of project based on assumed project parameters - update before approval process when specific sites are identified
	Identify potential sites
	• Determine site criteria:
	• Site size/configuration
	• Infrastructure needs
	• Environmental constraints (proximity to various land uses, negative/positive impacts)
	• Infrastructure needs (roads, power, sewer, etc.)
	• Employ a targeted or exlusionary approach as outlined in this document
	• Consult with CPED staff on land use and zoning
	• Create and execute a public outreach plan in consultation with the department of Neighborhood and Community Relations
	• Develop list of potential sites, evaluate based on site criteria above, and the following:
	• Acquisition, demolition, rehab, holding costs
	• Need for buffering and mitigation from adjacent, existing, and planned uses
	• Public input
	• Traffic impacts
	• Zoning code and Comprehensive Plan requirements
	Approval Process
	• Route land sale/acquisition form in preparation for City Planning Commission review, as required by state statute
	• Present options/recommendations to FSAM, CLIC, and the City Planning Commission
	• Determine and acquire necessary City Council approvals

Resources

"City of Minneapolis Downtown Campus Strategic Plan". February, 2005.

Debra Siniard Stinnett, "10 Steps to Successful Facility Siting", Waste Age. May 1, 1996

CPED Planning "Industrial Land Use Study and Employment Policy Plan".

CPED Planning, "Minneapolis Plan for Sustainable Growth", 2009.

City of Minneapolis Department of Public Works. "Relocation Study for Public Works Operations Linden Yards and the Impound Lot for the Bassett Creek Redevelopment Plan". November, 2009

Twin Cities Community Land Bank LLC. Framework for Business Plan

Benjamin Davy, "Fairness as Compassion: Towards a Less Unfair Facility Siting Policy"

Environmental Protection Agency, "Siting of School Facilities".

Department of Public Works Request for Council Action, MPD Mounted Patrol Horse Barn Facility. January 14, 2009.

San Francisco General Plan Community Facilities Element

Solid Waste Transfer Facility Site Selection Advisory Panel Report. Washington DC October 16, 2000

The Comprehensive Plan for the National Capital: District Elements

Southwest Transitway, Hennepin County. Operations and Maintenance Facility, 2010.

California department of Education, School Site Selection and Approval Guide, 20__

International Association of Chiefs of Police, Police Facility Planning Guidelines

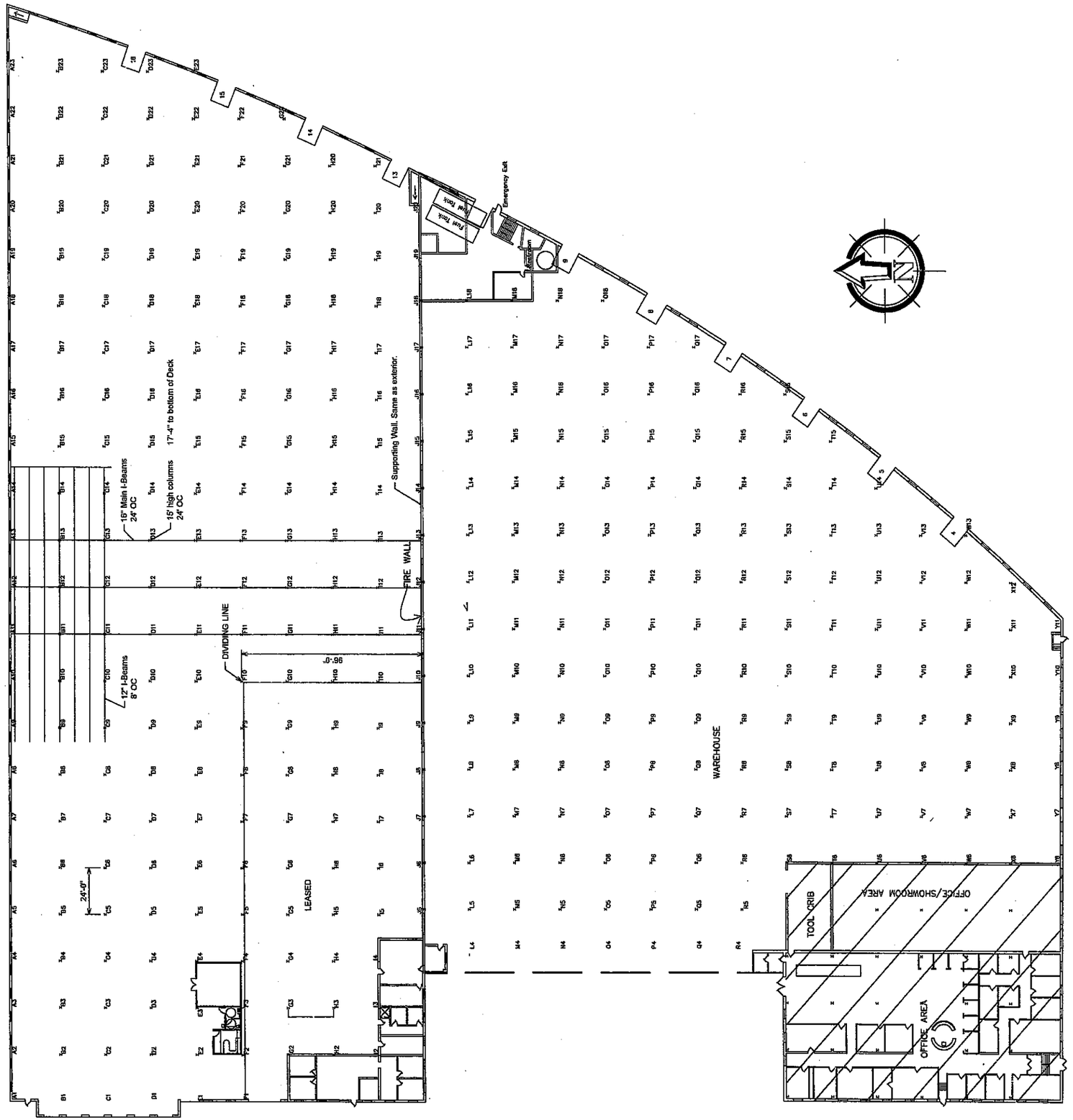
New York City Planning Commission, Criteria for the Location of City Facilities, 1990

State of Alaska Department of Education, Site Selection Criteria and Evaluation Handbook, 1997

GSA, Overview of GSA's Capital Program, Project Planning Guide

MPLS PLAN

Minneapolis
City of Lakes


15" Main I-Beams
24" OC
15' high columns
24" OC
17'-4" to bottom of Deck
Supporting Wall. Same as exterior.
FIRE WALL
DIVIDING LINE
12" I-Beams
8' OC
24'-0"
LEASED
WAREHOUSE
TOOL CRIB
OFFICE/SHOWROOM AREA
OFFICE AREA
Emergency Exit
Men Toilet
Fem Toilet
N

ifted

Attachment I

Fee Worksheet - Hiawatha Maintenance Facility Campus Expansion

Base Program

Minneapolis
City of Lakes

Proposal By:

Date

rev

Estimated Hours by Phase

Team	Firm	SD/MP	Program	Concept	Developer	SD	DD	CD	Bid	CA	Close-out	Totals
Architect of Record												**0**
Design Architect												**0**
LEED Architect												**0**
Mechanical Engineer												**0**
Electrical Engineer												**0**
Structural Engineer												**0**
Civil Engineer												**0**
Landscape												**0**
Interior Designer												**0**
Cost Estimating												**0**
Specialty Consultant												**0**
Specialty Consultant												**0**
Specialty Consultant												**0**
Specialty Consultant												**0**
Specialty Consultant												**0**
	Totals	0	0	0	0	0	0	0	0	0	0	**0**

MBE / WBE Worksheet	
How is fee developed?	
	Fee $ by phase
Visioning/Scope Definition/Master Planning	
Program Development	
Concept Design	
Developer Workshops	
Schematic Design Phase	
Design Development	
Construction Documents	
Bidding Phase	
Construction Administration	
Project Closeout	
Estimating	
Additional Consultants	
Total Leed Related Fees	
Total Professional Design Fees	
Estimated Reimbursables & Misc	
TOTAL =	

Describe approach to additional or reduced fee based upon potential scope and budget increase or decrease at end of Scope Definition/Master Plan Phase:

Projected Additional Fees (total)			Add'l Reimb
Surface Water & Sewer			
Ramp Maintenance			
Conference Center			
Central Stores			
Elections			
Traffic Maintenance			
Parking Structure			
Property & Evidence			

Hammel, Green and Abrahamson, Inc.
420 5th Street North, Suite 100
Minneapolis, Minnesota, USA 55401

CITY OF MINNEAPOLIS WATER DISTRIBUTION SERVICES CENTER LOCATION WORKFLOW ANALYSIS

Final Report

July 2, 2013

Prepared for:

Minneapolis Public Works:
Water Treatment & Distribution Services

Author: Sean Bergstedt
Lead Industrial Engineer: Brent Peterson, PE
Project Manager: Kenny Horns, PE, LEED AP

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- Data
  1. Work Order Data
  2. Projected Annual Travel Distance
  3. Analysis of Routing Assumption
  4. Leaks, Cleaning and Lining Data/Assumptions
- Cost Calculations
  1. Assumptions
  2. Results
- Narratives
  1. Security
  2. Co-location
  3. Storage
  4. Equipment
- Conclusions
- Appendices

Purpose

- Evaluate the movement implications of consolidating to either Fridley or Hiawatha sites for work order trips and vehicular movements associated with service center operations and meter operations

- Explore the advantages of consolidating the metering service and repair functions.

- Explore the advantages of consolidating the warehouse and distribution functions.

Data

What information was used to perform the analysis?

- Work order data from *Enquesta* for the meter shop and the east side yard.
- Projected work planning summaries based on foreman experience
- Site observations
- Institutional knowledge of operations

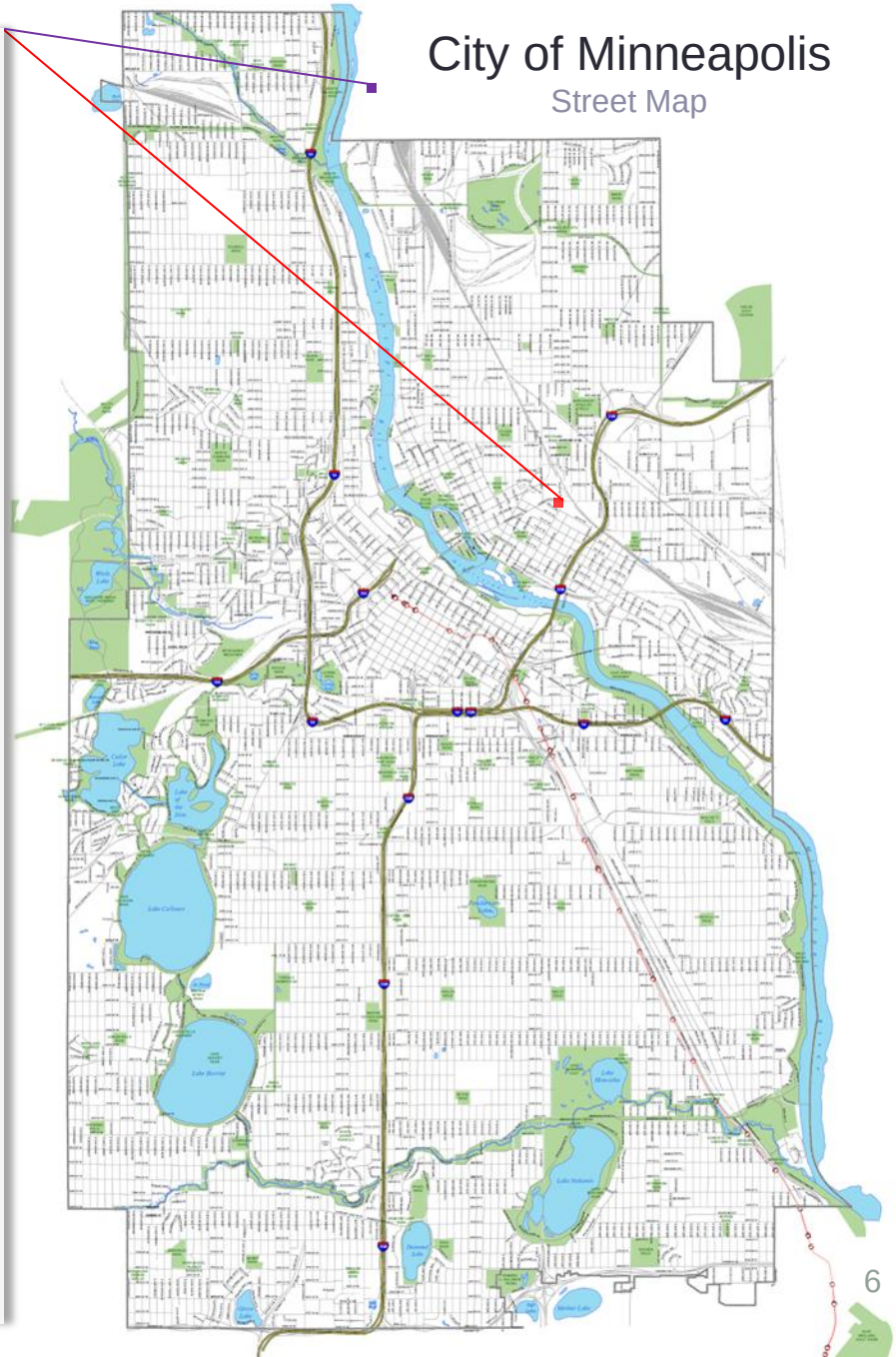
Contacts for Detailed Questions

- Karen Mosel & Ali - Work orders
- Bill Dougherty
Mark Ebert - Warehouse or "in-and-out"
- Roy Richardson - Fridley warehouse
- John Wertjes - Traffic control information
- Bob Ervin & Nate Wold - Vehicles & fleet, equipment storage, heating and temperatures
- Mike Schelkoph
Dean Anderson - Metering
- Bill Dougherty - Hydrants (procurement, storage, stock & inventory)

Work Order Data (meter shop + East Side Yard [ESY]):

1. Crew types deployed per work order
2. Quantity of each crew type deployed
3. City address location of deployment for each crew
4. Work order description
5. Frequency of orders with seasonal variations
6. Distances relative to proposed sites

WORKORDERYEAR	ORDERTYPE	DESCRIPTION
2011	198	MIU/ERT REPAIR-COLD PCK
2011	318	CC TURN-OFF
2011	211	CS PROPERTY VACANT
2011	192	RO REMOTE ONLY EXCHG
2011	62	FINAL BILL SET NEW ACCT
2011	320	CC COLLECTIONS TURN ON
2011	318	CC TURN-OFF
2011	64	FINAL BILL SET NEW ACCT
2011	231	SP PROJECT - AMR REPAIR
2011	64	FINAL BILL SET NEW ACCT
2011	318	CC TURN-OFF
2011	211	CS PROPERTY VACANT
2011	211	CS PROPERTY VACANT
2011	67	CC FINAL OUT DELQ ACCT
⋮		
2013	64	FINAL BILL SET NEW ACCT
2013	211	CS PROPERTY VACANT
2013	198	MIU/ERT REPAIR-COLD PCK
2013	198	MIU/ERT REPAIR-COLD PCK
2013	264	FNL BILL AMR/MTR RPR

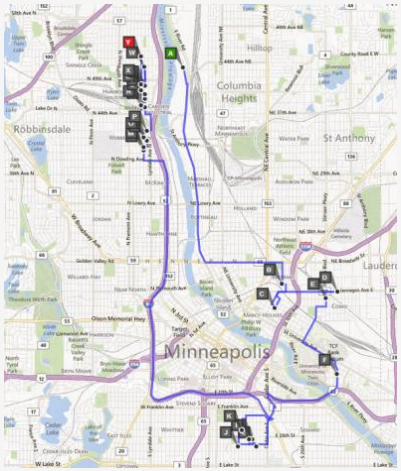


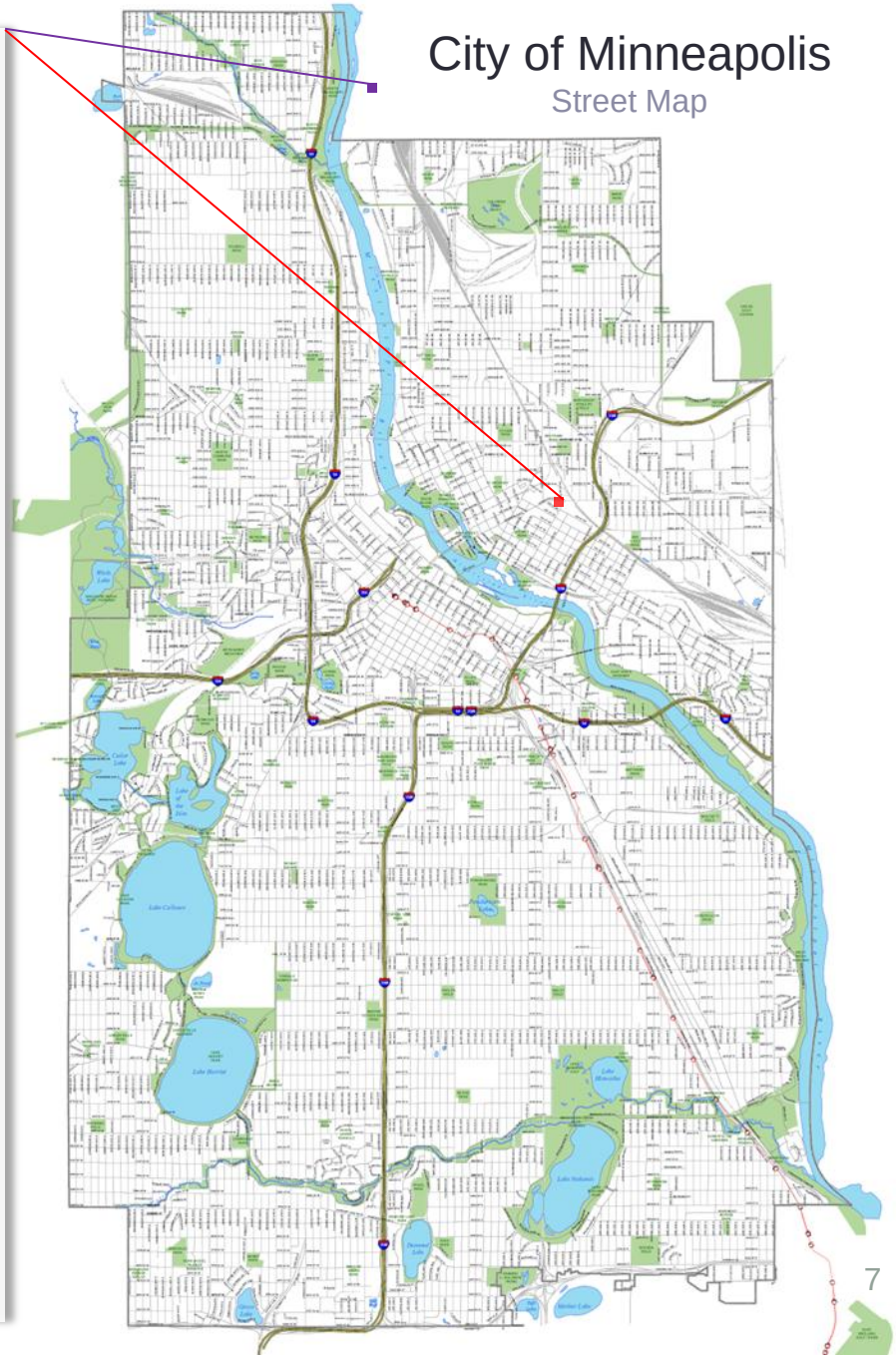
Work Order Data (meter shop + ESY):

1. I wrote a script to geocoded distances to each of the proposed facility addresses (160,000 data addresses)

Concatenated Address	Fridley Dist	Hiawatha Dist
4404 ABBOTT AVE S	15.54899646	5.608028335
2407 ALDRICH AVE N	3.699745231	5.954141552
2414 ALDRICH AVE N	3.681103585	6.049835332
2125 ALDRICH AVE N	3.905424719	5.748462064
3701 ABBOTT AVE S	15.34393836	6.231280681
3841 ABBOTT AVE S	15.33026782	6.451873485
4011 ALDRICH AVE N	1.657863667	7.558565836
3939 ALDRICH AVE N	1.696389735	7.487106195

2. Validated travel distances on a sample set of addresses using Bing maps manually



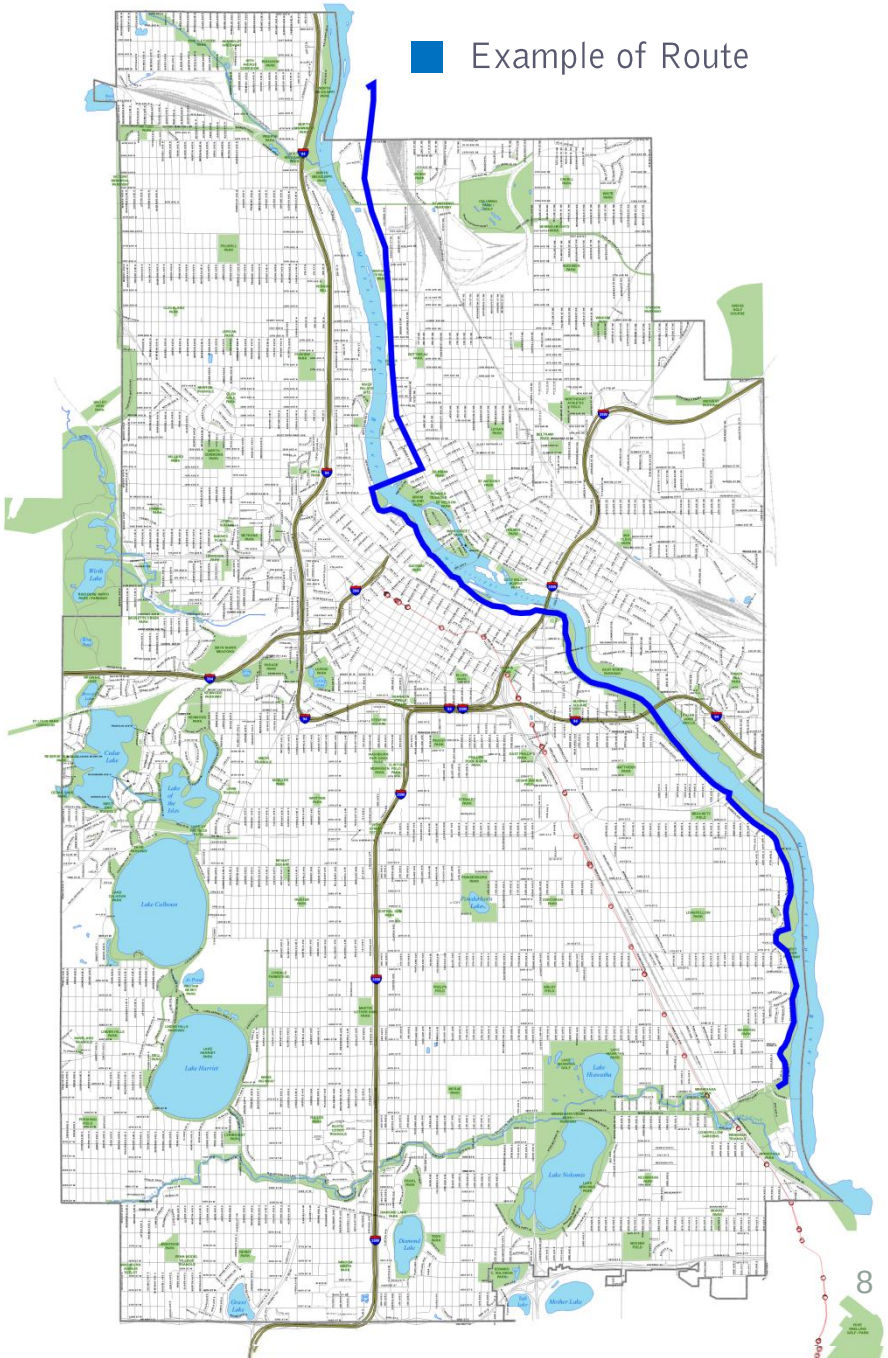


Shortest Path Routing:

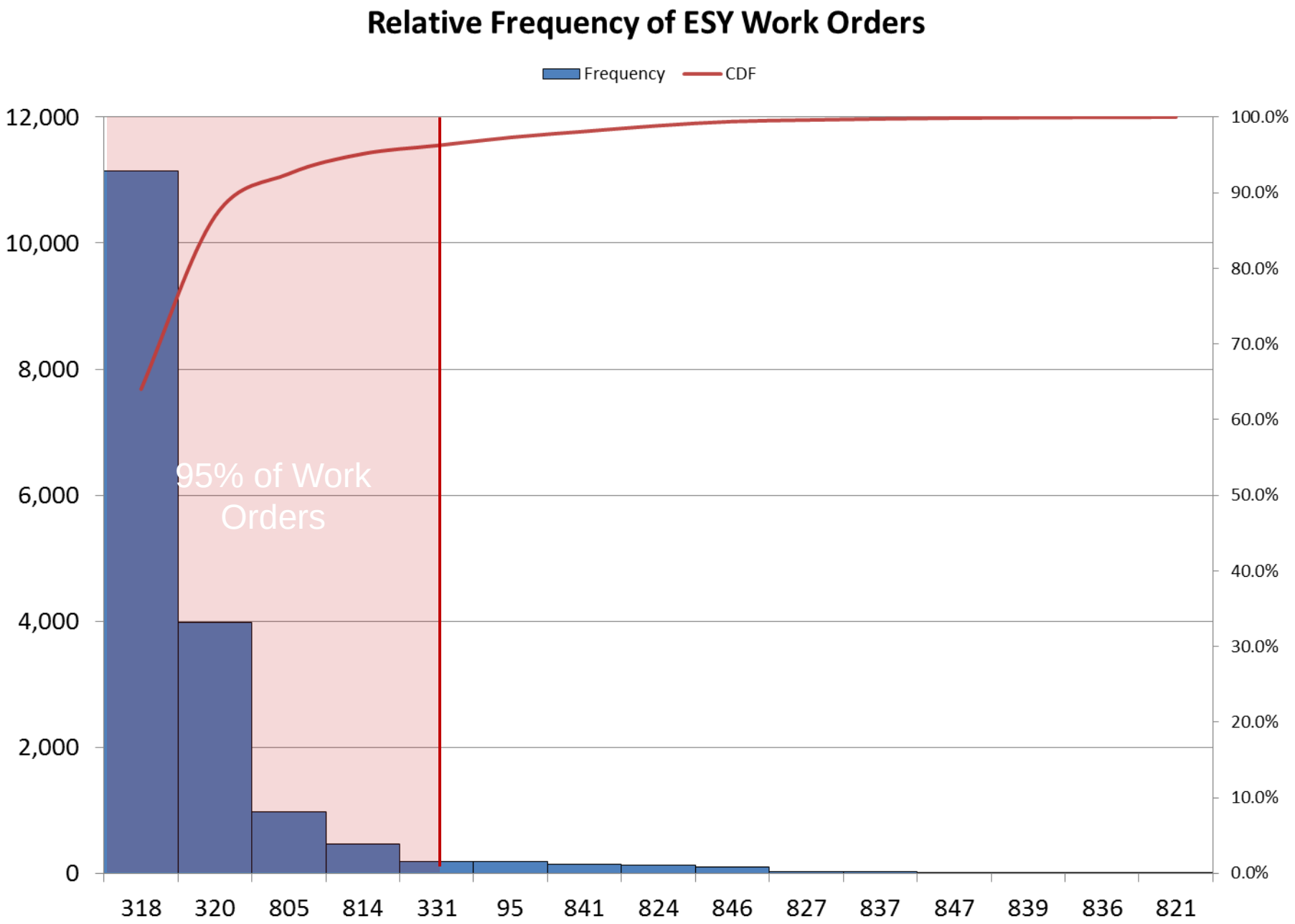
Discussion with user group brought to light the importance of calculating travel paths not on freeway travel.

Jim Jarosz volunteered to walk me through the Minneapolis map and show me the well established non-traffic travel paths that have been established as part of institutional knowledge

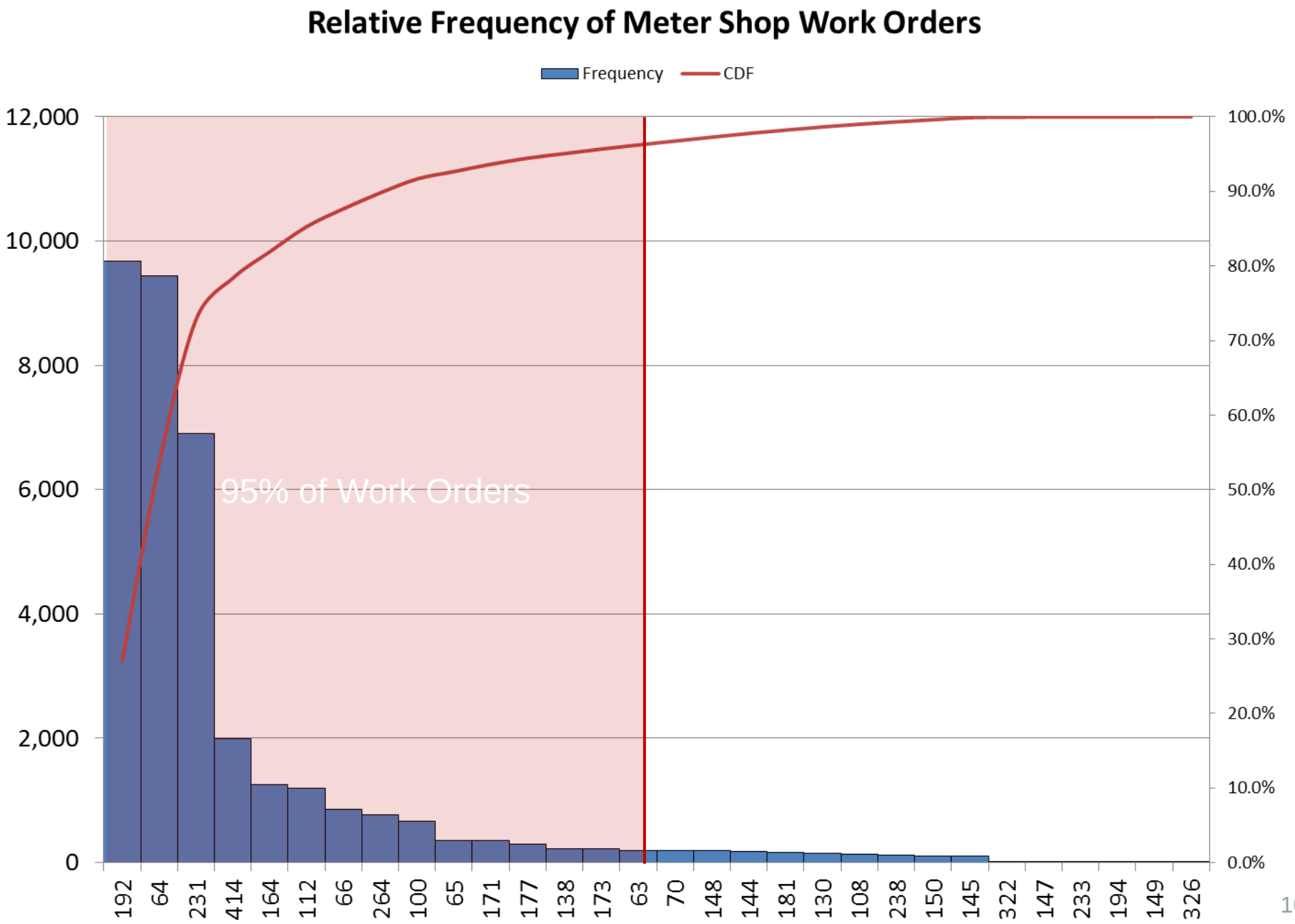
Although the travel path distances used in calculations are not the *exact* path of travel. A shortest path estimate is used as an approximation.



DISTRIBUTION OF WORK ORDERS – ESY



DISTRIBUTION OF WORK ORDERS – METER SHOP



PROJECTED ANNUAL TRAVEL DISTANCE

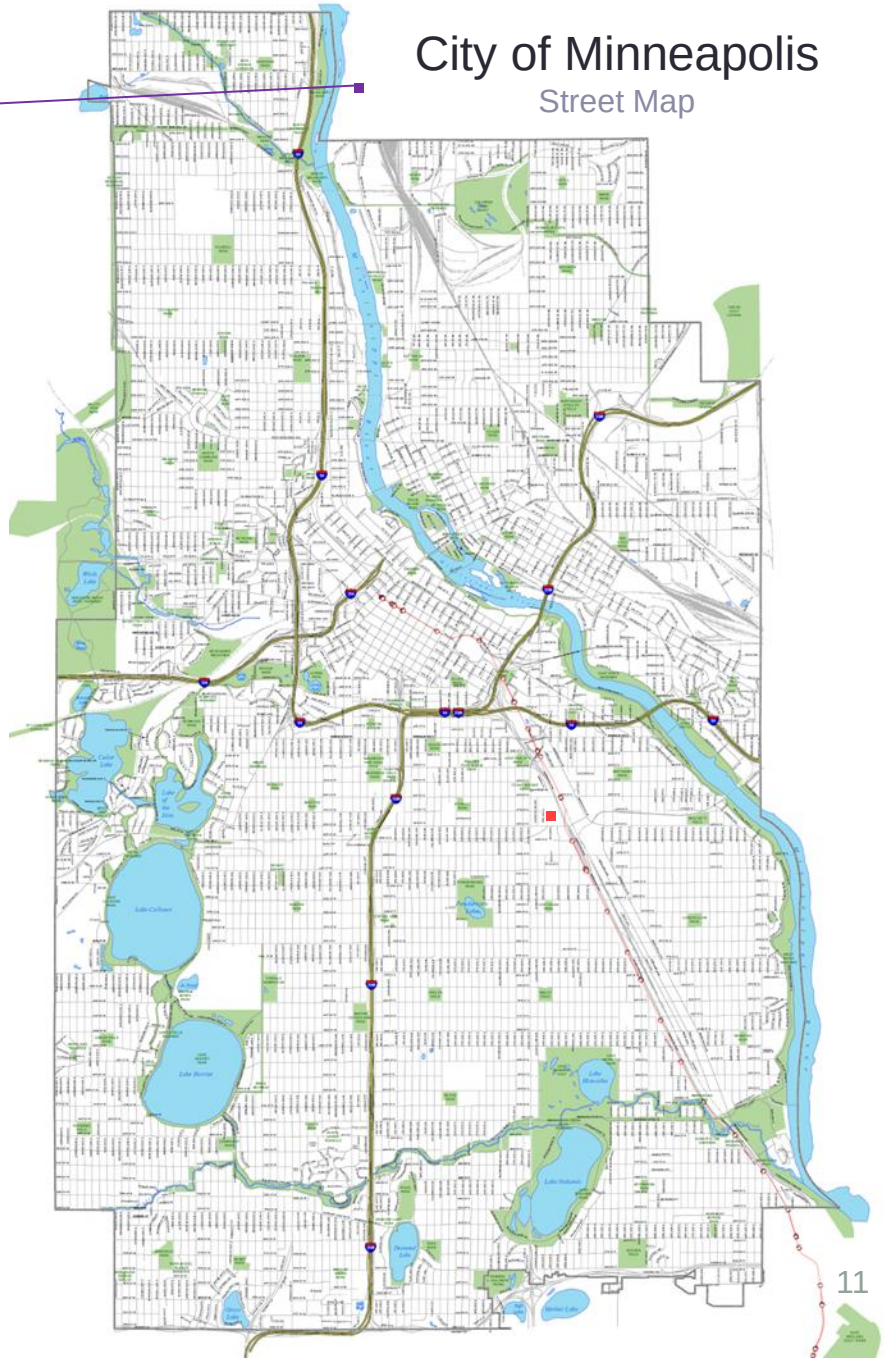
Fridley

(Mileage calculated form enquesta)

ESY	Miles/yr
Leaks, Cleaning, and Lining	25,467
Postings	14,462
318 (Delinquent Turnoffs)	14,462
320 (Turn-ons)	14,126
805 (Turnoff for repair)	7,404
814 (Stopbox repair)	846
95 (Vacant Turnoff)	1,249
	78,016

Meter Shop	Miles/yr
192	27,694
64	8,915
231	10,697
414	5,192
164	4,359
112	4,980
66	2,890
264	2,311
100	2,130
65	1,090
171	1,059
	71,317

TOTAL:	**149,333**



PROJECTED ANNUAL TRAVEL DISTANCE

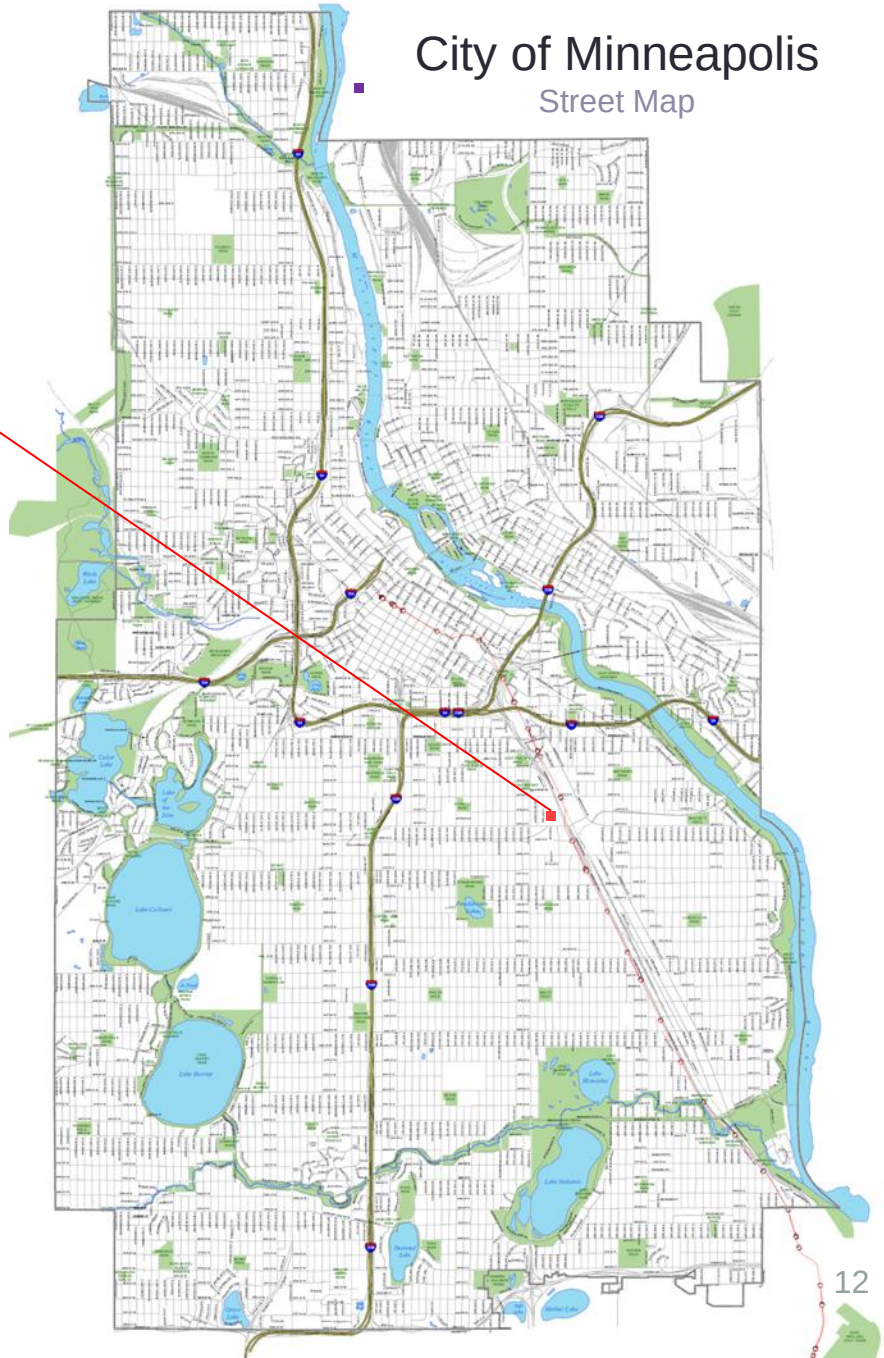
Hiawatha

(Mileage calculated form enquesta)

ESY	Miles/yr
Leaks, Cleaning, and Lining	16,875
Postings	9,601
318 (Delinquent Turnoffs)	9,601
320 (Turn-ons)	9,357
805 (Turnoff for repair)	3,974
814 (Stopbox repair)	557
95 (Vacant Turnoff)	919
	50,884

Meter Shop	Miles/yr
192	15,303
64	5,371
231	5,869
414	3,729
164	2,897
112	2,304
66	2,185
264	1,128
100	1,425
65	740
171	494
	41,445

TOTAL:	**92,329**
	+38%
Advantage:	**57,004**



Summary of Transportation Miles

	ESY Miles	Meter Shop Miles	TOTAL
Fridley	78,016	71,317	**149,333**
Hiawatha	50,884	41,445	**92,329**
		Δ =	**57,004**

The calculated miles that contribute directly to the *difference* in travel between the propose sites equate to 57k miles. The reader should be aware that the mileage values do not include:

1. Side excursions
2. Interstitial travel (travel between the first site to the last destination of the day)

Analysis of Routing Assumption

<u>Key Assumptions:</u>

1. For those work orders such as turnoff/turn-ons (318s/320s/postings) that have multiple destinations on the same day, only the first trip of the day and the last trip matters to the *difference* in travel between the two sites. Therefore, only the first trip and the last trip are included in the distance calculations.
2. Workers who are on these special routes, will always take the optimal path of travel.

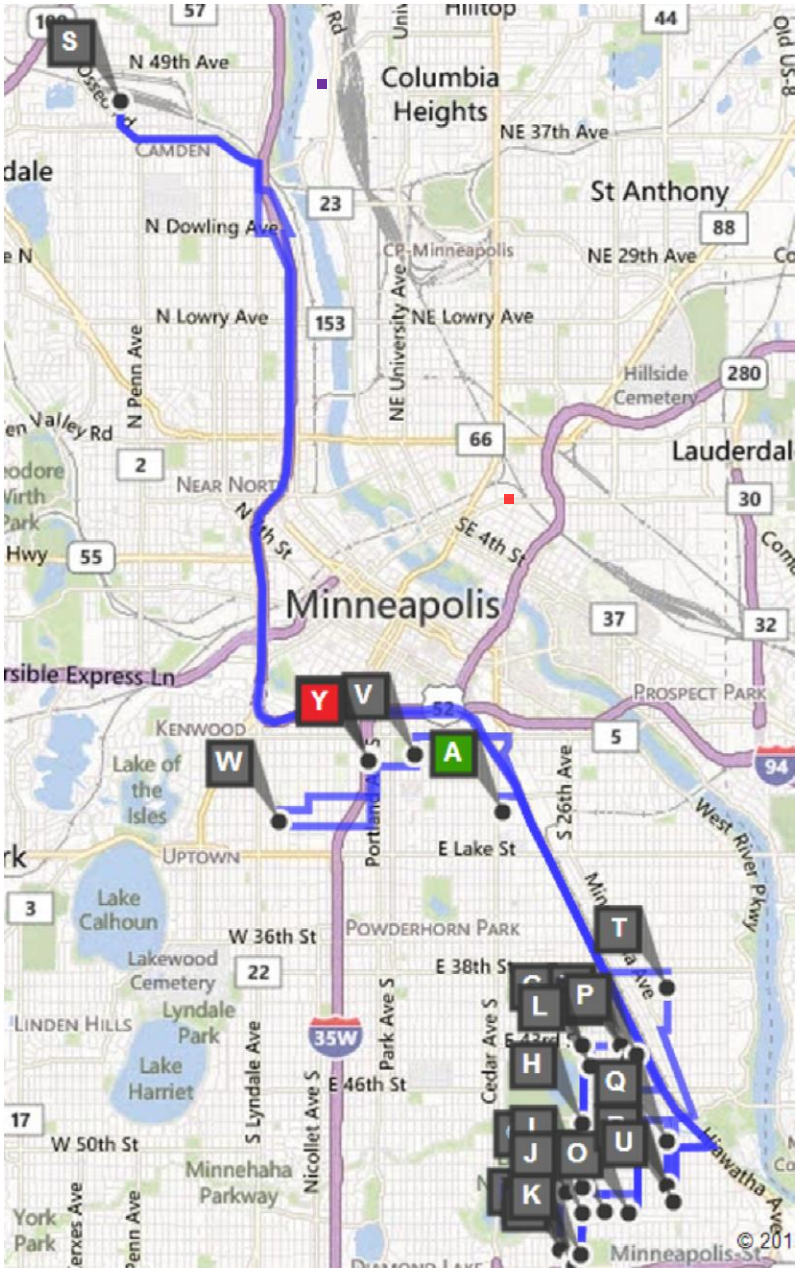
Example:

Assume there are A – Y destinations in a day for a single truck, where A is the starting destination, Y is the ending destination (Fridley or Hiawatha), and B is the first destination of the day. The only distances that are included in my calculation are A to B and X to Y.

$$A \rightarrow \boxed{B} \rightarrow C \rightarrow \cdots \rightarrow W \rightarrow \boxed{X} \rightarrow Y$$

- Included in distance calculation
- Excluded in distance calculation

The assumption means that from destination B to destination X, there is no *difference* between the travel paths whether you come from Fridley or Hiawatha. This assumption was posed to a foremen at the eastside yard and was deemed reasonable.



Key Assumptions (continued):

1. In addition, it is assumed that the previous assumptions discount the total miles travelled slightly due to unaccounted for excursions, travel path error, suboptimal routing, and other miscellaneous travel.

Thus,

$$Dist_{actual} = \{\overrightarrow{AB} + \overrightarrow{XY}\} + \{\overrightarrow{BC} + \cdots + \overrightarrow{WX}\} + e + r + p + m$$

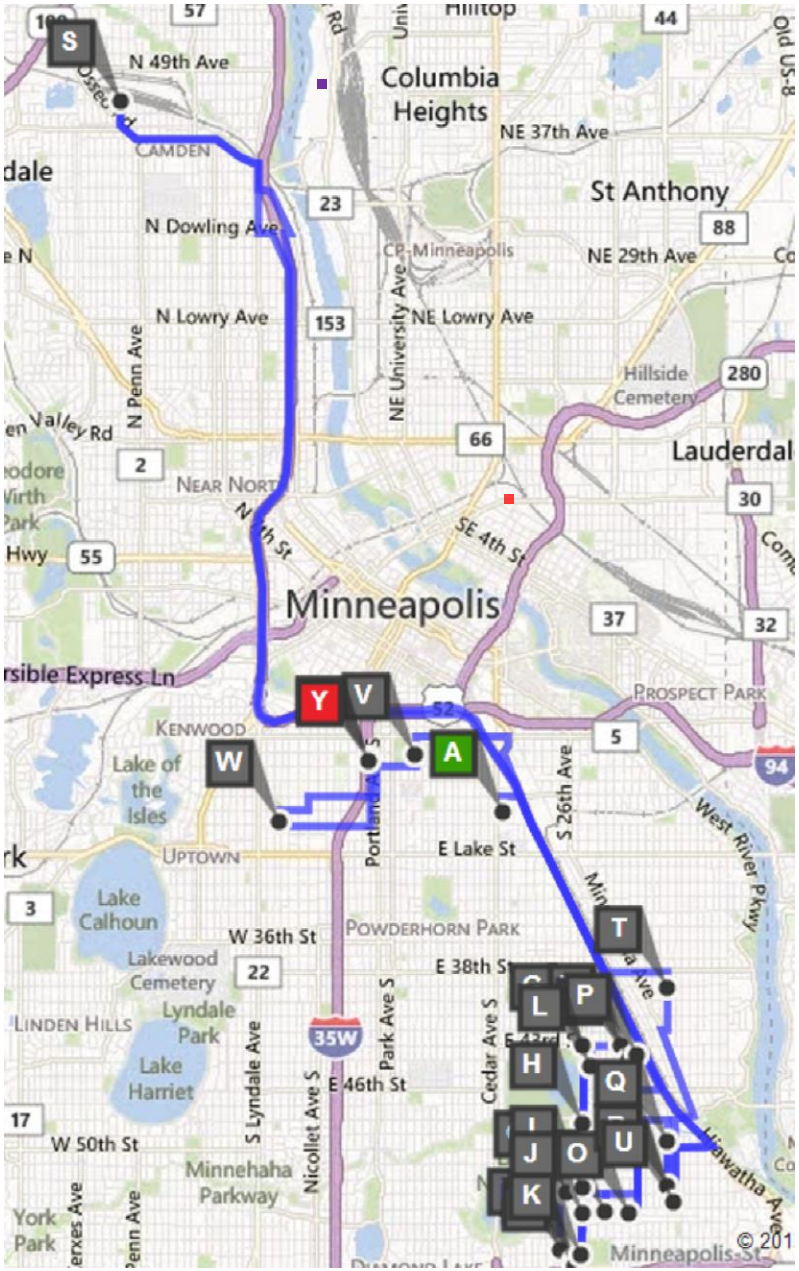
Where,

$$e = unaccounted\ for\ excursions$$
$$r = suboptimal\ routing$$
$$p = path\ error$$
$$m = miscellaneous$$

$$Dist_{study} = \{\overrightarrow{AB} + \overrightarrow{XY}\}$$

$$\frac{Dist_{study}}{Dist_{actual}} = \left\{\underbrace{29.6\%}_{Fridley}, \underbrace{18.3\%}_{Hiawatha}\right\}$$

$$= \frac{\{\overrightarrow{AB} + \overrightarrow{XY}\}}{\left\{\{\overrightarrow{AB} + \overrightarrow{XY}\} + \{\overrightarrow{BC} + \cdots + \overrightarrow{WX}\} + e + r + p + m\right\}}$$



Analysis of Routing Assumption

The Essential Question:

The essential question is, "can we expect the sum of the excluded travel distances to account for the remaining 70.4% - 81.5% of the total?

Sample Data 1:

@ Fridley

$$\{\overrightarrow{AB} + \overrightarrow{XY}\} = 9\ mi$$

$$\{\overrightarrow{BC} + \cdots + \overrightarrow{WX}\} = 19.4\ mi$$

$$\frac{\{\overrightarrow{AB} + \overrightarrow{XY}\}}{\left\{\{\overrightarrow{AB} + \overrightarrow{XY}\} + \{\overrightarrow{BC} + \cdots + \overrightarrow{WX}\} + e + r + p + m\right\}} = \frac{9}{\{9 + 19.4 + e + r + p + m\}}$$

Is it reasonable that $e + r + p + m = 2\ mi$?

Sample Data 2:

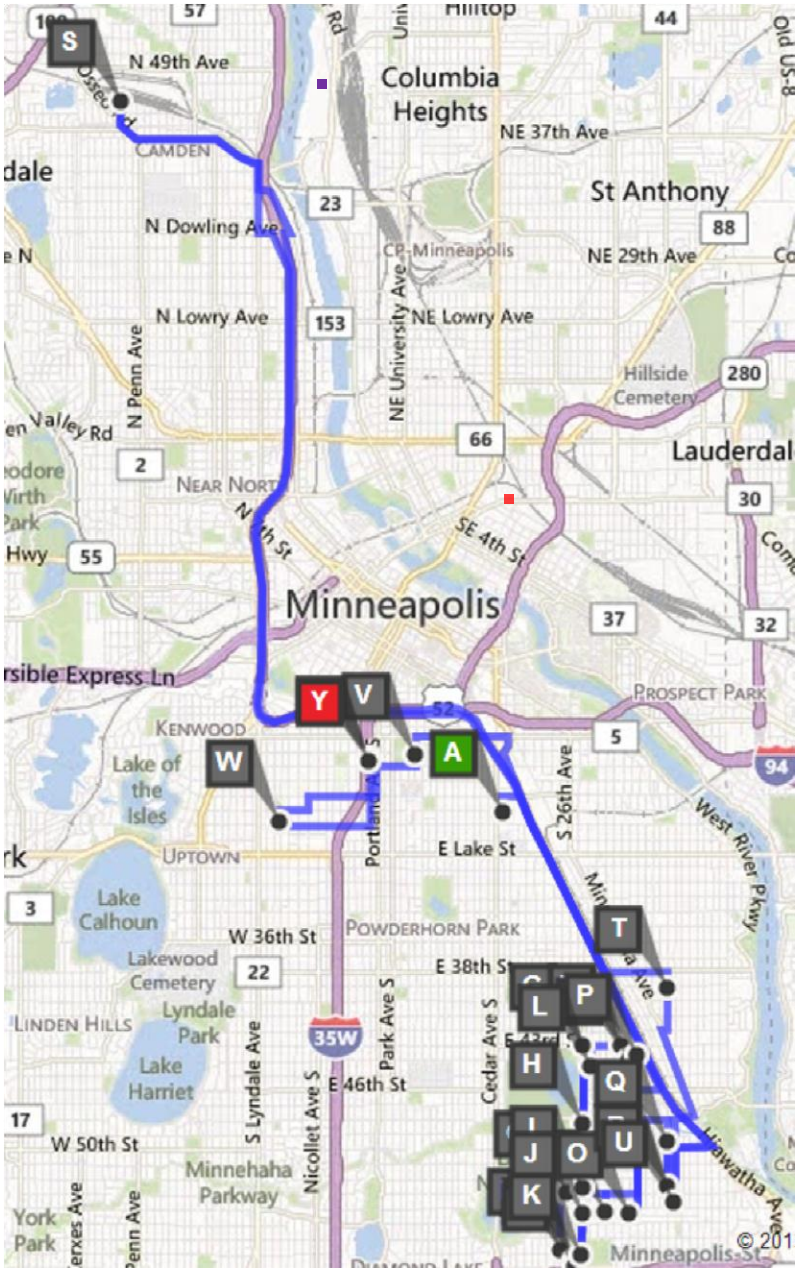
@ Hiawatha

$$\{\overrightarrow{AB} + \overrightarrow{XY}\} = 11.8\ mi$$

$$\{\overrightarrow{BC} + \cdots + \overrightarrow{WX}\} = 22.6\ mi$$

$$\frac{\{\overrightarrow{AB} + \overrightarrow{XY}\}}{\left\{\{\overrightarrow{AB} + \overrightarrow{XY}\} + \{\overrightarrow{BC} + \cdots + \overrightarrow{WX}\} + e + r + p + m\right\}} = \frac{11.8}{\{11.8 + 22.6 + e + r + p + m\}}$$

Is it reasonable that $e + r + p + m = 5.4\ mi$?



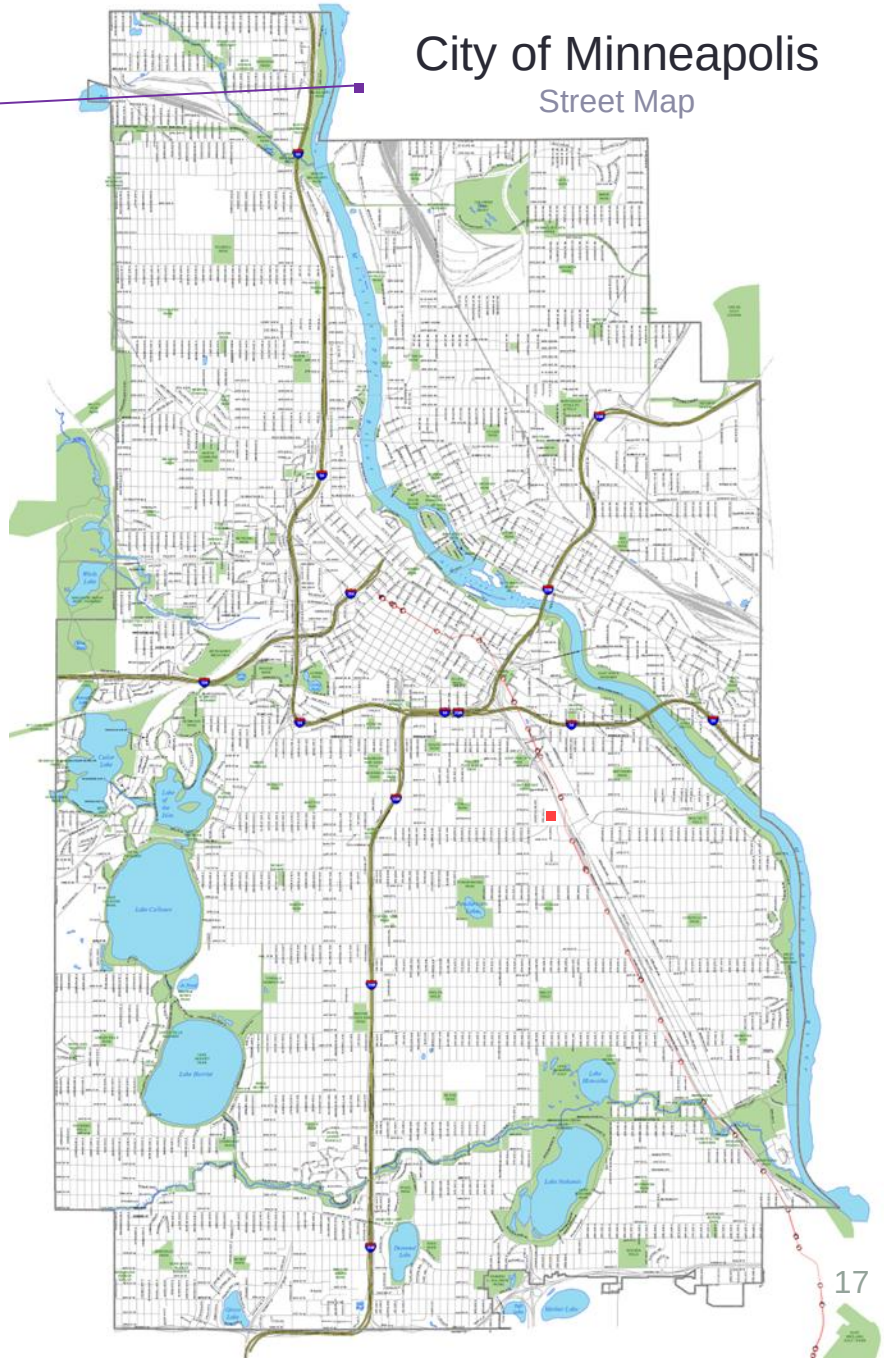
PROJECTED ANNUAL TRAVEL DISTANCE – Leaks, Cleaning and Linings

Fridley

ESY	Miles
Leaks, Cleaning, and Lining	25,467
Postings	14,462
318 (Delinquent Turnoffs)	14,462
320 (Turn-ons)	14,126
805 (Turnoff for repair)	7,404
814 (Stopbox repair)	846
95 (Vacant Turnoff)	1,249
	78,016

Meter Shop	Miles
192	27,694
64	8,915
231	10,697
414	5,192
164	4,359
112	4,980
66	2,890
264	2,311
100	2,130
65	1,090
171	1,059
	71,317

TOTAL:	**149,333**



Work Order Information:

Created a spreadsheet for Mark Ebert to identify the anticipated large structural projects planned for 2013 in addition to anticipated leaks.

Project Type/Location:								Leaks
NUM (#)	CREW NAME	UP (days)	DOWN (days)	TRIPS/ DAY	FTEs (#)	EQMT (#)	TRIPS (#)	NOTES (itemized list, does not necessarily relate to rows)
2	Clam Crew (3FTE)	18	18	1	6	2	144	45 leaks per year, already there have been 15
	Flatbed Boom Truck							
1	Foreman Pick-up	18	18	2	1	1	144	
1	Gate Crew (3FTE)	18	18	2	3	1	144	
	Hose Crews (4FTE)							
	Inspector - G&L (2FTE)							
	Inspector - Van (1FTE)							
	Pick-up							
1	Pick-up + Tailer (2FTE)	18	18	1	2	1	72	<-- this is for the auger
1	Rubber Tire Backhoes	18	18	1	1	1	72	
1	Tri-axle Dump Truck	18	18	5	1	1	360	<-- 5 trips, 1 for equipment to yard, 2 dumps at fridley, 2 fills to yard
	Valve Truck							
1	Leak Investigator	18	18	1	1	1	72	
	Beat Crew (2 FTE)							
8	<-- Total -->				15	8	1008	

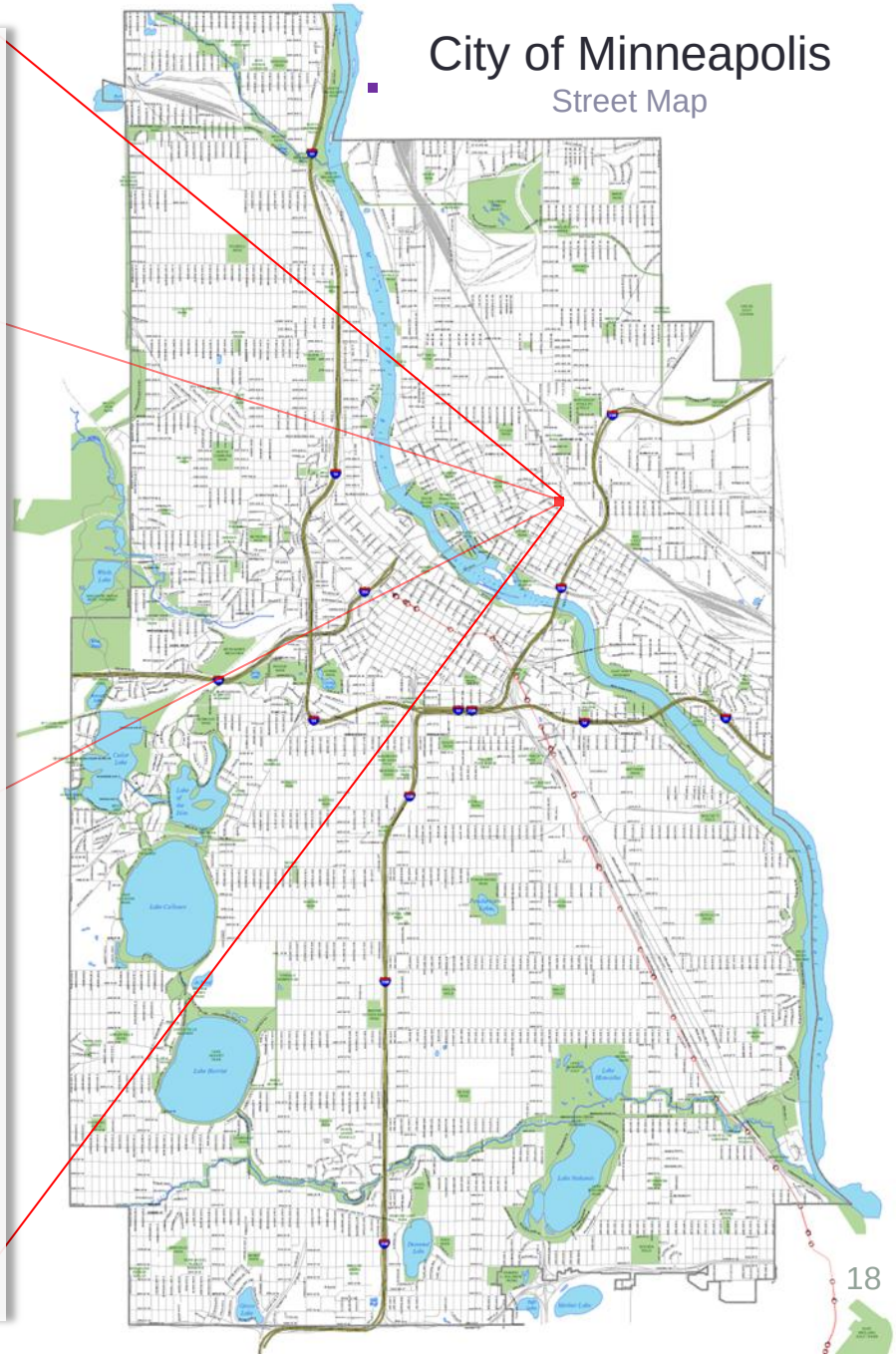
Project Type/Location:								Shingle Creek
NUM (#)	CREW NAME	UP (days)	DOWN (days)	TRIPS/ DAY	FTEs (#)	EQMT (#)	TRIPS (#)	NOTES (itemized list, does not necessarily relate to rows)
2	Clam Crew (3FTE)				6	2	0	
1	Flatbed Boom Truck	54		1	1	1	108	
2	Foreman Pick-up	24	12	1	2	2	144	
1	Gate Crew (3FTE)	35		1	3	1	70	
	Hose Crews (4FTE)							
2	Inspector - G&L (2FTE)				4	2	0	
	Inspector - Van (1FTE)							
	Pick-up							
2	Pick-up + Tailer (2FTE)	13	13	1	4	2	104	
2	Rubber Tire Backhoes	24	12	1	2	2	144	
2	Tri-axle Dump Truck	24	12	1	2	2	144	
	Valve Truck							
	Leak Investigator							
	Beat Crew (2 FTE)							
14	<-- Total -->				24	14	714	

Project Type/Location:								Nicollet Ave S: 36th to 40th St E
NUM (#)	CREW NAME	UP (days)	DOWN (days)	TRIPS/ DAY	FTEs (#)	EQMT (#)	TRIPS (#)	NOTES (itemized list, does not necessarily relate to rows)
	Clam Crew (3FTE)							Vehicle Rental cost is fixed
	Flatbed Boom Truck							Non-freeway vehicles: Backhoe, Auger (hauled with pick-up), Compressor
	Foreman Pick-up							
1	Gate Crew (3FTE)	6		1	3	1	12	
1	Hose Crews (4FTE)	3.5	3	1	4	2	26	
1	Inspector - G&L (2FTE)	4		1	2	1	8	
1	Inspector - Van (1FTE)	10		1	1	1	20	
	Pick-up							
	Pick-up + Tailer (2FTE)							
	Rubber Tire Backhoes							
	Tri-axle Dump Truck							
1	Valve Truck	6		1	1	1	12	
	Leak Investigator							
	Beat Crew (2 FTE)							
5	<-- Total -->				11	6	78	

Data Breakdown

- Number of trips by crew type
- Days spent setting up
- Days spent tearing down
- Number of FTEs per vehicle type

} Leaks, C&L Mileage

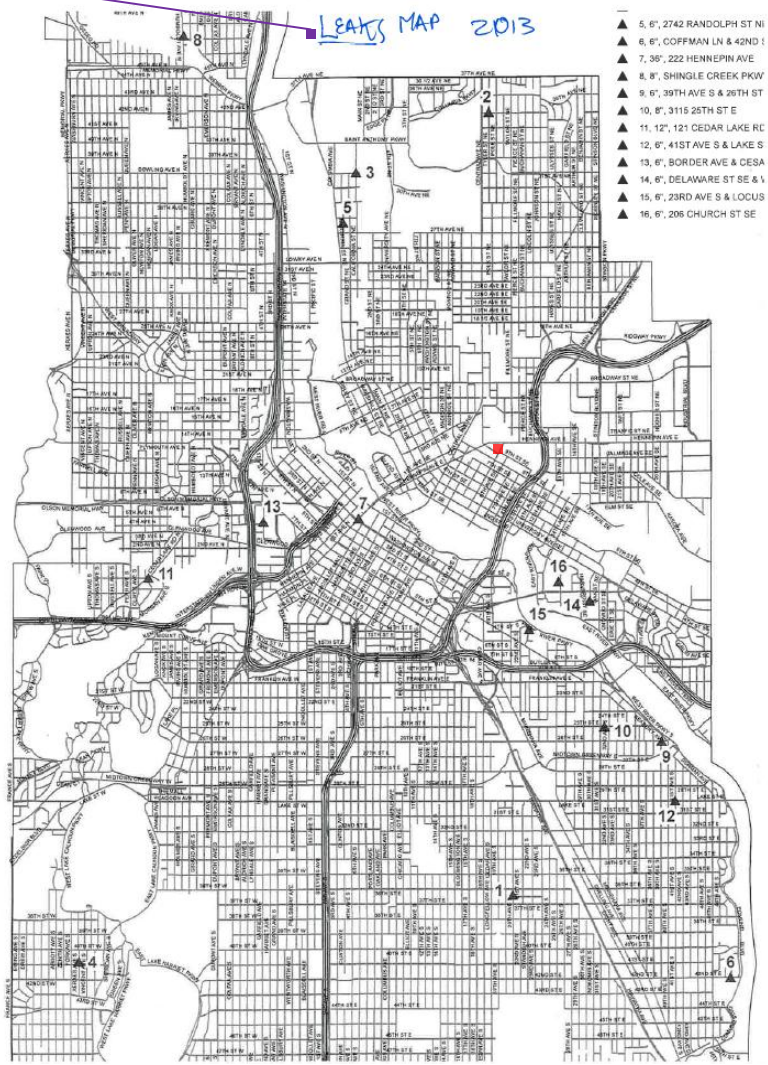


Leaks, Cleaning & Lining Assumptions

Key Assumptions:

1. Because leaks, cleaning and linings often make frequent use of rubber tire backhoes, when the distance to the location is far from the equipment site, it is assumed they are stored near the worksite.

2. Tri-axle dump trucks deploy from both Fridley and the ESY with all full loads being brought only to Fridley.



Cost Calculation

What Factors are Considered in the Calculation of Cost?

- Shortest path travel distance from site to the first and last address in each neighborhood for each day by work order.
- Estimated fuel consumption cost per mile
- Estimated maintenance cost per mile of travel
- Estimated cost in man-hours per trip based on an average travel speed.

Cost Calculation Assumptions

1. The average vehicle travel speed is likely less than or equal to 30 mph (almost entirely back road travel)

2. The average price of fuel is expected to be approximately $3.82 per gallon based on actual average costs of fuel from 2012 fleet statistics.

3. There are approximately 44 leaks occurring each year on average, are random occurrences, and happen typically in clusters occurring primarily near the river according to 75-year incident map. The average travel distance from Fridley is approximately 11 mi, the average travel distance from Hiawatha is 6 mi.
4. Field employee hourly wages are approximately $28 / hr

5. Postings occur at a frequency of approximately 120 posts per week between 7 pick-up trucks on Mondays (15 – 20 properties each).

6. Postings echo roughly the same distance travelled for delinquent turn-offs.

7. Postings require a single FTE.

8. The cost of maintenance is approximately $0.26 on average per mile according to 2012 fleet maintenance history, which includes service, parts, and repairs occurring outside the repair shop. This value does not reflect costs incurred by the base lease or depreciation as these values are the same between the sites.

Fridley

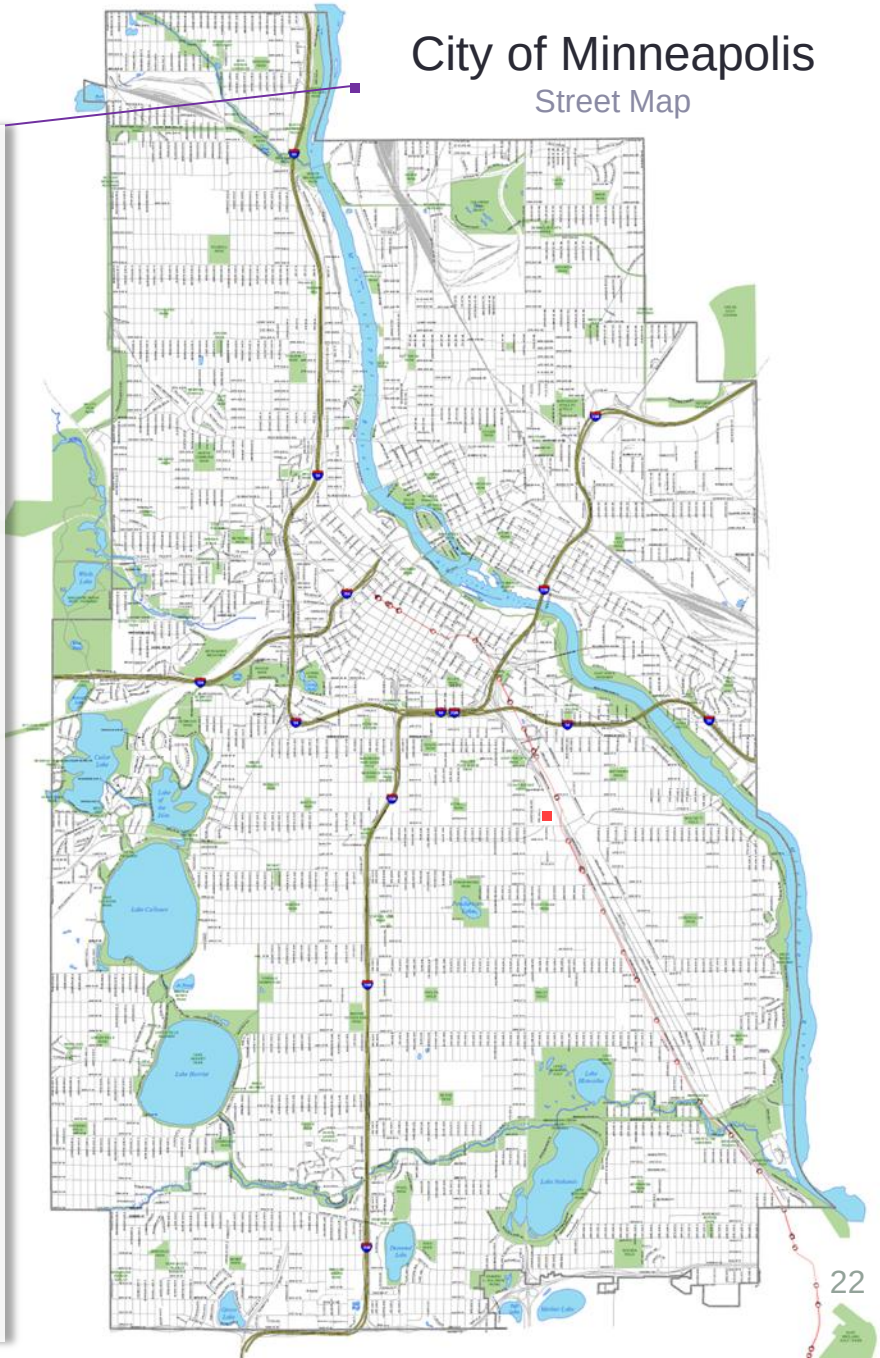
ESY	Miles	Fuel	Maint	Man-hrs
Leaks, Cleaning, and Lining	25,467	$20,290	$7,614	$25,249
Postings	14,462	$6,409	$3,760	$12,683
318 (Delinquent Turnoffs)	14,462	$6,409	$3,760	$12,683
320 (Turn-ons)	14,126	$6,260	$3,672	$10,044
805 (Turnoff for repair)	7,404	$3,281	$1,925	$3,268
814 (Stopbox repair)	846	$375	$220	$565
95 (Vacant Turnoff)	1,249	$554	$325	$235
	78,016	**$43,578**	**$21,276**	**$64,726**

Meter Shop	Miles	Fuel	Maint	Man-hrs
192	27,694	$10,579	$7,200	$25,848
64	8,915	$3,406	$2,318	$8,321
231	10,697	$4,086	$2,781	$9,984
414	5,192	$2,301	$1,350	$4,846
164	4,359	$1,665	$1,133	$4,068
112	4,980	$1,902	$1,295	$4,648
66	2,890	$1,104	$752	$2,698
264	2,311	$883	$601	$2,157
100	2,130	$813	$554	$1,988
65	1,090	$416	$283	$1,017
171	1,059	$405	$275	$988
	71,317	**$27,560**	**$18,542**	**$66,562**

TOTAL:	**149,333**	**$71,138**	**$39,818**	**$131,288**

City of Minneapolis

Street Map



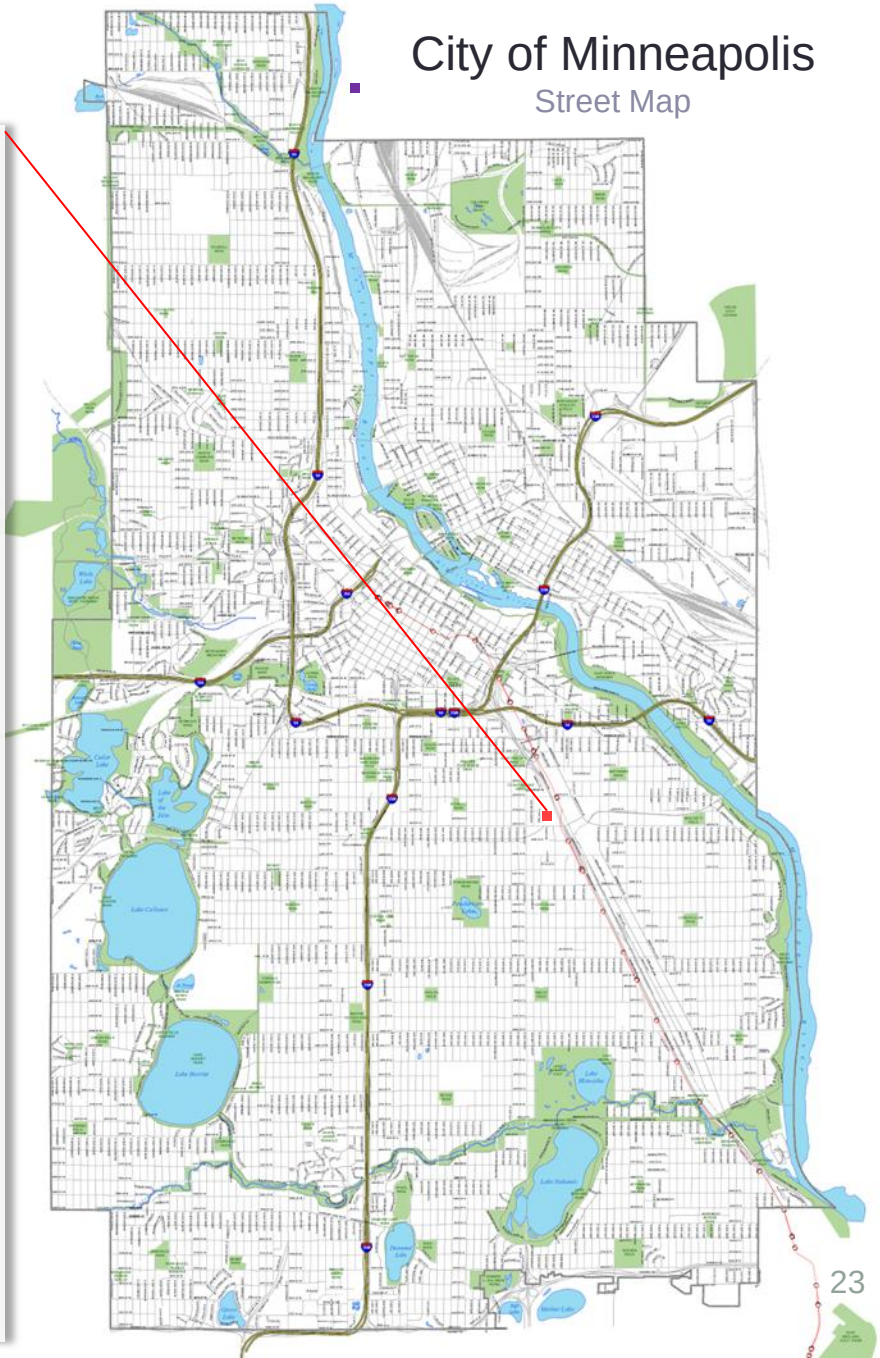
PROJECTED ANNUAL TRAVEL COSTS

Hiawatha

ESY	Miles	Fuel	Maint	Man-hrs
Leaks, Cleaning, and Lining	16,875	$15,113	$4,388	$16,726
Postings	9,601	$4,255	$2,496	$8,961
318 (Delinquent Turnoffs)	9,601	$4,255	$2,496	$8,961
320 (Turn-ons)	9,357	$4,146	$2,433	$8,733
805 (Turnoff for repair)	3,974	$1,761	$1,033	$3,709
814 (Stopbox repair)	557	$247	$145	$858
95 (Vacant Turnoff)	919	$407	$238	$520
	50,884	**$30,184**	**$13,229**	**$48,466**

Meter Shop	Miles	Fuel	Maint	Man-hrs
192	15,303	$5,846	$3,978	$14,283
64	5,371	$2,052	$1,396	$5,013
231	5,869	$2,242	$1,526	$5,478
414	3,729	$1,652	$969	$3,480
164	2,897	$1,107	$753	$2,704
112	2,304	$880	$599	$2,150
66	2,185	$835	$568	$2,039
264	1,128	$431	$293	$1,052
100	1,425	$544	$371	$1,330
65	740	$283	$192	$690
171	494	$189	$128	$461
	41,445	**$16,061**	**$10,773**	**$38,680**

TOTAL:	**92,329**	**$46,245**	**$24,002**	**$87,147**
	+38%	+35%	+40%	+34%
Advantage:	**57,004**	**$24,893**	**$15,816**	**$44,141**



Summary of Transportation Costs

	ESY			Meter Shop			TOTAL
	Fuel	Maint	Man-hrs	Fuel	Maint	Man-hrs	
Fridley	$43,578	$21,276	$64,726	$27,560	$18,542	$66,562	$242,244
Hiawatha	$30,184	$13,229	$48,466	$16,061	$10,773	$38,680	$157,394
						Δ =	**$84,850**

The difference in selecting Hiawatha over Fridley may be larger but is at least $85k annually in travel operation costs with respect to fuel consumption, vehicle maintenance, and man-hours. This is based on work order data and projected leaks/cleaning and lining projects from 2011 and 2013, respectively.

Summary of Transportation Costs

	ESY			Meter Shop			TOTAL
	Fuel	Maint	Man-hrs	Fuel	Maint	Man-hrs	
Fridley	$43,578	$21,276	$64,726	$27,560	$18,542	$66,562	$242,244
Fridley + Radio	$32,176	$14,587	$44,272	$27,560	$18,542	$66,562	$203,699
				(Same savings at Hiawatha + Radio)		**Δ =**	**$38,545**

The difference advantage in leveraging radio turnoff/turn-on technology is at best $39k annually in travel operation costs with respect to fuel consumption, vehicle maintenance, and man-hours.

Narratives

What other considerations are there to make the decision?

- Security
- Benefit of consolidating resources.
  - Command Center (Marie, Mark & Bob)
  - Claims
  - Interdepartmental coordination
  - During events provide quick, unified response
  - Craig's water permits
- Storage (operational efficiency)
- Equipment

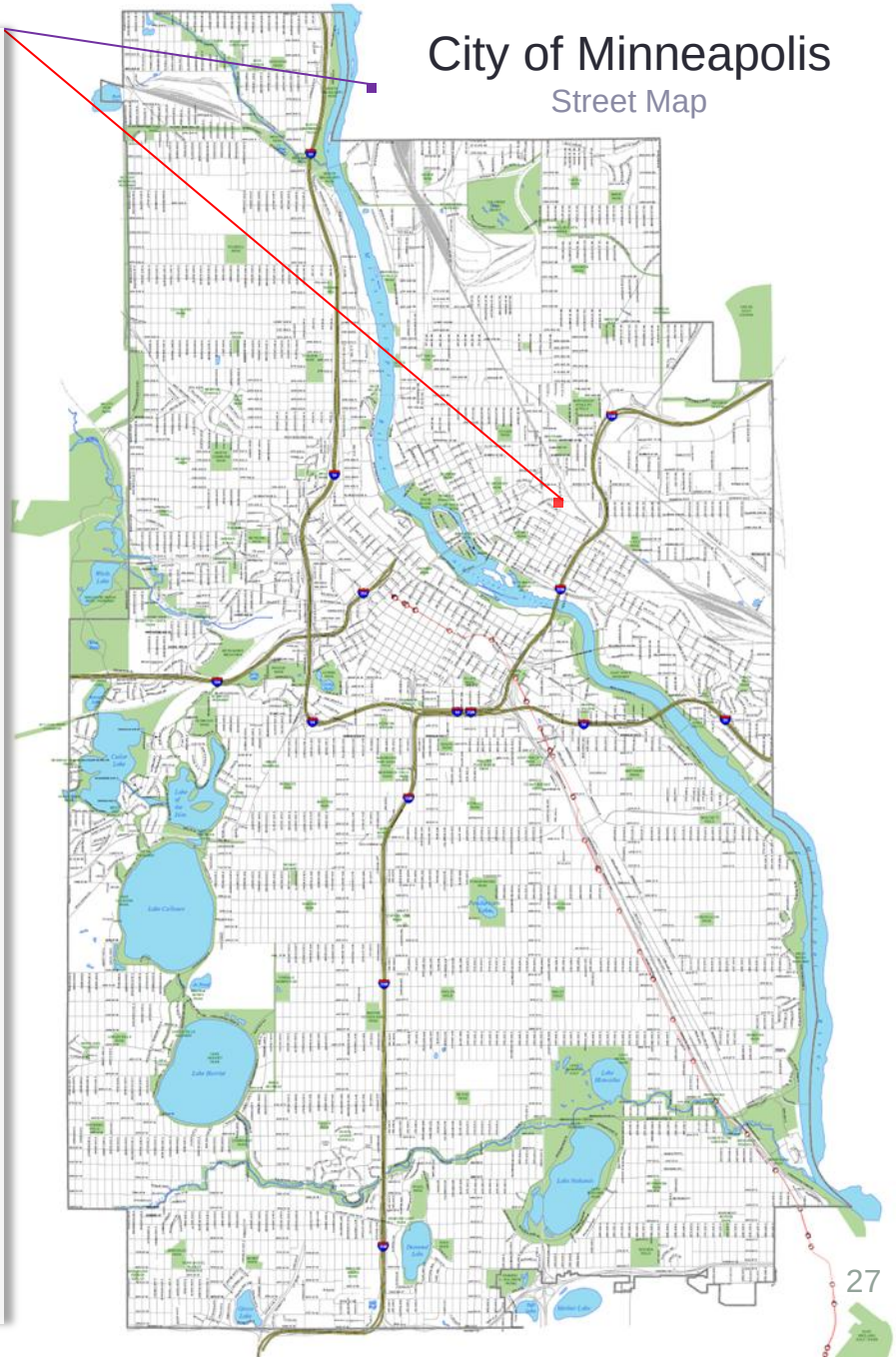
Security

The difference between the Fridley and Hiawatha sites regarding security have programmatic and operational implications, and offer an unique opportunity to incorporate and support the concept of CPTED (Crime Prevention Through Environmental Design) with the site layout.

Programmatic advantages are already available at the Fridley site. A central, secure entry exists to protect the high risk treatment facilities by restricting access. With the new build out of the Fridley campus, it would be possible to enhance the two-tier campus security approach by leveraging the existing infrastructure to minimize public access in the future. Operations would not change significantly from today as visitor and employee parking is already isolated outside the high risk zone. By comparison, a similar two-tier approach is in place at both the St. Paul Water Plant and the Metro Waste Water Plant.

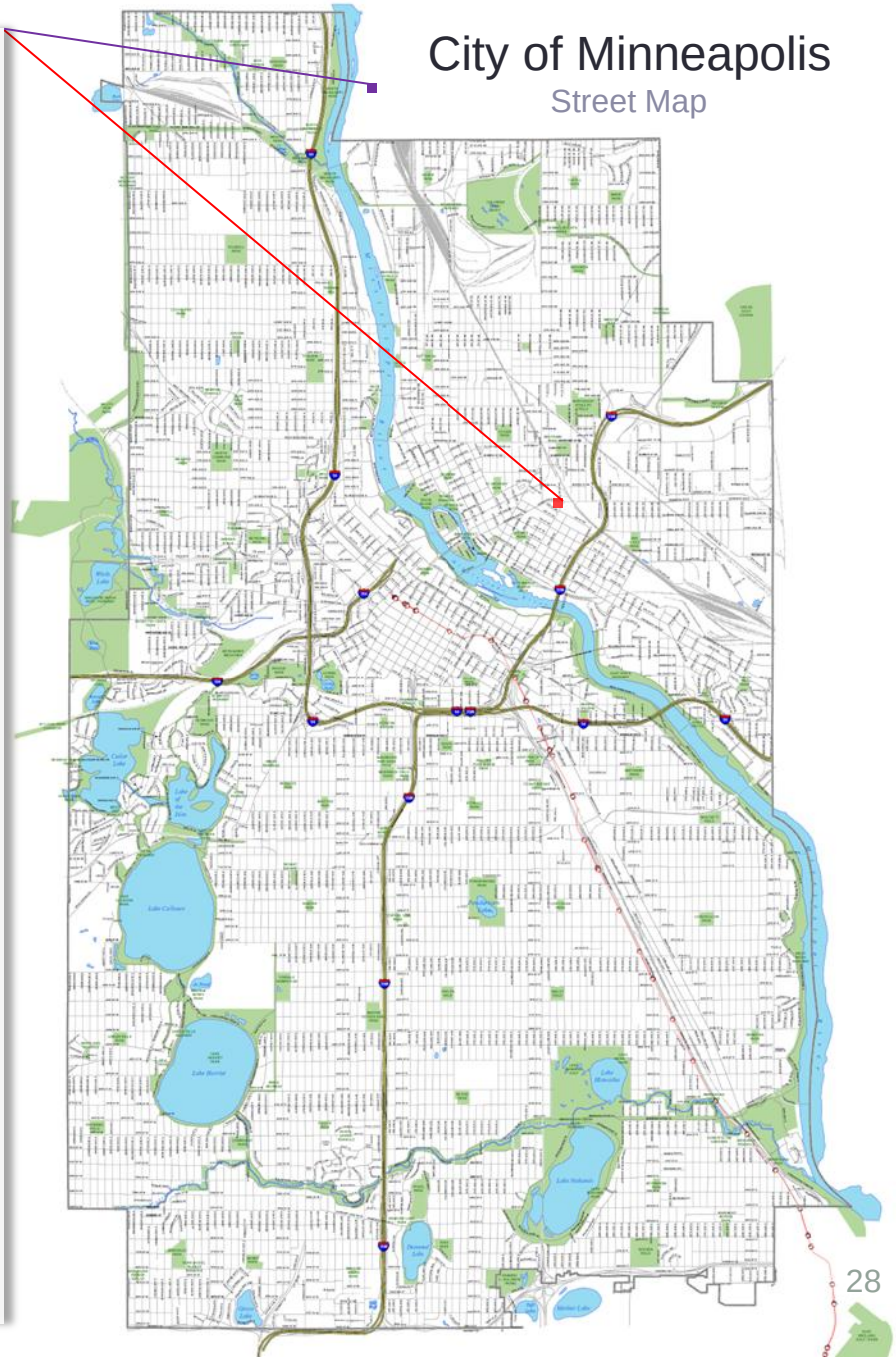
Providing the same security approach at Hiawatha is possible, however, it comes at the cost of significant infrastructure development to achieve the same level of security. If the primary goal is to influence potential offender decisions preceding criminal acts, the future water distribution environment should take advantage of existing infrastructure as is the spirit of CPTED.

Whether the distribution center is located at Fridley or at Hiawatha, the campus will require added cameras and technology upgrades. At Fridley these upgrades will be in *addition* to what exists; at Hiawatha, upgrades will be a complete new installation.



Security (continued)

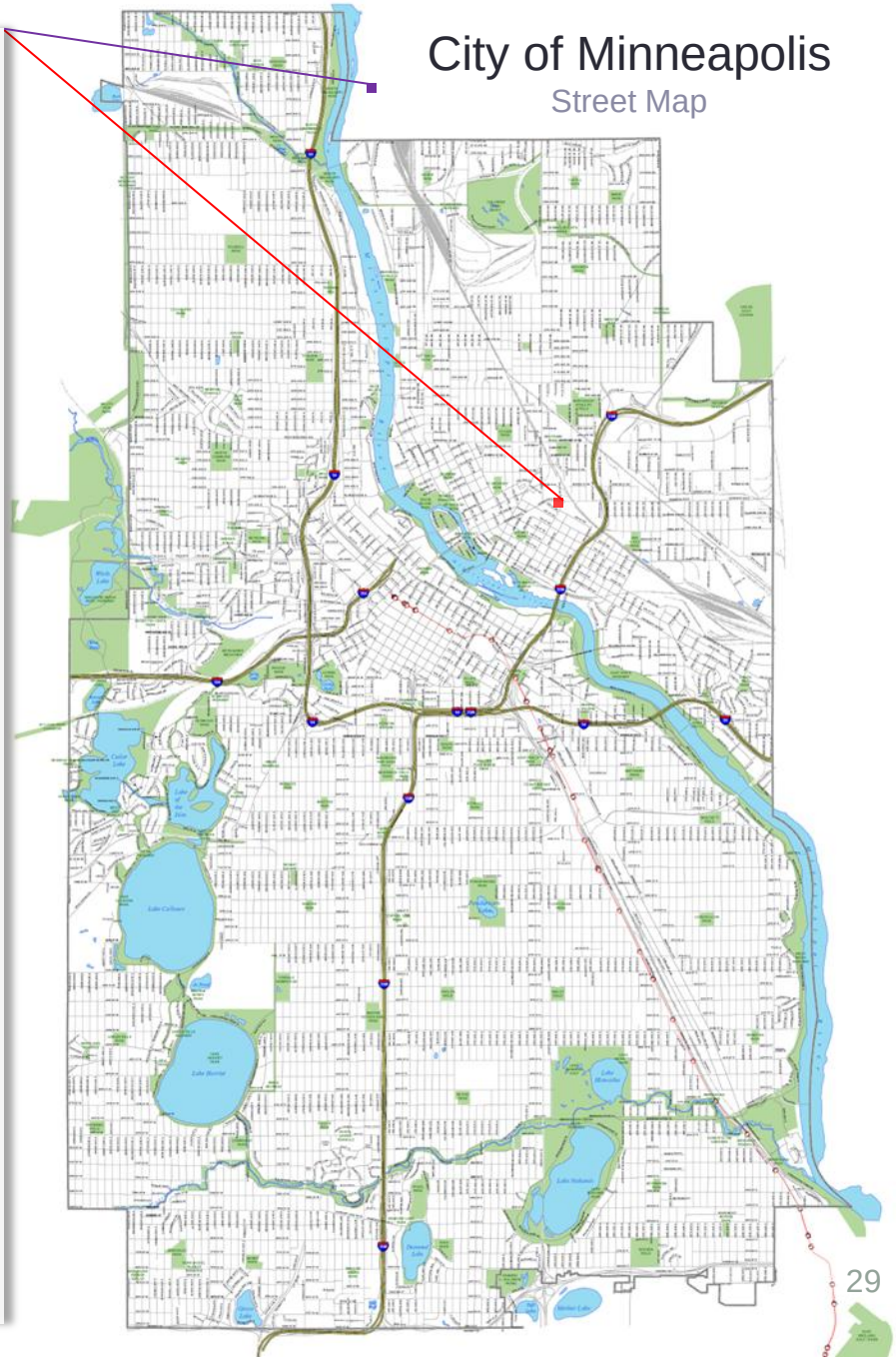
Lastly, for both sites, considerations could be made for not having any security forces on contract by handling the visitors through a new administrative building. Studies show that unarmed security forces contribute very little in cases of serious threats. A more complete security, vulnerability study scheduled for 2014, may reveal additional insight on specific approaches to security that leverage principles of CPTED. It is possible to do the two tier approach without the added buildings but it will be difficult. A more complete security study is scheduled for 2014, which may reveal new information to consideration in planning.



Co-location

Several benefits are evident with respect to co-locating resources to one central site. For example,

1. Consolidating engineering services between the Engineering and Distribution units to a new administrative building will facilitate communication, record keeping, and one less CAD technician. Further, no additional renovations for engineering spaces in the plant would be necessary and by providing meeting space outside of the lab would minimize the need to remodel conference room spaces.
2. IT functions will also benefit from the same advantages as engineering but with no reduction in personnel
3. At Fridley, the meter facility could be renovated in the meter testing area, and meter administration could be consolidated with other administrative personnel. This would require no new construction and minimizes costs to renovating the meter shop specifically for testing functions.
4. A new administrative building would include modern training and conferencing rooms for both the plant and distribution units. All three unit managers would office together and be able to share staff (where applicable). And, it is expected that the employees in the permit section downtown will move to this location once the permit process is automated. A unified administrative area enables a cohesive environment for quick response during emergency situations because of more timely communication between staff.



Storage

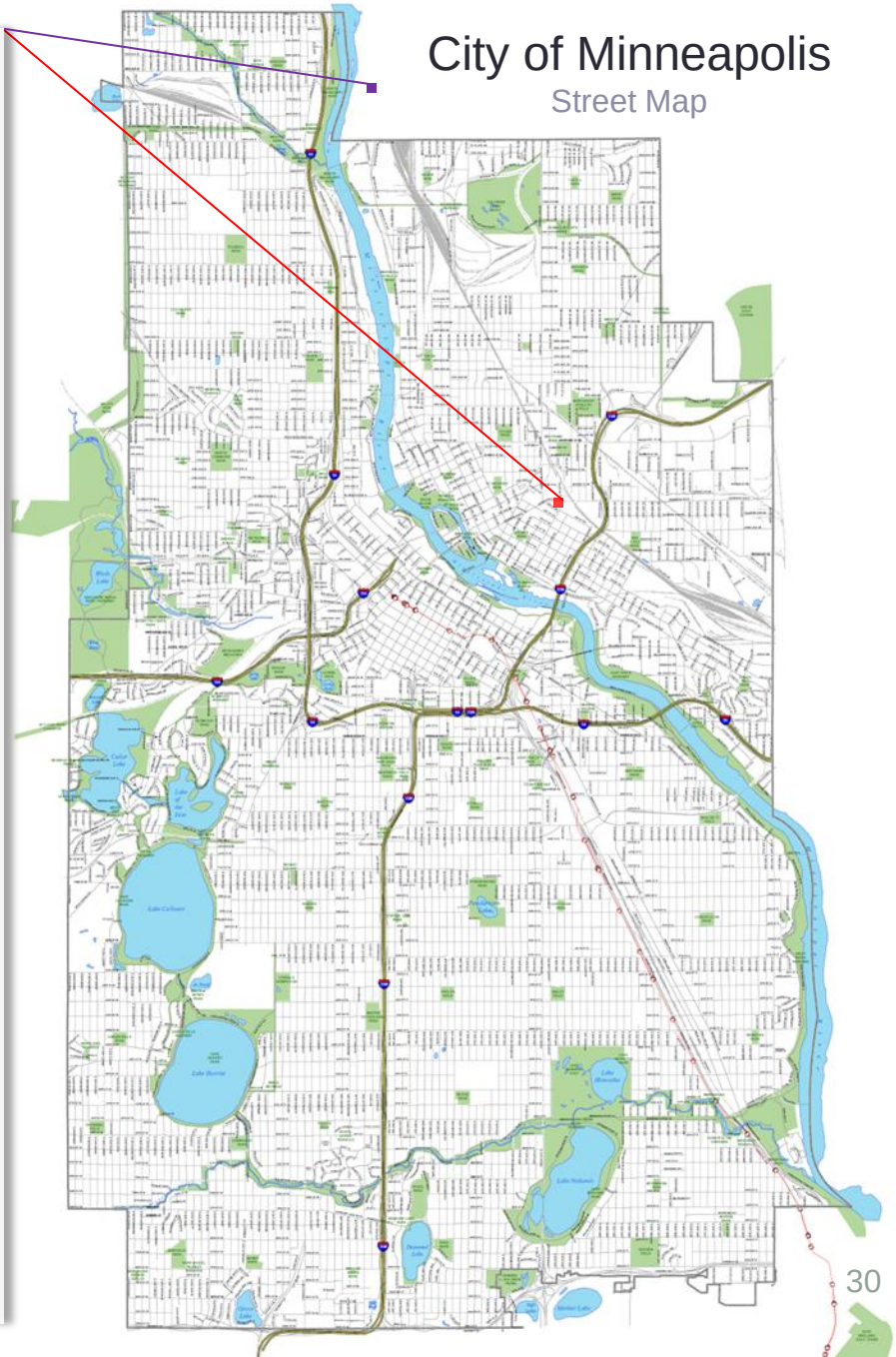
Advantages in storage exist at both proposed sites, and in both cases offer the advantage of reducing demand for overall inventory dollars from the efficiency gains of consolidation (i.e. reduced duplication of inventory management as well as raw inventory dollars). However, these advantages are relative as outlined below.

Those advantages that are specific to Hiawatha include:

1. Existing infrastructure that easily supports storage space for the organization of equipment and supplies in a central warehouse-type fashion.
2. Openness of space leads to high visibility of inventory for ease of management.
3. Loading dock could be refactored to facilitate ease of daily loading and unloading of equipment as well as order replenishment and disposal.

Advantages specific to the Fridley site include:

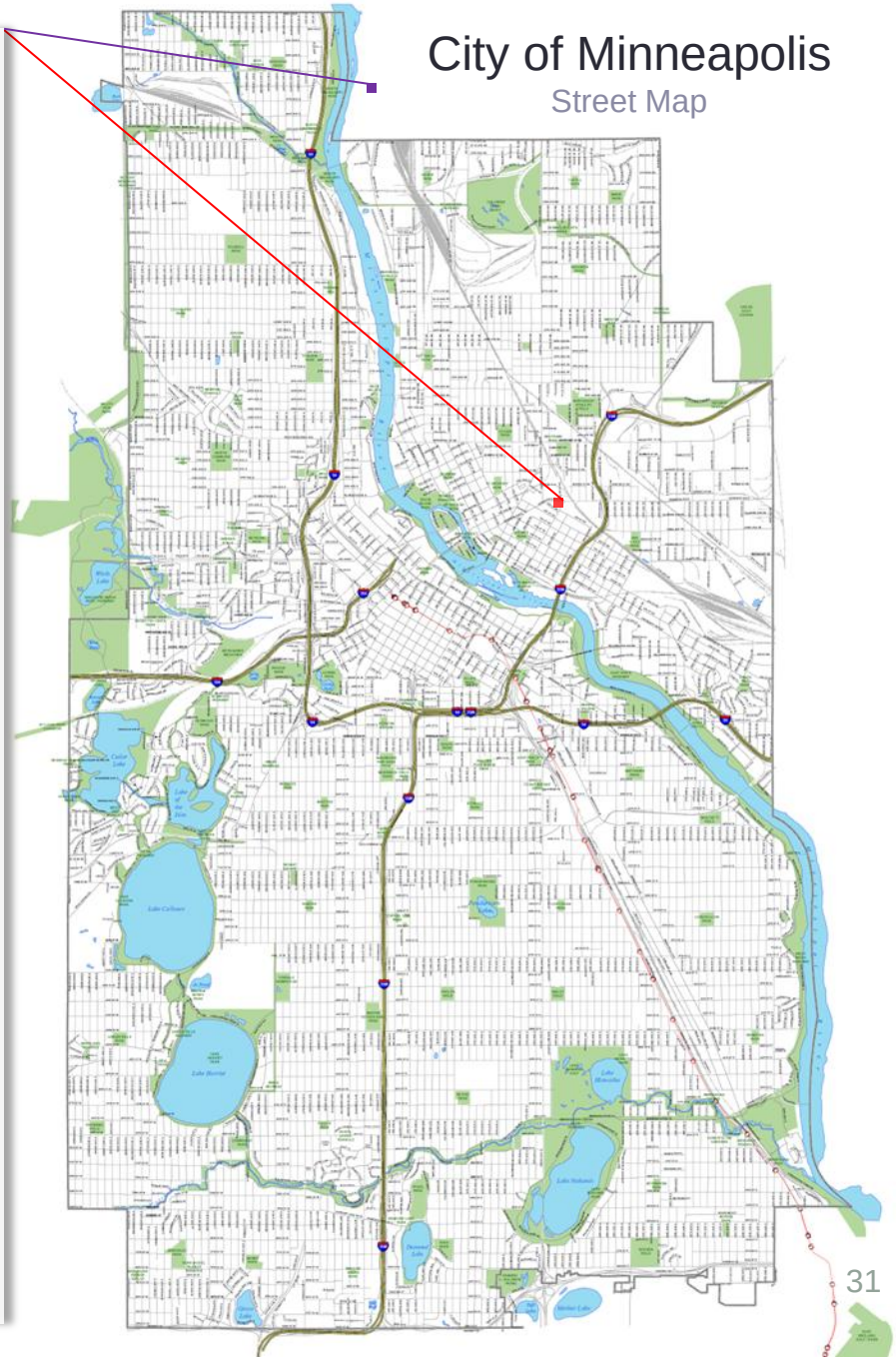
1. The expansion of warehouse operations can be accomplished by building adding space adjacent to existing warehouse infrastructure.
2. Greater consolidation of all inventory to one location. No duplication is necessary as all inventory will be at one central site instead of (potentially) two.



Equipment

The same consolidation advantages exist for equipment as for storage. Consolidation at Fridley means better utilization of equipment among the treatment operations/maintenance, laboratory, distribution, and meter shop work units. Also, there is an advantage from a maintenance perspective (i.e. oil changes and repairs). Maintenance resources could be combined to perform vehicle repairs on all fleet vehicles.

These advantages would be lost at Hiawatha due to duplication, but other advantages do exist. For example, because of its central locality, Hiawatha would generate less demand on vehicle mileage leading to less cost in fuel and vehicle repair. As outlined in the travel cost study, locating to Hiawatha results in 57k less miles travelled annually which equates to approximately $24k and $16k annually in fuel and maintenance savings, respectively. At least $85k annual savings would potentially incur if man-hours costs are included in the total cost savings.



Summary of Narratives

How are the narrative advantages measured?

	Advantages @ Fridley/Disadvantages @ Hiawatha	
• Security	Reduction or elimination of security contract of $400,000 by eliminating 5 FTEs	
• Co-locating	1 FTE (Engineering)	→ Potential for Hiawatha
	1 FTE (Administrative)	→ Potential for Hiawatha
• Storage	2 FTE	
• Equipment	1 FTE	→ Potential for Hiawatha

Conclusions

The overall *advantages* provided through the narratives and travel analysis

	Advantages @ Fridley	Disadvantages @ Hiawatha
• Security	Reduction or elimination of security contract of $400,000 by eliminating 5 FTEs	
• Co-locating	~~1 FTE (Engineering)~~	~~Potential for Hiawatha~~
	~~1 FTE (Administrative)~~	~~Potential for Hiawatha~~
→ Note: SPRWS experienced unanticipated benefits due to co-locating because of synergies		
• Storage	2 FTE	
• Equipment	~~1 FTE~~	~~Potential for Hiawatha~~

	Advantages @ Hiawatha	Disadvantages @ Fridley
• Transportation		$85k ~ 1 FTE

TOTAL Fridley: -7 FTE vs Hiawatha: - 1 FTE

→ Note: Land cost of the Hiawatha site is not included

Challenging the Assumptions

To validate the approach, the following questions were posed to the analyst.

1. Were all of the data incorporated?

Yes, all of the work orders that were stored in Enquesta plus the institutional knowledge provided from Karen on postings, Dean on Meter Shop Operations, and Mark Ebert on leaks, cleaning and linings were incorporated into the analysis.

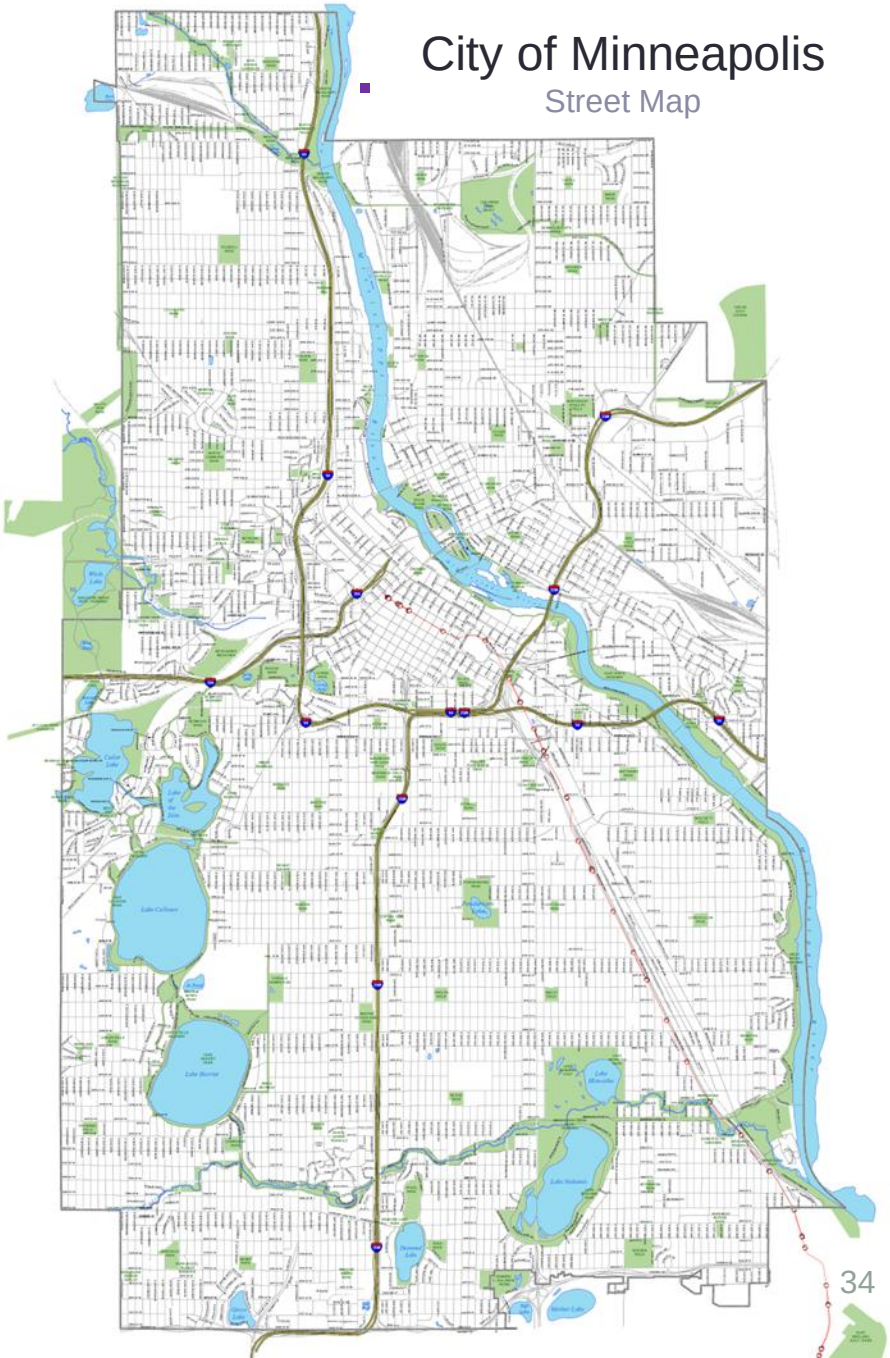
2. Are there any work orders that were forgotten?

Not any that are known, the work orders were validated with Karen and Dean to make sure that volumes that comprise the 95th percentile of the vehicle trips were accounted.

3. Do the miles calculated represent the whole of all travel?

No, there are many variables such as undocumented travel, side excursions, suboptimal routing, and other miscellaneous travel information that are not included in the analysis. However, it is believed that with the data collected, there is a quantitative story that helps to inform the decision of selecting the ideal site.

And, the missing mileage is likely erroneous with respect to both proposed sites and does not contribute to the *difference* in mileage. Further, even if it does make a difference, there is no way to quantitatively account for it that would not introduce more error to the calculations, or would require so much additional cost and effort to achieve only marginal improvement in accuracy.



Challenging the Assumptions

4. Are the calculated numbers accounting for the majority of the difference in travel between the sites?

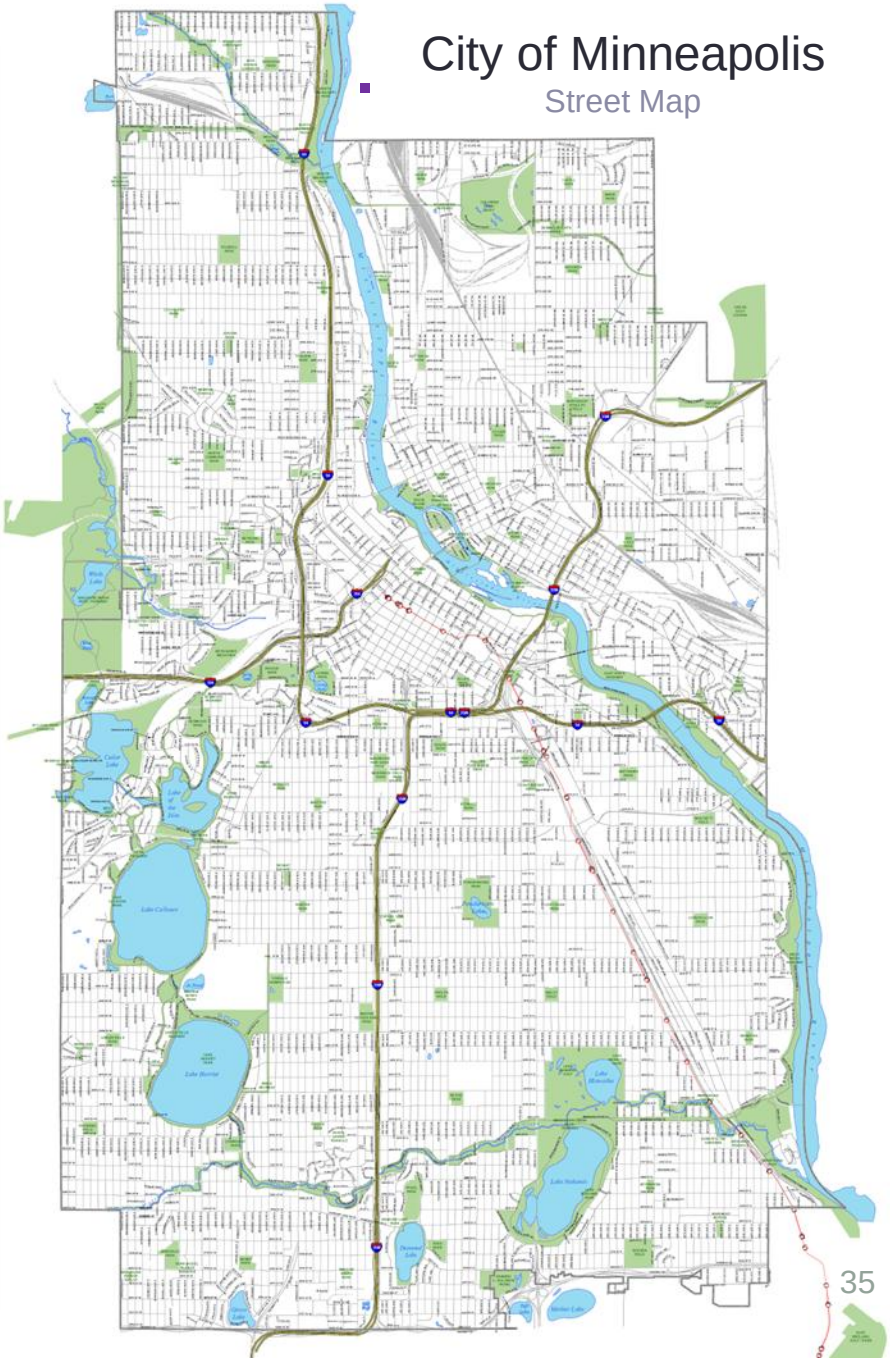
Yes, because the assumptions were validated with sample test data and verified by consulting with the appropriate users to derive the assumption numbers.

5. Are there any mistakes?

It is certainly possible, but it is believed that the problem approach has been tackled by the right questions, the right variables, the right measurements, and in the appropriate amount of time as to justify the effort of the study.

6. In terms of order of magnitude, do the results show the correct range of the difference in cost for transportation?

Yes, the cost of fuel from 2012 for the East Side Yard is approximately $181k, the difference in fuel cost between the proposed sites is roughly $13.5k. By asking if a 7% difference in fuel cost is reasonable, the answer seems to be yes. Why? Because of two reasons (1) even though Fridley is less centralized, the only mileage that contributes to the difference occurs on the first and last trip, <u>not</u> <u>all</u> of the trips, and (2) the calculations for fuel cost are based on current operations that are not expected to significantly change moving forward.

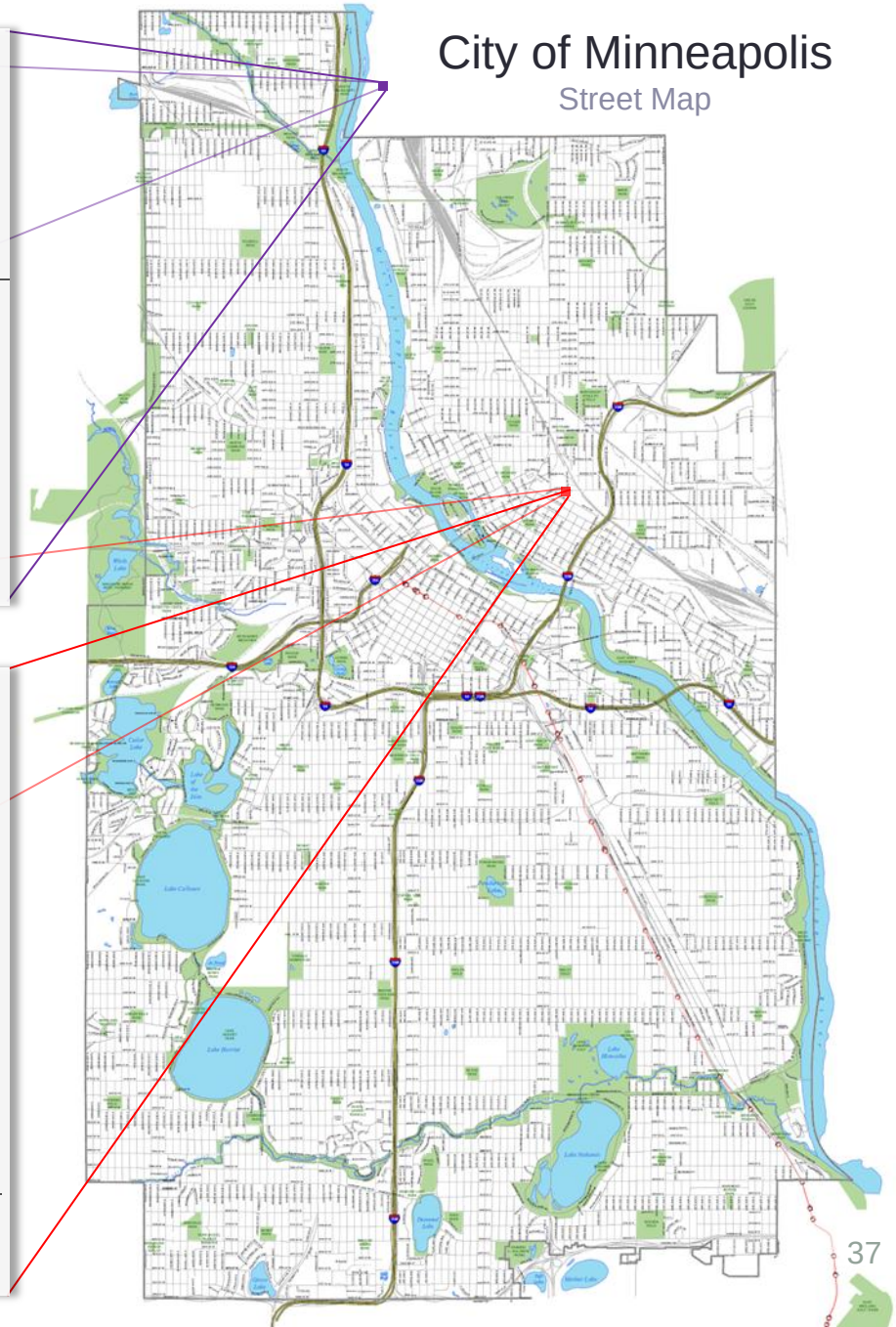


Fridley

Eastside Yard

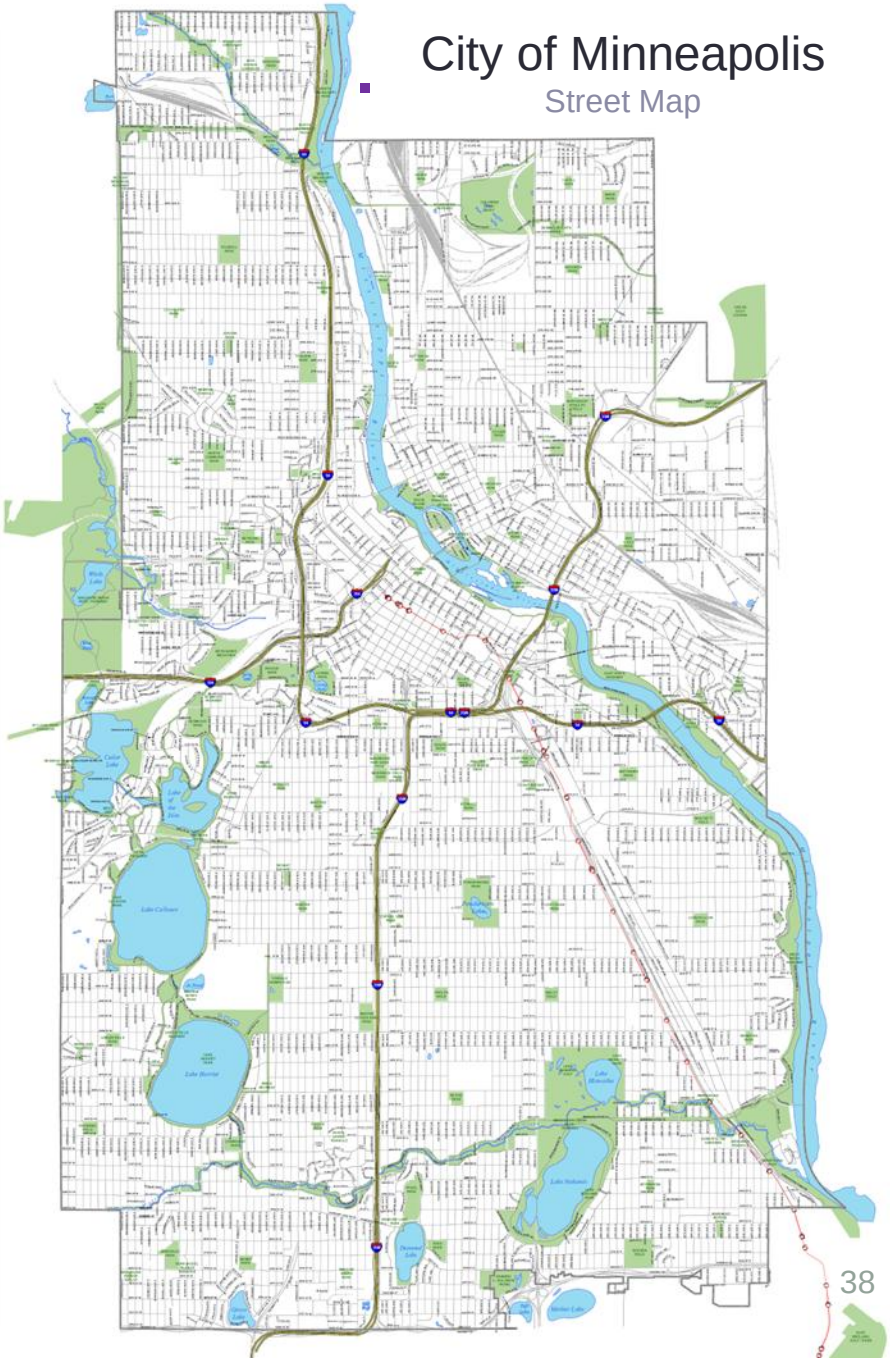
Meter Shop	Quantity	Avg MPG	Mileage	Gallons
Gate	1	5.45	11,170	1,600
Tapper	1	12.30	2,693	464
General Use Car	1	21.90	32,007	1,404
Locator Truck	1	10.00	15,766	2,125
Resident Min-vans	12	15.00	13,282	1,230
	16	**65**	**74,918**	**6,823**
TOTAL:	**68**	**8.5**	**429,290**	**58,295**

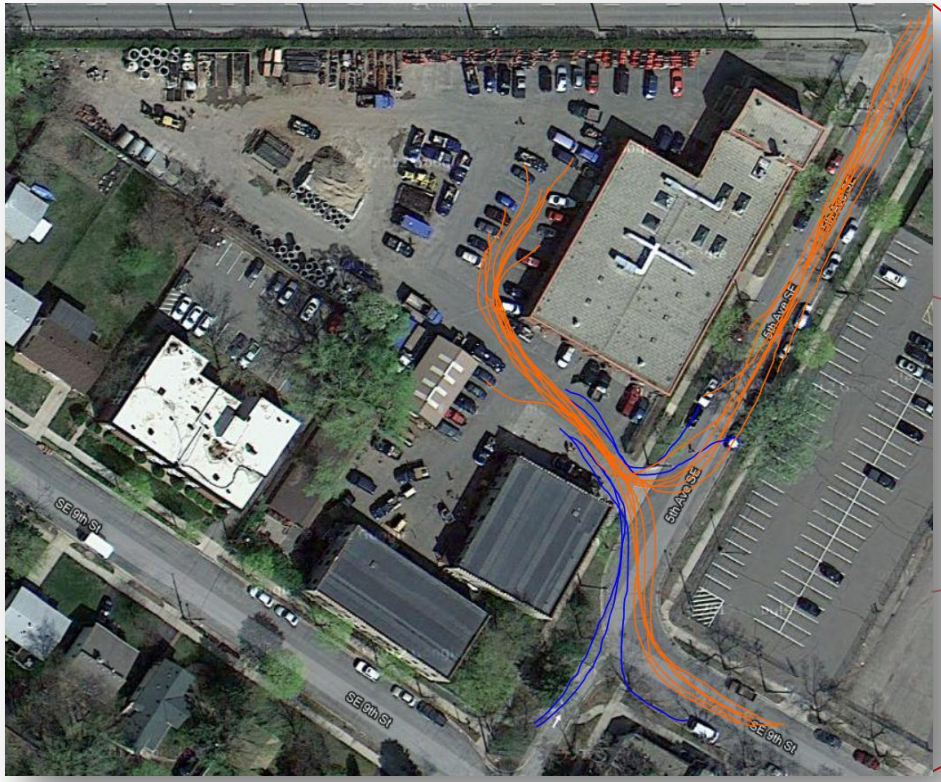
ESY	Quantity	Avg MPG	Mileage	Gallons
Gate Trucks	6	5.45	47,628	8,739
Tapper Vans	1	12.30	12,700	1,033
General Use Car	2	21.90	2,840	130
Backhoe	3	0.47	3,525	7,712
Tri-axle Dump Truck	2	5.58	16,887	3,026
Boom Truck	1	2.33	2,067	887
1 Ton Dump	1	6.55	7,728	1,180
Beat Truck	15	8.62	142,500	16,531
Clam Truck	3	4.00	4,257	1,064
Pick-up	13	10.00	100,714	10,070
Investigator Van	2	12.30	13,526	1,100
Trailer	3	-	-	-
	52	**90**	**354,372**	**51,472**



1. Additional Operational Considerations

- Technology – What happens when new equipment and technology is implemented?
- Event Scenarios – What happens when parts of the city become affected by a major disturbance? For example, a tornado strike or flood?
- Demographics – Some parts of town generally require more attention. It may need consideration when evaluating alternatives.
- Process – In the event that we change our internal processes, what about the change could affect the operational efficiency at a given site? For example we stop batching orders and leverage technology to improve efficiency of deployed vehicles.

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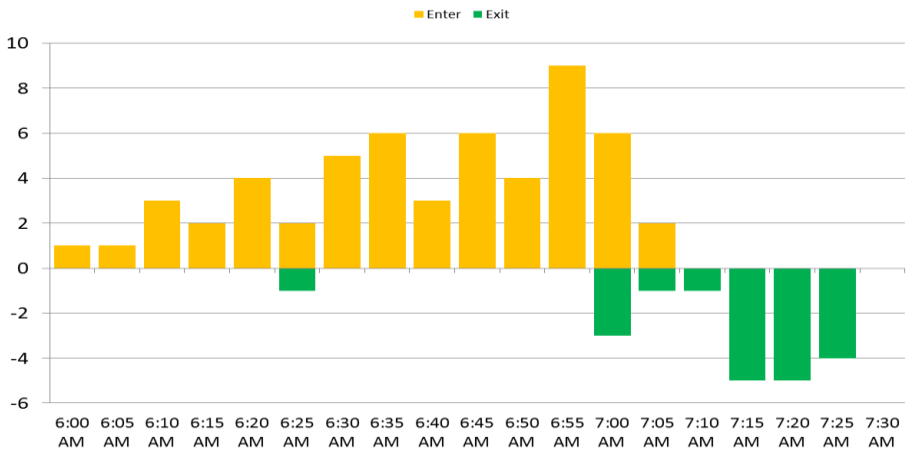
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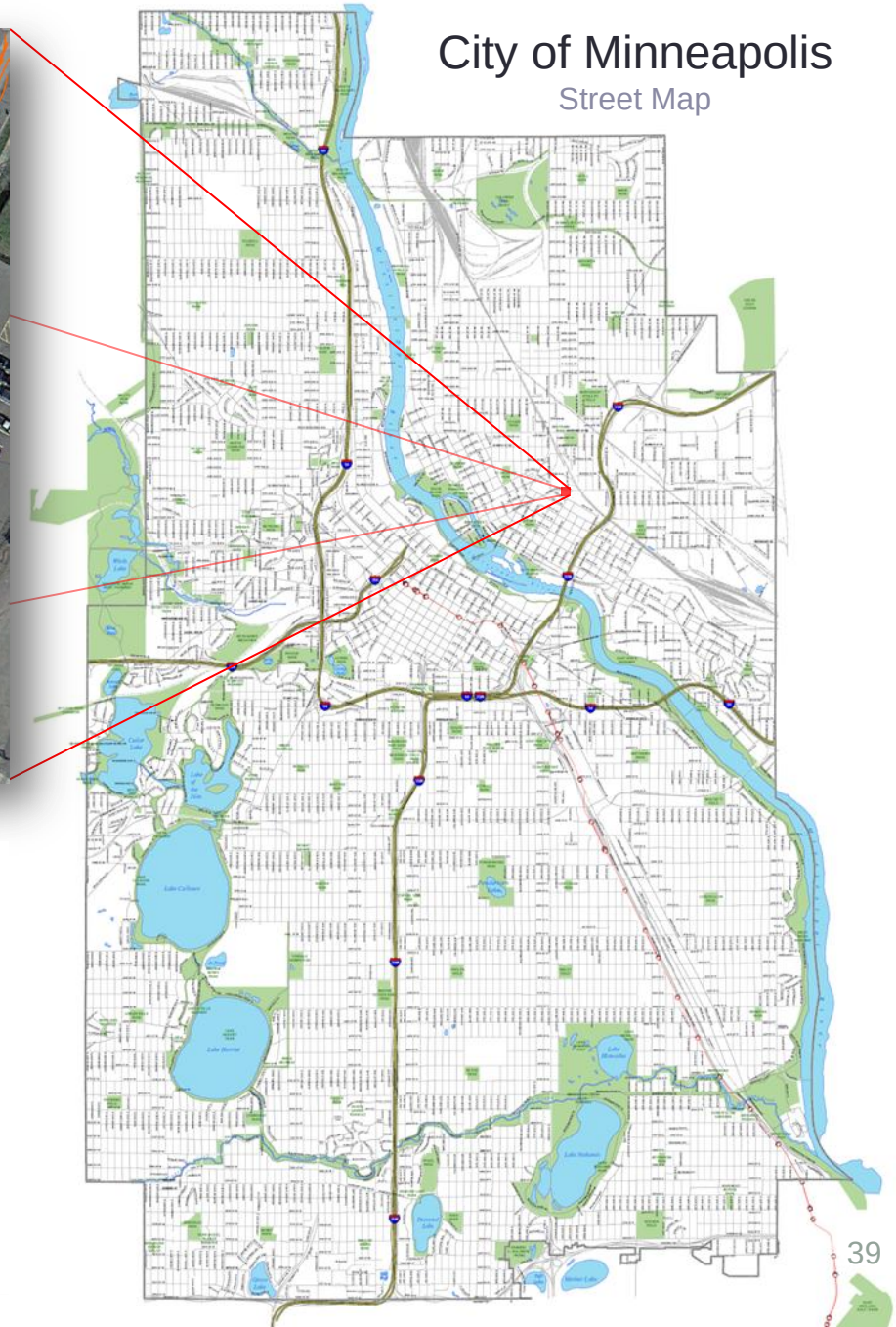
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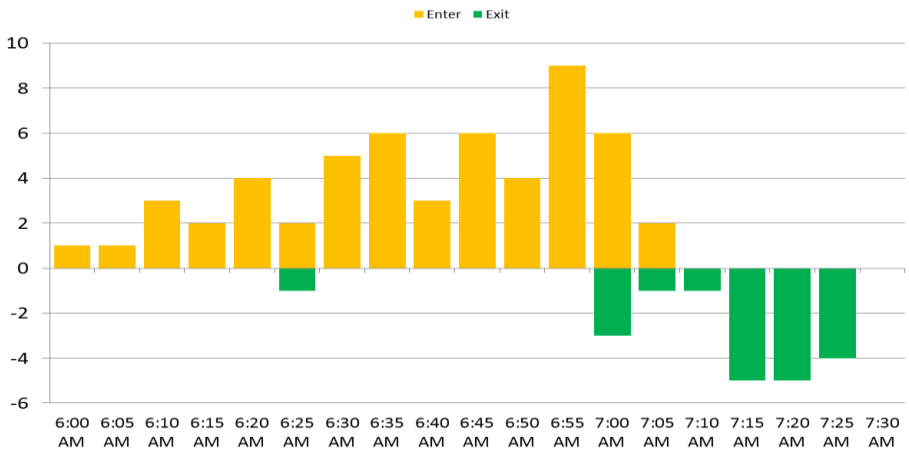
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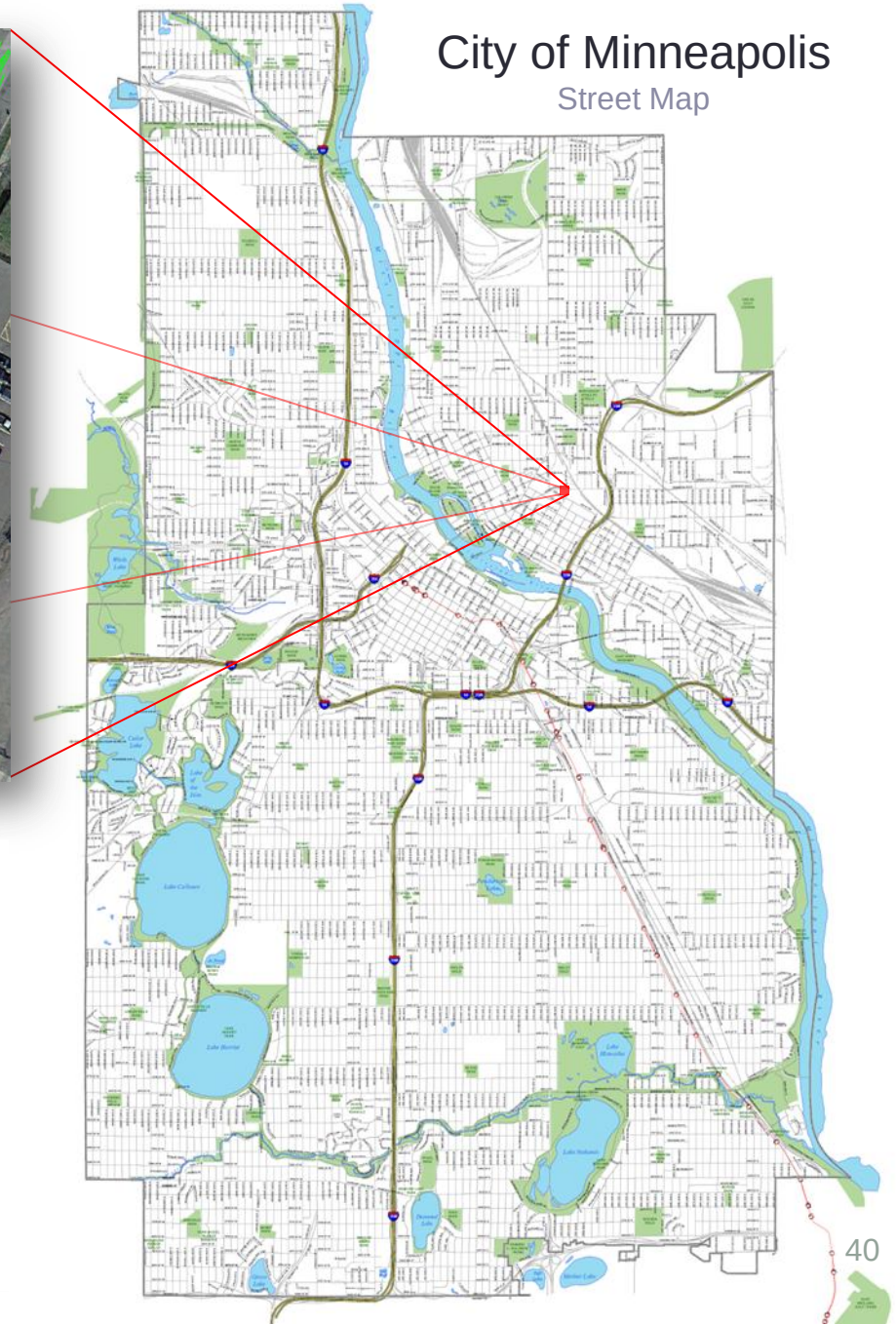
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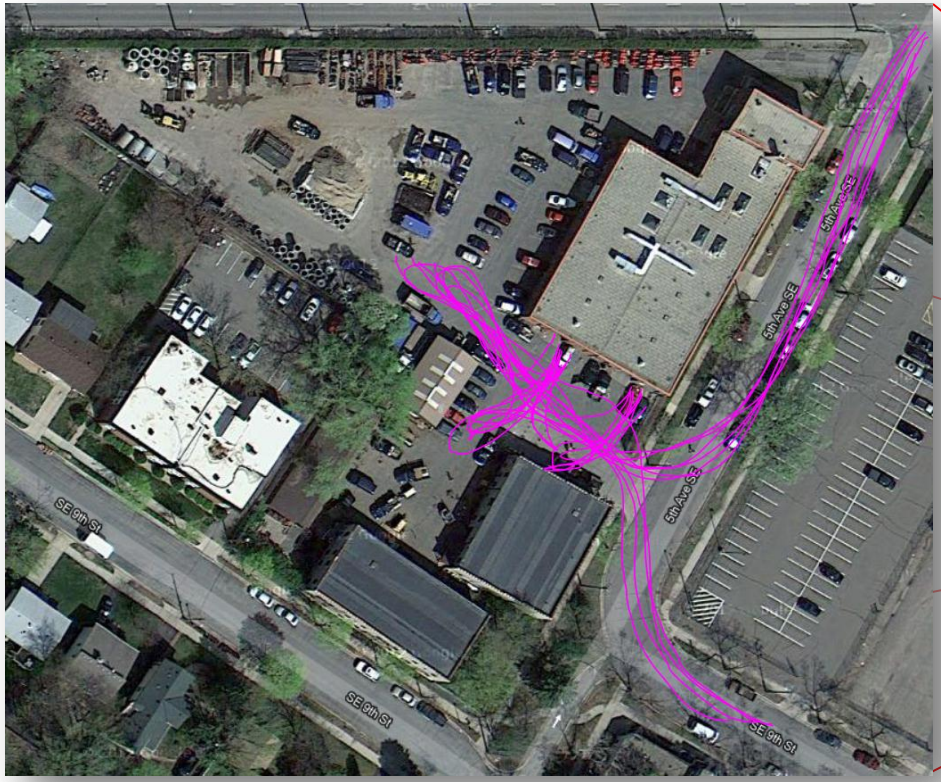
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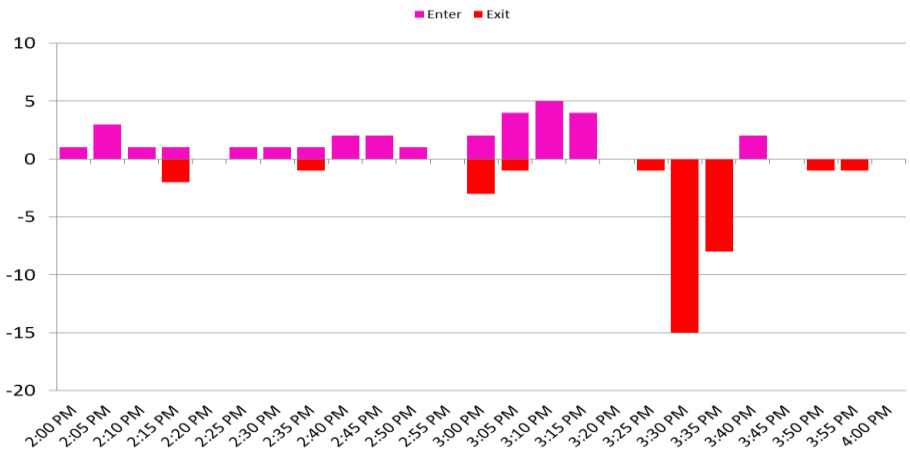
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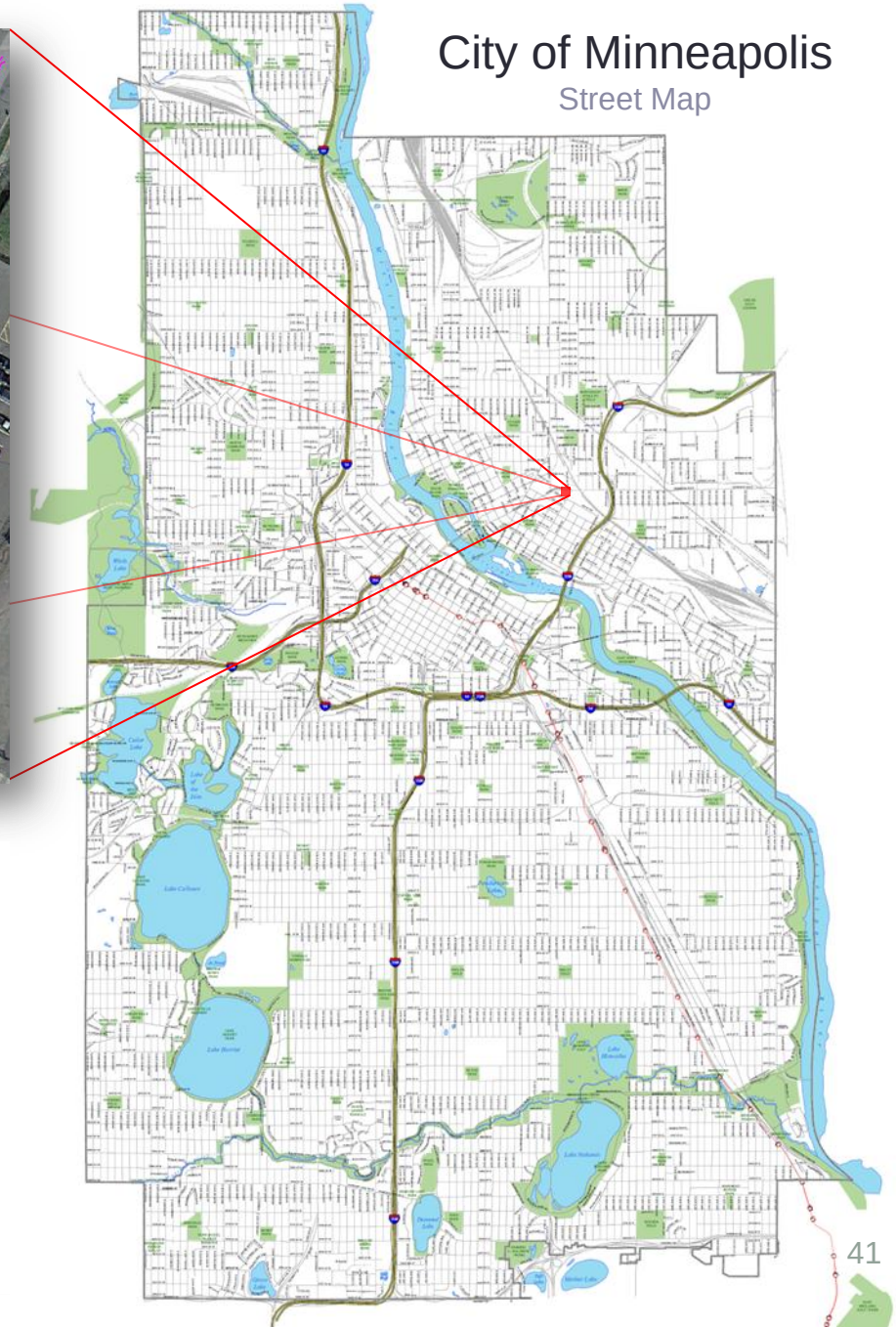
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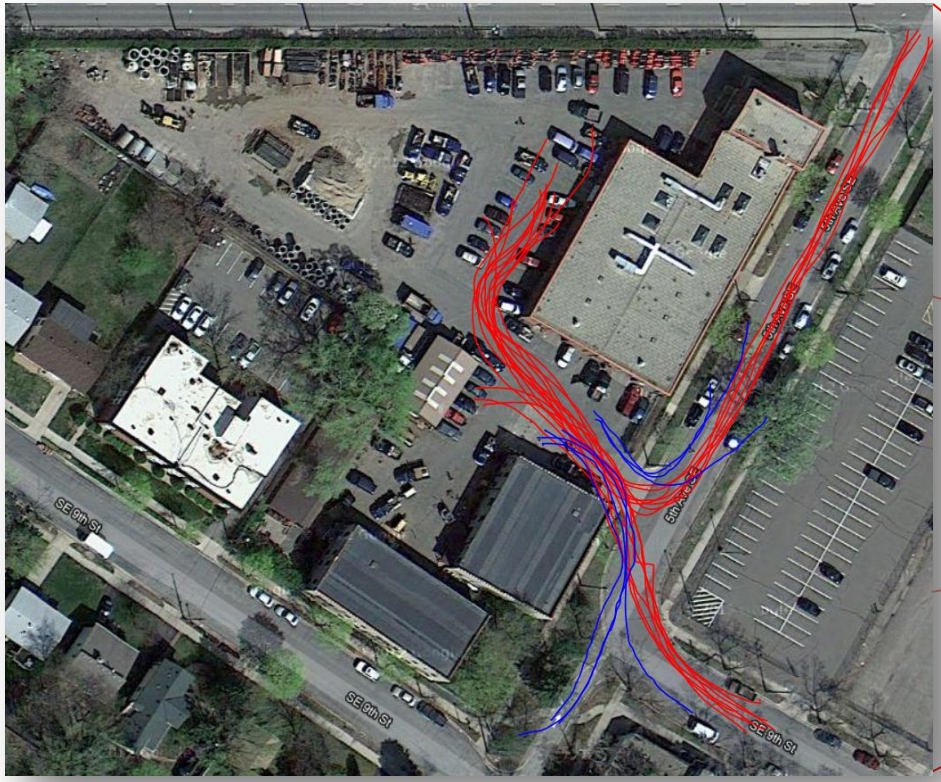
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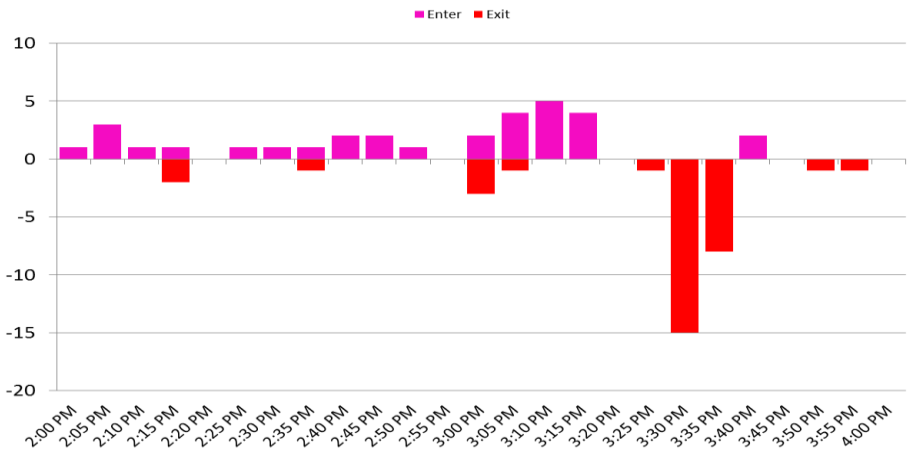
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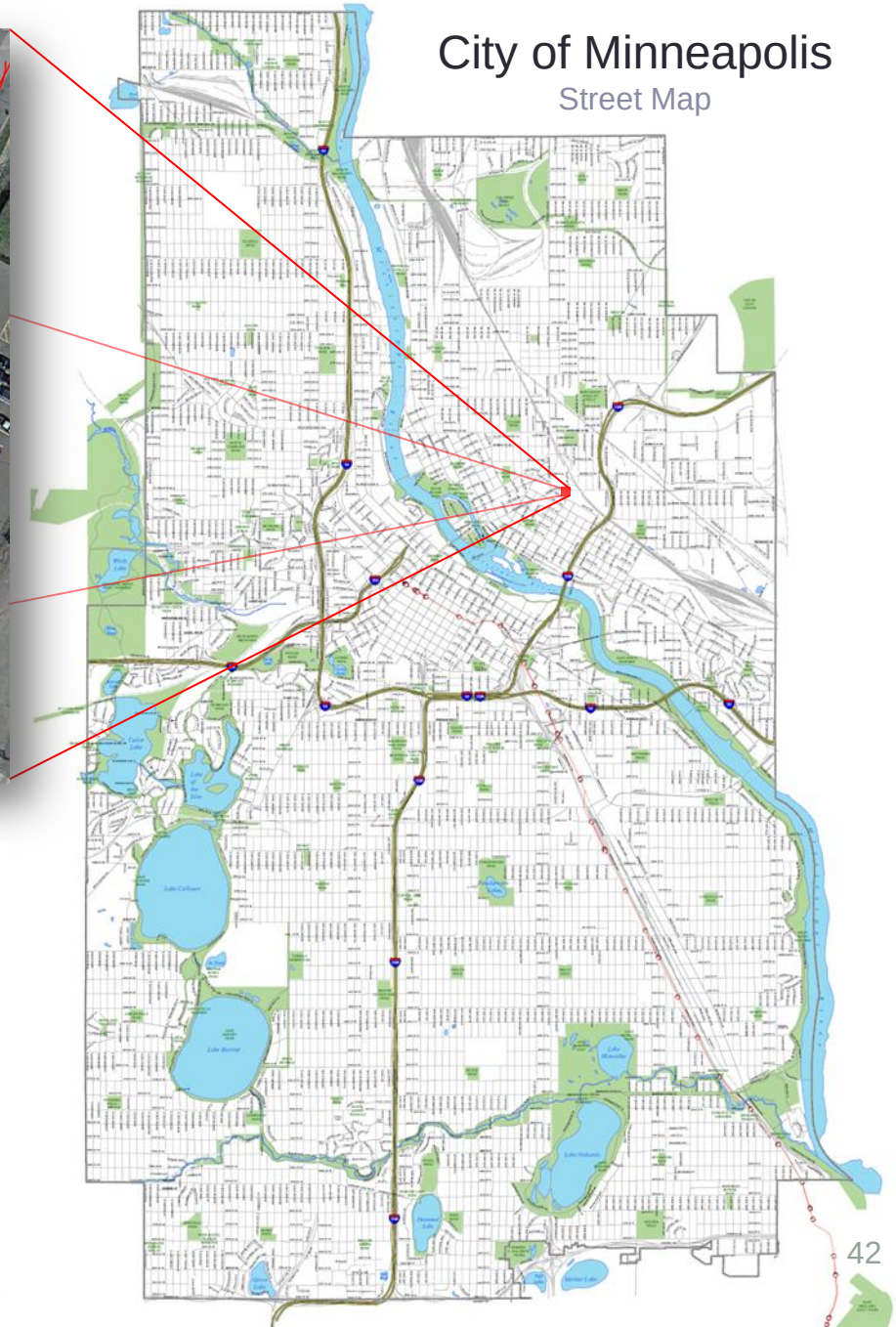
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ATTACHMENT K

City of Minneapolis AIA Contract Amendments

AIA B101:

2.5.1 Include a per occurrence limit

2.5.3 Include per statutory limits

2.5.4 Add a paragraph after 2.5.4 regarding evidence of insurance, e.g.,: Evidence of all insurance in ACORD format demonstrating coverage through a bona fide insurer maintaining at a minimum an "A" rating must be provided to the Owner upon execution of this Agreement. The Owner must be an additional insured on the insurance. A copy of all insurance policies must be provided to the Owner upon request. The Architect must notify the Owner in the event of cancellation, termination, non-renewal, or material change in any insurance policy, including, but not limited to, any reduction in the aggregate coverage provided by the policy. Failure to maintain insurance coverage as required by this Section 2.5 is a material breach of this Agreement.

3.4.6 Insert new section 3.4.6 as follows: "At the award of the construction contract, the Architect shall incorporate all addenda, bid clarifications, changes accepted, add alternates and deduct alternates into a "For Construction" set of drawings at the Owner's request."

3.6.2.2 Revise first sentence to read as follows: "The Architect has the authority and responsibility to reject Work that does not conform…."

3.6.6.5 Add "and make appropriate recommendations to the Owner" to the end of the sentence.

5.9 Add at the end of the sentence: "…provided, however, that failure of the Owner to provide such notice to the Architect shall in no way affect the Architect's obligations under this Agreement, nor shall such failure relieve the Architect from any liability for its failure to discover and correct any such fault, defect, error, omission, or inconsistency."

7.1 Delete the entire Article 7 and replace with a new Section 7.1 as follows: "All right, title and interest, including all rights under federal and state copyright and intellectual property laws in the Drawings, Specifications and other documents prepared by the Architect for this Project (collectively, "Instruments of Service") and the electronic methods of reproducing such documents are hereby conveyed, assigned and transferred by the Architect and its consultants to the Owner. The Owner shall retain legal title to such Instruments of Service. No further compensation shall be due to the Architect for the Owner's use of the Instruments of Service, whether during performance of this Agreement or after termination or completion. Except as described below, the Owner may use the Instruments of Service for any purpose. The Owner agrees to not sell the Instruments of Service to others under any circumstance and to hold harmless the Architect for any re-use that is not for maintenance, repair or operation of the Owner's facility. All Instruments of

Service shall be furnished to the Owner in a format requested by the Owner, including electronic format."

8.1.1 Revise to read as follows: "The Owner and Architect shall commence all claims and causes of action, whether in contract, tort, or otherwise, against the other arising out of or related to this Agreement within the period specified by applicable law."

8.1.3 Revise to read as follows: "The Architect waives consequential damages for claims, disputes or other matters in question arising out of or relating to this Agreement. This waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement."

8.2.1 Revise the first sentence to read as follows: "Any claims, dispute or other matter in question arising out of or related to this Agreement shall be subject to mediation at the option of the Owner as a condition precedent to the commencement of litigation."

8.2.2 Insert "If the Owner elects to mediate," to the start of the first sentence and insert the word "non-binding" before the word "mediation in the same sentence. Delete the last two sentences.

8.2.3 Delete the last sentence.

8.2.4 Check the litigation box.

8.3 Insert "Intentionally omitted" and delete in its entirety.

9.3, 9.4 and 9.5 Change "seven" to "thirty".

9.6 Delete "and all Termination Expenses as defined in Section 9.7."

9.7 Insert "Intentionally omitted" and delete entire provision.

9.8 Delete "and Section 11.9" at the end of the sentence.

10.8 add "or (4) in order to comply with applicable law" to the end of the sentence.

11.5 Attach proposal

11.9 Insert "Intentionally omitted" and delete entire provision.

Revise Owner's signature block to add signature lines for "Department head approval" by the Director of Public Works and "Approved as to form" by an Assistant City Attorney.

<u>AIA B214</u>

6.3 Delete the words "and Owner" from the first sentence and the word "mutual" from the second sentence.