

CITY OF ANN ARBOR
INVITATION TO BID



WTP - LIME RESIDUAL REMOVAL
CONTRACT NO. 2 – DREDGING AND HAULING

ITB No. 4561

Due Date: Wednesday, JANUARY 16, 2019 at 2:00 PM

Public Services Area
Administering Service Area/Unit

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

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DETAILED SPECIFICATIONS

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ATTACHMENTS

City of Ann Arbor Prevailing Wage Declaration Form

City of Ann Arbor Living Wage Forms

City of Ann Arbor Vendor Conflict of Interest Disclosure Form

City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form

MDOT Certified Payroll Form

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on **Thursday, January 3, 2018 at 2:00 PM** at **The City of Ann Arbor Water Treatment Plant, 919 Sunset Road, Ann Arbor, MI 48103.**

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **Monday, January 7, 2018 at 2:00 PM** and should be addressed as follows:

Specification/Scope of Work questions emailed to joe.siwek@tetrattech.com
Bid Process and Compliance questions emailed to cspencer@a2gov.org

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of **Joseph Siwek** at joe.siwek@tetrattech.com after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **Wednesday, January 16 at 2:00 PM EST**. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and **Four (4)** Bid copies in a sealed envelope clearly marked: **ITB No. 4561 WTP LIME RESIDUAL REMOVAL – CONTRACT NO. 2 – DREDGING AND HAULING**.

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48107

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document must be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

Bids that fail to provide these completed forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.

Hand delivered bids will be date/time stamped/signed by the Procurement Unit at the address above in order to be considered. Normal business hours are 9:00 a.m. to 3:00 p.m. Monday through Friday, excluding Holidays. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid

as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Qualifications

The city will evaluate Proposals based on cost as well as experience. Contractors that have not included the required list of similar work experience and associated references in Section 5 of the Bid Form may have their bid rejected.

As part of the proposal, Bidders shall provide documentation that the Bidder's company has at least 10 years of experience performing construction on similar projects. Completion of past projects including dredging is preferred. Bidders shall also submit the attached form, "Section 5-References," which identifies a minimum of three projects completed in the past 5 years on similar projects, including construction cost, contractor and subcontractor information, that demonstrate similar work experience and complexity to that included within these contract documents.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of Ninety (90) days

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements cannot be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under

Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a "living wage" to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: www.wdol.gov.

For the purposes of this ITB the Construction Type of Heavy will apply.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may be awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the

City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the "Freedom of Information Act." The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by any prospective bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that goes into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

- (a) For any period of time while the Commercial Vehicle is unoccupied; or
- (b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except when it is providing power or electrical energy to equipment or a tool that is actively in use.

Environmental Commitment

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 201_.

Bidder's Name

Authorized Signature of Bidder

Official Address

(Print Name of Signer Above)

Telephone Number

Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____
(initial here)

Authorized Official

_____ **Date** _____, 201__

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone () _____ Fax () _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Project: WTP Lime Residual Removal Project – Contract No. 2, Dredging and Hauling ITB No.: 4561

Bidder's Name: _____

Notes:

1. All bidders shall provide a Unit Price and Total Price for all bid items specified.
2. Quantities included in the bid table represent estimated quantities for different work. The CONTRACTOR shall be compensated for the actual number of items completed using the unit prices provided.
3. The City, at its sole discretion, may elect to delete any portion of the work delineated below, with no change to the unit prices provided. Work shall be determined based upon the availability of funds.
4. Any item not provided in the following list shall be considered incidental.
5. Contract shall be awarded based on the base bid or any combination of a base bid and alternate bid in any manner the City believes to be in its best interest.

Bid Items

BASE BID					
Item No.	Item Description	Qty	Unit	Unit Price	Total Price
1	General Conditions (Max, \$50,000)	1	LS	\$	\$
2	Audiovisual Coverage	1	LS	\$	\$
3	Soil Erosion and Sedimentation Control Plan	1	LS	\$	\$
4	Minor Traffic Control	1	LS	\$	\$
5	Residual Removal, Dewatering, Hauling and Disposal	8,000	Dry Ton	\$	\$
6	Closeout	1	LS	\$	\$
7	Certified Payroll Compliance and Reporting	1	LS	\$	\$
TOTAL BASE BID (ITEMS 1 THROUGH 7)					\$

Total Base Bid: _____ Dollars (\$ _____)

(Amount shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.)

Alternates

Bidder shall list alternate bid item prices below.

Alternate No. 1 – Residual Removal, Dewatering, Hauling and Disposal, greater than 8,000 Dry Tons

Add: _____ Dollars (\$ _____)
(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.)

For additional _____ Dry Tons removed at a unit rate of
\$ _____ Dollars / Dry Ton

BID FORM

Section 2 – Material, Equipment and Environmental Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
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If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

<u>Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
_____	<u>Dredging</u>	_____
_____	<u>Dewatering</u>	_____
_____	<u>Trucking</u>	_____
_____	<u>Disposal</u>	_____
_____	<u>Landscaping</u>	_____

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

CONTRACT

THIS AGREEMENT is made on the _____ day of _____, 201_, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor")

(An individual/partnership/corporation, include state of incorporation)

(Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled WTP Lime Residual Removal Project – Contract No. 2 – Dredging and Hauling, ITB 4561 in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Non-discrimination and Living Wage
Declaration of Compliance Forms (if
applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of
Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds

General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means **Public Services Area / Water Treatment Services Unit**

Project means **WTP LIME RESIDUAL REMOVAL PROJECT – CONTRACT NO. 2 – DREDGING AND HAULING, ITB No. 4561**

ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City. The anticipated notice to proceed date is June 15, 2019.
- (B) The entire work for this Contract shall be completed substantially completed by December 31, 2019. Final completion of site restoration shall be May 1, 2020.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the

Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to **\$500** for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

- (A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Form for the estimated bid total of:

_____ Dollars (\$_____)

- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney’s fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor’s behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City’s sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party’s invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party’s failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By _____

Its: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

By _____
Jacqueline Beaudry, City Clerk

Approved as to substance

By _____
Howard S. Lazarus, City Administrator

[signatures continue on next page]

By _____

Craig Hupy, Public Services Area
Administrator

Approved as to form and content

Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for

\$ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City dated _____, 201_, for: _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the Contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 201_.

(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

LABOR AND MATERIAL BOND

- (1) _____
of _____(referred to
as "Principal"), and _____, a corporation
duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound
to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants
as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et
seq., in the amount of
\$ _____, for the payment of which Principal and Surety bind themselves, their
heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City, dated _____, 201_,
for _____
_____; and this bond is
given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as
amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably
required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have
no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 201_

(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen,

mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;
- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section I3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character;

rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the

date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;

- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within 12 months after final payment;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3

days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the

Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the act(s) or omission(s)

giving rise to the claim were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. In the case of all contracts involving on-site work, the Contractor shall provide to the City, before the commencement of any work under this contract, certificates of insurance and other documentation satisfactory to the City demonstrating it has obtained the policies and endorsements required on behalf of itself, and when requested, any subcontractor(s). The certificates of insurance endorsements and/or copies of policy language shall document that the Contractor satisfies the following minimum requirements.

- (a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident
Bodily Injury by Disease - \$500,000 each employee
Bodily Injury by Disease - \$500,000 each policy limit

- (b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

\$1,000,000 Each occurrence as respect Bodily Injury Liability or Property
Damage Liability, or both combined.
\$2,000,000 Per Job General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products and Completed Operations Aggregate

- (c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- (d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- (2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.
- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and

demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.

- (4) Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20____, to _____, 20____, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

<http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx>

DETAILED SPECIFICATIONS

CONTENTS – DETAILED SPECIFICATIONS

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

- A. The Project is located at the City of Ann Arbor Water Treatment Plant (WTP), 919 Sunset Road, Ann Arbor, MI and the WTP's lime residual lagoon located approximately 2,000 feet to the west.
- B. The Work consists of the removal, hauling and off site disposal of no fewer than 8,000 dry tons of lime residual from the City's existing lime residual lagoon. Removal entails dredging at the lagoon and pumping to WTP via existing infrastructure.
- C. Processing of lime residuals shall occur at the WTP administration parking lot with hauling originating at the same location.

1.02 DIVISIONS OF THE WORK/DIVISION LIMITS

- A. The work described above will be executed after the Lime Residual Lagoon Maintenance Project – Contract No. 1 as shown on the Drawings and described herein. Minimal overlap of Contracts No. 1 and No. 2 is possible, but not anticipated.

Contract limits are further described as follows:

- 1. Contract No. 2 Work is described in 1.01.B above.
 - 2. Contract No. 1 Work consists of modifications to the Water Treatment Plant parking lot to accommodate temporary dewatering facilities and trucking operations, as well as work to modify existing force main manholes to facilitate the pumping of lime residuals from the lagoon site to the Water Treatment Plant site.
 - 3. The Contract No. 1 work shall be substantially complete prior to the mobilization of the Contract No. 2 CONTRACTOR.
 - 4. Anticipated Notice to Proceed dates, Substantial Completion dates, Final Completion dates, as well as liquidated damaged are outlined in section 1.03 A. 2 below.
- B. At all Contract interfaces, Contractors awarded the various Contracts shall cooperate with other Contractors meeting at that point, and shall schedule Delays created by situations involving two uncooperative Contractors shall be considered the fault of the dispute between the concerned parties and shall not be passed on as a cost to OWNER. Periodic meetings between Contract No. 1 and Contract No. 2 Contractors prior to commencement of construction for Contract 2 may be required. Periodic meetings between Contract No. 1 and Contract No. 2 Contractors may be required.
 - C. The City will have a project underway at the WTP during this contract. The project is titled WTP Architectural and Structural Repairs and will include roof replacement and masonry repair throughout the WTP site.

1.03 WORK SEQUENCE

- A. CONTRACTOR shall arrange its Work so that at no time shall it cause unnecessary interruption to the operation of existing facilities. In order to meet the overall objective of this Project, certain elements of the Work must be completed in a particular sequence. It may also be necessary to do

certain parts of the Work outside normal working hours. CONTRACTOR shall do this Work at such times and at no additional cost to OWNER. A suggested sequence of construction is as follows:

1. Suggested General Sequence
 - a. Submit Project Schedule and CONTRACTOR's Proposed Site Operations Plan for review.
 - b. Perform walk-throughs and review proposed water treatment plant and lime residual lagoon operations site plans with ENGINEER.
 - c. Provide 14 day notice prior to beginning work in the parking lot to allow plant staff to notify staff and vendors and residents of changes at the plant and along the perimeter of the lime residual lagoon.
 - d. Contractor shall be responsible for dewatering force main pipe, and daily maintenance and flushing as well as final cleaning and flushing once operations are complete.
 - e. Coordinate with City of Ann Arbor to confirm the date that the Trumpeter Swan presence is no longer of concern and the site is fully open to work.
 - f. Provide protection of downstream waterbodies by ensuring all proposed protections along the overflow structures are properly installed and maintained.
 - g. Protect existing equipment, hatches and other facilities at the water treatment plant during all operations, including temporary water connections, and filtrate discharge.
 - h. Set up and maintain all required traffic control and parking restriction signs per the contract.
 - i. Keep owner informed related to any necessary work stoppages due to weather or other purposes.
 - j. Perform sampling on each truck and provide calculations for determining the dry unit weight of each load removed from site and submitting documentation to ENGINEER for review.
 - k. Maintain soil erosion control measures left in place from Contract No. 1.
 - l. Site clean up. Permanent restoration work including pavement restoration is to be included as part of Contract No. 3.
2. Schedule
 - a. It is anticipated that the Notice to Proceed will be issued in June, 2019. The CONTRACTOR is permitted to perform any work at the water treatment plant in advance of lagoon operations as needed once Contract No. 1 is substantially complete in Mid-August.
 - b. CONTRACTOR shall not be permitted to begin work in the pond until the fledgling period for the Trumpeter Swan is complete. This is estimated to be September 1-15. Once cleared to work at the lagoon site, the CONTRACTOR shall work continuously within the allowable daily work hours until weather conditions limit safe and productive execution of the Work.
 - c. Work shall be substantially complete by December 31, 2019. Pond freezing may cause work to be terminated prior to this date and shall not alleviate the need to complete the minimum quantities specified in this contract.
 - d. Final completion for site restoration shall be by May 1, 2020.
3. Work Hours
 - a. Allowable work hours are Monday through Friday 7:00 AM to 7:00 PM. Work on Saturdays may be permitted upon request and approval by the City. No work is permitted on Sundays or holidays. CONTRACTOR shall obey all City Noise Ordinances related to operating hours.
 - b. Trucking shall be restricted during the following periods daily Monday through Friday to relieve school-related traffic:
 - 7:30 AM to 8:30 AM

- 2:45 PM to 3:45 PM

B. If CONTRACTOR wishes to propose an alternate sequence of construction for maintaining operation of existing facilities, CONTRACTOR shall submit complete details of its plan to ENGINEER for approval.

1.04 LIQUIDATED DAMAGES

A. Liquidated damages will be applied independently for each key contract date or performance level set forth by this Contract.

B. Where the schedule requirements identified in this Section are not met; including not removing the minimum quantity of residual, final cleaning, and all other work, non-quantifiable liquidated damages in the following amounts will be applied.

C. Key Contract Dates:

Milestone	Completion Date	Liquidated Damage
Substantial Completion (including removal of lime residual from lagoon and WTP site cleanup)	December 31, 2019	\$500/day
Final Completion (including flushing and cleanup and restoration of both sites)	May 1, 2020	\$500/day

1.05 CONTRACTOR USE OF PREMISES

A. Limit use of the premises to construction activities in areas indicated; allow for OWNER occupancy and use by the public. Confine operations to areas within Contract limits indicated. Portions of the Site beyond areas in which construction operations are indicated are not to be disturbed.

B. Keep driveways and entrances serving the premises clear and available to OWNER, OWNER's employees, and private property owners at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on Site. Areas for CONTRACTOR's trailers, equipment, and material storage, and CONTRACTOR's employee parking shall be as indicated on Drawings or agreed by OWNER prior to the start of construction.

C. CONTRACTOR shall maintain buffer distances as shown on the site plan from the area of the lime residual lagoon that is occupied by Trumpeter Swans. The City will be monitoring the swan activity throughout the year. No activities shall be permitted in open waters within the buffer zone until the City confirms that work can be performed adjacent to the swan habitat, typically no sooner than October 1st. Under no circumstance shall the Contractor approach or disturb swan nests.

D. CONTRACTOR use of OWNER's utilities (power and water) is covered in Section 01 50 00. CONTRACTOR shall coordinate all connections and usage of OWNER utilities to ensure no disruption with normal facility operation.

E. CONTRACTOR shall provide his own restroom facilities, see Section 01 50 00.

1.06 OWNER OCCUPANCY

- A. Full OWNER Occupancy: OWNER will occupy the Site and existing building during the entire construction period. Cooperate with OWNER during construction operations to minimize conflicts and facilitate OWNER usage. Perform the Work so as not to interfere with OWNER's operations.

1.07 PROTECTION OF WORK AND MATERIAL

- A. During the progress of the work and up to the date of final payment, the CONTRACTOR shall be solely responsible for the care and protection of all equipment, work and materials covered by the Contract.
- B. All work and materials shall be protected against damage, injury or loss from any cause whatsoever, and the CONTRACTOR shall make good any such damage of loss at his own expense. Protection measures shall be subject to the approval of the OWNER.

1.08 CONFINED SPACE

- A. The force main manholes and some locations on the water treatment plant site are considered Non-Permitted Confined Spaces. The CONTRACTOR must meet all requirements of MIOSHA for working in confined spaces. The CONTRACTOR must submit a confined space entry program to the City for record, before any work is started in the area.

1.09 SECURITY AND ACCESS

- A. The City of Ann Arbor's water treatment plant and lime residual lagoon are limited access facilities. The CONTRACTOR must comply with the City's operational provisions for security including, but not limited to:
 - 1. Provide proper identification of employees.
 - 2. Provide and use photos IDs for all CONTRACTOR personnel.
 - 3. Maintain daily sign-in log of personnel and visitors.
 - 4. Provide a list of personnel and vehicles on site.
 - 5. Maintain a daily log of vehicle license plate numbers on site.
 - 6. Allow OWNER to conduct background checks on CONTRACTOR's personnel upon request.
 - 7. Notify the plant in advance of material deliveries to the site, including delivery contents.

These procedures may be revised by the City at any time, as needed.

- B. Use of OWNER's security measures does not relieve Contractor of its responsibility to secure its own working spaces and materials.
- C. Access to Site, Roadways, and Parking Areas
 - 1. The CONTRACTOR shall be responsible for providing access to the construction area and for preparing and maintaining temporary access road, fence, and/or gate, as needed. CONTRACTOR's personnel shall park on approved City streets adjacent to water treatment plant and shall not park on the plant site. CONTRACTPR's personnel may park on the lagoon site.
 - 2. It shall be the responsibility of the CONTRACTOR to obtain any permits required from the City of Ann Arbor and pay all associated fees.

3. The CONTRACTOR shall be responsible for removal of snow in areas of the CONTRACTOR's work.

1.10 PERMITS

- A. The CONTRACTOR will be required to follow the requirements established by all permits necessary for the construction of this project. The following is a list of all permits that must be obtained prior to the beginning of construction.
 1. Soil Erosion Control Permit – City of Ann Arbor
 2. Right of Way Permit – City of Ann Arbor
- B. CONTRACTOR may be required to obtain a permit from the City of Ann Arbor should any part of project mobilization or project activities interfere with traffic on a City street. CONTRACTOR must coordinate installation of no parking measures with the City Engineering Department.
- C. The Soil Erosion Control Permit shall be applied for by the Contractor. The CONTRACTOR shall be required to obtain the permit, pay all associated fees and adhere to all requirements of the permit.
- D. CONTRACTOR is responsible for obtaining any and all permits needed to engage in the handling, removal or disposal of lime residuals, as well as producing and submitting all paperwork related to the hauling and acceptable disposal of the lime residuals to the ENGINEER. OWNER will apply for and obtain the MDEQ Notice of Intent documentation.

1.11 RESTORATION OF DISTURBED LAWN AREAS

- A. Recondition existing lawn areas damaged by CONTRACTOR's operations including storage of materials and equipment and movement of vehicles.
- B. All lawn areas shall be restored to a condition that is equal to or better than prior to construction.
- C. Construction methods for seeding and mulching shall be in accordance with the City of Ann Arbor Public Services Department Standard Specifications, Division VIII – Landscaping and Restoration.
- D. Seeding dates, kinds of seed and rates shall be as follows:
April 15 – October 10
Perennial Ryegrass (44 lb/acre)
Kentucky Bluegrass (66 lb/acre) and
Creeping Red Fescue (110 lb/acre)
- E. Contractor's obligation for lawn restoration shall not be relieved until the grass seed has germinated and covered the disturbed area to a density similar to surrounding, undisturbed areas.

1.12 MISCELLANEOUS PROVISIONS

- A. CONTRACTOR shall notify all Owners of public utilities within the right-of-way or easement for the purpose of establishing the approximate locations of the utilities in accordance with the requirements of Act No. 53 Public Acts of 1974 of the State of Michigan. CONTRACTOR shall notify MISS DIG-Utility Communication System, 1-800-482-7171, three working days prior to starting any excavation with power equipment.

- B. CONTRACTOR shall be responsible for verifying the location of all underground utilities by magnetic or other type instruments before beginning excavation Work.
- C. Time and Sequence of Work: In general, it is the intention and understanding that CONTRACTOR shall have control over the sequence or order of execution of the several parts of the Work to be done under the Contract and over the method of accomplishing the required results, except as some particular sequence or method may be distinctly demanded by the Drawings and Project Manual or by the expressed provisions of the Contract. ENGINEER may, however, make such reasonable requirements as may, in ENGINEER's judgment, be necessary for the proper and effective protection of Work partially or wholly completed, and to these requirements CONTRACTOR shall conform.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 CONTROL OF WATER POLLUTION

- A. General Requirements
 - 1. The CONTRACTOR shall conduct his work in such manner as to prevent the entry of filtrate, fuels, oils, bituminous materials, chemical, sewage or other harmful materials into the City's water supply or on to the soil.
 - 2. The CONTRACTOR shall take all necessary precautions to prevent the entry of these harmful materials including the use of tarps, planks, protective trusses or scaffolding systems, or other OWNER and ENGINEER approved methods.
 - 3. Any vehicles or equipment with oil, fuel, or other fluid leaks shall not be allowed on the site and shall be immediately removed upon detection.
 - 4. The CONTRACTOR shall monitor provisions to reduce the spread of filtrate and all erosion control BMPs during pipeline flushing activities at the lagoon site. The existing storm water basin may be utilized as an area to flush, and CONTRACTOR will be responsible for a complete cleanup of all lime residuals and any repairs to the basin.

5. The CONTRACTOR shall continually monitor the water levels in the pond and the performance of the turbidity curtain to be set in place to prevent residuals from passing downstream to Newport Creek in the event of an overflow. In the event of an overflow, the CONTRACTOR shall be responsible for defining the extent of any areas contaminated by residual, all cleanup and any State mandated penalties or fines related to the spill.

END OF SECTION

SECTION 01 27 00 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies administrative and procedural requirements for measurement and payment. Payment for Work under this Contract will be made on a unit price or lump sum basis for Work actually completed. Final measurements of the Work will be taken by ENGINEER to determine the amount of Work completed. The method of applying the unit prices to measured quantities shall be as specified in this Section.

1.02 OWNER'S INSTRUCTIONS

- A. Payment will only be made for items listed on Bid Form. The costs for other Work required for a complete Project will be included in the prices Bid for the other items of Work listed on Bid Form.
- B. Payment for each item will be in accordance with Paragraph 11.03 of the General Conditions, and include all applicable labor, material, equipment, and ancillary items to complete the Work specified.
- C. All measurements shall be rounded to the nearest whole unit.

1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by ENGINEER and paid for by OWNER.
- B. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- C. The date for each progress payment will be determined at the Pre-Construction Conference. The period of construction Work covered by each Application for Payment is 1 month. Actual start/end dates will be determined at the Pre-Construction Conference.
- D. Use the AIA (American Institute of Architects) Application and Certification for Payment form for Applications for Payment.
 - 1. Complete every entry on the form, including execution by person authorized to sign legal documents on behalf of CONTRACTOR.
 - 2. Incomplete applications will be returned without action.
- E. Initial Application for Payment: Administrative actions and submittals that must precede submittal of the first Application for Payment include the following:
 - 1. List of subcontractors.
 - 2. List of principal suppliers and fabricators.
 - 3. CONTRACTOR's Construction Schedule (preliminary if not final).
 - 4. Schedule of principal products.
 - 5. Submittal Schedule (preliminary if not final).

- F. Application for Payment at Substantial Completion: Administrative actions and submittals that shall proceed or coincide with this application include:
1. Warranties (guarantees) and maintenance agreements.
 2. Maintenance instructions.
 3. Start-up performance reports.
 4. Changeover information related to OWNER's occupancy, use, operation, and maintenance.
 5. Final cleaning.
 6. Application for reduction of retainage, and consent of surety.
 7. Final progress photographs.
 8. List of incomplete Work, recognized as exceptions to ENGINEER's Certificate of Substantial Completion.
- G. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.
 3. Assurance that unsettled claims will be settled.
 4. Assurance that Work not complete and accepted will be completed without undue delay.
 5. Transmittal of required Project construction records to OWNER.
 6. Proof that taxes, fees, and similar obligations have been paid.
 7. Removal of temporary facilities and services.
 8. Removal of surplus materials, rubbish, and similar elements.
 9. CONTRACTOR's waivers of liens for Project.
 10. Consent of Surety for final payment.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

SCHEDULE OF UNIT PRICES

Description: General Conditions, Max \$50,000
Payment: Lump Sum.
Measurement: Each.
Work Required: This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

The unit price for this item of work shall include all labor, material, and equipment costs to transport equipment to site, obtain Contractor's bonds, insurance and any permits, complete all site preparatory work including tree clearing, temporary grading, temporary facilities and all other operations and related work needed to begin work perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

Description: Audiovisual Coverage
Payment: Lump Sum.
Measurement: Each.
Work Required: As specified under Section 01 32 00 - Audiovisual Coverage.

Description: Soil Erosion and Sedimentation Control Plan
Payment: Lump Sum.
Measurement: Each.
Work Required: Includes all labor equipment, materials, and fees to complete and submit for approval a detailed Soil Erosion and Sedimentation Control plan from the City of Ann Arbor based on the planned operations of the selected methods for completing the project utilizing the provided construction site plan as a basis. Includes maintenance and periodic inspection and reporting for all BMPs throughout the course of the project and all related work.

Description: Minor Traffic Control
Payment: Lump Sum.
Measurement: Each.
Work Required: Includes all labor, material and equipment costs to perform all the work described by the maintenance of traffic plan, including traffic and pedestrian detours, furnishing and operating speed limit control signs, and other miscellaneous traffic maintenance work as detailed in the drawings and specifications.

Description: Residual Removal, Dewatering, Hauling and Disposal
Payment: Dry ton for the quantity category as listed on the bid form.
Measurement: As calculated through the collection of truck weigh tickets, and moisture content sampling for each truckload hauled from the site. 85 percent of unit price paid upon initial submittal of disposal documentation, with the remaining 15 percent of unit price paid when the target volume of 8,000 dry tons is reached. All removal above 8,000 dry tons will be paid at price provided in the the alternate section of the Bid Form.
Work Required: Includes all labor, material, equipment, permitting, disposal and additional costs to perform all the work described as described in the contract documents, including removal of lime residuals from the lagoon, pumping of material to the WTP, dewatering, loading, safe handling, trucking and transportation from the City property to approved disposal sites, and all related work.

Description: Closeout
Payment: Lump Sum.
Measurement: Each.
Work Required: Includes all labor, equipment and materials to complete all site cleanup, including flushing and inspection of all storm sewers used to return filtrate to the lagoon, the basin at the lagoon site where filtrate was discharged, flushing and cleaning of the force main, removal of all temporary work items installed by Contract No. 1 and other work and operations needed to conclude and closeout work on the project per the contract documents.

Description: Certified Payroll Compliance and Reporting
Payment: Lump Sum.
Measurement: Each.
Work Required: The unit price for this item of work shall include all supervisory, accounting, administrative, and equipment costs needed to monitor and perform all work related to maintaining compliance with the tasks specified in this Detailed Specification, the City of Ann Arbor Code of Ordinances, its Prevailing Wage Compliance policy and the applicable Federal and State laws.
Payment for this work will be made with each progress payment, on a pro-rata basis, based on the percentage of construction completed. When all of the work of this contract has been completed, the measurement of this item shall be 1.0 times the Lump Sum bid amount. This amount will not be increased for any reason, including extensions of time, extra work, and/or adjustments to existing items of work.

END OF SECTION

SECTION 01 31 00 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Scheduling
 - a. Coordination of Work under this Contract.
 - b. Administrative and supervisory personnel.
 - 2. Land survey work.
 - 3. Pre-Construction Conference.
 - 4. Pre-Installation Conference.
 - 5. Public relations program.
 - 6. Progress meetings.
 - 7. General installation provisions.
 - 8. Cleaning and protection.
- B. Related Sections Specified Elsewhere:
 - 1. Division of Work and specific construction milestones in Section 01 11 00.
 - 2. Requirements for CONTRACTOR's Construction Schedule are included in Section 01 33 00.

1.02 DEFINITIONS

- A. Monument: The term "monument" shall be considered as any object defining the location of a property corner, street location, section line, fractional section line, right-of-way marker, or other delineation of land ownership or division.

1.03 SUBMITTALS

- A. Within 15 days of Notice to Proceed, submit a list of CONTRACTOR's principal staff assignments, including the Superintendent and other personnel in attendance at Site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

1.04 SCHEDULING

- A. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair. Make adequate provisions to accommodate items scheduled for later installation.
- B. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at Site in accordance with Laws or Regulations. CONTRACTOR shall train CONTRACTOR's employees on use of these sheets and shall keep a master copy on hand at Site.

- C. Coordination with Water Treatment Plant Operations:
 - 1. CONTRACTOR shall so conduct CONTRACTOR's operations as not to interfere with the OWNER's operations at the WTP. CONTRACTOR must comply with all restrictions as noted in the contract documents and on the drawings. CONTRACTOR responsible for identifying any conflicts their Work may have with existing operations and immediately notifying the ENGINEER and OWNER prior to proceeding with the Work.
- D. Coordination with Other Contractors:
 - 1. CONTRACTOR shall so conduct CONTRACTOR's operations as not to interfere with or injure the Work of other Contractors or workmen employed on adjoining or related Work, and CONTRACTOR shall promptly make good any injury or damage which may be done to such Work by CONTRACTOR or CONTRACTOR's employees or agents.
 - 2. Should a contract for adjoining Work be awarded to another CONTRACTOR, and should the Work on one of these contracts interfere with that of the other, ENGINEER shall decide which contract shall cease Work for the time being and which shall continue, or whether Work on both contracts shall continue at the same time and in what manner.
- E. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project closeout activities.

1.05 PRE-CONSTRUCTION CONFERENCE

- A. ENGINEER will schedule a Pre-Construction Conference and organizational meeting at the Site or other convenient location prior to commencement of construction activities to review responsibilities and personnel assignments.
- B. Attendees: OWNER, ENGINEER and ENGINEER's consultants, CONTRACTOR and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
 - 1. Tentative Construction Schedule.
 - 2. Critical Work sequencing.
 - 3. Designation of responsible personnel.
 - 4. Procedures for processing field decisions and Change Orders.
 - 5. Procedures for processing Applications for Payment.
 - 6. Distribution of Contract Documents.
 - 7. Submittal of Shop Drawings, product data, and samples.
 - 8. Preparation of Record Documents.
 - 9. Use of the premises.
 - 10. Office, Work, and storage areas.
 - 11. Equipment deliveries and priorities.

12. Safety procedures.
13. First aid.
14. Security.
15. Housekeeping.
16. Working hours.

1.06 PRE-INSTALLATION CONFERENCE

- A. Where specified, CONTRACTOR, supplier, and ENGINEER shall meet on Site and discuss tools, techniques, and procedures for extraction of the lime residual, dewatering of the filtrate and trucking routes for hauling prior to performing the Work.

1.07 PUBLIC RELATIONS PROGRAM

- A. Periodic Open Meetings: Up to two public meetings may be scheduled and attended by representatives of CONTRACTOR, OWNER, and ENGINEER. The public meeting shall be held at 7:00 p.m., local time, at Ann Arbor Water Treatment Plant or other convenient time and location as determined by OWNER. The periodic open meeting shall have a published agenda. The purpose of this meeting will be to provide a forum whereby impacted residents and commercial business owners can present their concerns and a plan of action developed for a solution.

1.08 PROGRESS MEETINGS

- A. Attendees: In addition to representatives of OWNER and ENGINEER, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.
- B. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
- C. CONTRACTOR's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to CONTRACTOR's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- D. Reporting: ENGINEER will prepare and distribute copies of minutes of the meeting to each party present and to other parties who should have been present. The minutes will include a brief summary, in narrative form, of progress since the previous meeting and report.
- E. Schedule Updating: CONTRACTOR shall revise Construction Schedule after each progress meeting where revisions to Schedule have been made or recognized. Issue revised Schedule no later than 3 days after the progress meeting date to ENGINEER for distribution concurrently with the progress meeting minutes.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 LAND SURVEY WORK

A. ENGINEER will:

1. Identify existing control points and property line corner stakes and will furnish one set of suitable base lines and reference elevations for various parts of the Work to be maintained and preserved by CONTRACTOR.
2. Structures: Establish a minimum of 2 permanent benchmarks on Site, referenced to data established by survey control points.
3. Sewers and Water Mains: Establish a minimum of 2 permanent benchmarks on Site, referenced to data established by survey control points. Additional benchmarks will be placed on Site if these permanent benchmarks cannot be referenced from other areas of the Work.

B. Monuments:

1. During the progress of Work, CONTRACTOR may encounter monuments within CONTRACTOR's working area. A minimum number of such points have been located by ENGINEER prior to construction to provide control for the preparation of construction Drawings, and these are noted on Drawings.
2. All probable monument points, as so far as known, have been indicated on Drawings as property, street, and/or section line intersection points.
3. CONTRACTOR, prior to actual construction, shall erect protective barricades around all ascertained monuments that are in or adjacent to the construction area. Any other monument uncovered or located during progress of the Work shall be protected from damage or loss and ENGINEER shall be notified in writing as to the exact location.
4. During the normal course of Work, monuments may require removal. CONTRACTOR shall not remove any such monument until ENGINEER shall have set 4 iron pipe stakes each 2 feet long as reference points, or located by reference traverse, all such monuments for the resetting of such monuments. Reference stakes shall be located in such positions and barricaded so that they will not be disturbed by any construction operations. CONTRACTOR shall furnish the necessary iron pipe stakes, barricades, necessary labor, and other assistance required by ENGINEER for ENGINEER's Work in setting the reference stakes. After this referencing has been done and permanent sketches prepared, ENGINEER will give permission to CONTRACTOR for the removal of the monument. Referenced monuments will be reset by OWNER after all backfilling has fully settled.
5. Any monuments damaged or destroyed by CONTRACTOR that are not within the normal Work area as determined by ENGINEER shall be replaced, and CONTRACTOR shall pay all costs of the replacement survey. The replacement survey shall be performed by, or under, the direct supervision of a Registered Land Surveyor, licensed in the State in which the Work is performed.

C. CONTRACTOR Performance:

1. Furnish stakes and such suitable labor and assistance as ENGINEER may require in setting survey work.

2. Be responsible for costs by ENGINEER for providing:
 - a. Additional or replacement staking of original control points established by ENGINEER.
 - b. Replacements of Site benchmarks established by ENGINEER.
3. Verify layout information shown on Drawings, in relation to the property survey and existing benchmarks before proceeding to layout the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - a. Record benchmark locations, with horizontal and vertical data, on Contract Record Documents.
4. Working from lines and levels established by ENGINEER, establish benchmarks and markers to set lines and levels at each area of Work and elsewhere as needed to properly locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
5. Benchmarks or control points shall not be changed or relocated without prior written approval by ENGINEER. Promptly report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.
6. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.
7. Advise entities engaged in construction activities, of marked lines and levels provided for their use.
8. As construction proceeds, check every major element for line, level and plumb.
9. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations by instrumentation and similar appropriate means.
10. Building Lines and Levels: Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels, and control lines and levels required for mechanical and electrical Work.
11. Existing Utilities and Equipment:
 - a. The existence and location of underground and other utilities and construction as shown on Drawings as existing are not guaranteed. Before beginning Site Work, CONTRACTOR shall investigate and verify the existence and location of underground utilities and other construction.
 - b. Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities having jurisdiction.
 - c. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water service piping.

3.02 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

END OF SECTION

SECTION 01 31 50 – GENERAL CONDITIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies all work described and required by the Plans and Specifications at each location for which no item of work is listed in the Bid Form, including but not limited to:
1. Coordination of, and cooperation with, other contractors, agencies, departments, and utilities.
 2. Protection and maintenance of utilities.
 3. Placing, maintaining, and removing all soil erosion and sedimentation controls, including stone inlets filers (as shown on project plants).
 4. Maintaining drainage.
 5. Maintaining driveways drive openings, sidewalks, bike paths, mail deliveries, and solid waste/recycle pick-ups. This includes coordination of hose piping and temporary ramps.
 6. Storing all materials and equipment off lawn areas.
 7. Site clean-up.
 8. Furnishing and operating vacuum-type utility structure cleaning equipment
 9. Noise and dust control
 10. Mobilization(s) and demobilization(s).
 11. All miscellaneous and incidental items such as overhead, insurance, and permits.
 12. Meeting all requirements relating to Debarment Certification, Davis Bacon Act, and Disadvantaged Business Enterprise, and providing the necessary documentation.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 32 00 - AUDIOVISUAL COVERAGE

PART 1 - GENERAL

1.01 SUMMARY

- A. CONTRACTOR shall provide to OWNER a complete color audiovisual record of Site for the purpose of establishing a record of conditions prior to construction. The audio-video recording shall be of a professional quality that will clearly provide an accurate visual description of existing conditions. The record shall include all audio-video deliverables, deliverable storage cases, index labels, and run sheet logs.

1.02 SUBMITTALS

- A. Provide 2 copies of the audiovisual record as specified in this Section. Submit deliverables in accordance with Section 01 33 00. The original deliverable shall be retained by CONTRACTOR and maintained in a safe environment in case additional copies of the record are required.

PART 2 - PRODUCTS

2.01 AUDIO-VIDEO DELIVERABLE

- A. Videos shall be mastered on high-quality formats only. High-quality formats acceptable are digital hard drive and DVD. Deliver premium quality DVDs or hard drives to ENGINEER.

PART 3 - EXECUTION

3.01 ACCEPTABLE VIDEOTAPING FIRMS

- A. Services shall be performed by one of the following organizations:
 - 1. Construction Video (586) 752-2580
 - 2. Kuiper Productions (906) 297-8002

3.02 SCHEDULE

- A. Video recording shall take place prior to construction and prior to the placement of equipment and material when possible. The video must be recorded during a time of good visibility. No recording shall be done during precipitation or when the surfaces are covered with more than 5 percent snow, leaves, or temporary debris unless authorized by ENGINEER.
- B. When video recording on private property, CONTRACTOR shall give the property owners sufficient notice of such entry so that the owners may be advised of and their permission obtained for the Work. Refusal of entry shall be noted on the logsheet.

3.03 COVERAGE

- A. The video coverage must include all surface features within the construction zone of influence. Surface features shall include but not be limited to roadways, cross streets, driveways, sidewalks, curbs, ditches, culverts, headwalls, retaining walls, landscaping, trees, shrubbery, fences, or other structures located within the construction zone. Where construction may necessitate a local detour of traffic, additional panning of the full highway right-of-way will be required. It will not be necessary to cover side street detours, only areas within the full highway right-of-way of the street along which the construction is being done. OWNER shall have the authority to designate what area may be omitted or added for audio-video coverage.

Areas of coverage shall include:

- Lagoon Site
 - Hatcher Street from the access gate to Hatcher Crescent.
 - Sunset Road from the WTP to Newport Road.
 - Newport Road from Sunset Road to Miller Road (or alternate approved trucking route to nearest major City street).
- B. Where conventional wheeled vehicle is used, the camera shall be securely mounted to provide steady viewing. The camera lens shall be at a level to facilitate best perspective and line of sight. The vehicle shall be plainly marked with company name and telephone number. Caution signs, flags, and strobes may be used for safety.
- C. The vehicle rate of travel shall be proportional to the number, size and value of the surface features within the construction zone of influence. The following shall be used as a guide for maximum rates of travel:

Area Type	Typical Characterization	Average Feet per Minute
High-Density	Hard surface streets, curbs, drives and sidewalks; 50-foot lots; few empty lots	48
Medium-Density	Gravel roads, hard and soft surface drives, no sidewalks, culverts and headwalls, 100-foot lots, few empty lots	60
Low-Density	Gravel roads, small fields or woods, occasional buildings	90
Extra Low-Density	Gravel roads, large fields, sparse buildings	120

- D. Vehicle rates of travel on road surface view only or haul routes shall be approximately 5 miles per hour.
- E. Panning rates and zoom-in zoom-out rates shall be controlled sufficiently so that playback will produce clarity of the object viewed, and locations must be identified by audio and video means at intervals of not more than 100 lineal feet.
- F. The recording must be continuous and where sound and video information can be recorded. Accompanying the video shall be a corresponding, simultaneously recorded audio track containing the commentary of the camera operator. The commentary shall provide orientation for the viewer, identification of surface features, and description of points of interest being recorded visually.

- G. To preclude the possibility of tampering or editing in any manner, all video recordings must be made by electronic means and display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as the corresponding engineering stationing numbers. The date information will contain the month, day, and year (for example, 4/1/01), placed directly below the time information. The time information shall consist of hours, minutes, and seconds, separated by colons (for example 10:35:18).
- H. The engineering stationing numbers must be accurate, must correspond to the project stationing if provided, and must include the standard engineering symbols (for example, 14+18). If there is no engineering stationing, each street shall be stationed individually starting at 0+00.
- I. Below the engineering stationing, periodic transparent alphanumeric information shall appear. This information will consist of the name of the project, name of area covered, direction of travel, viewing side, etc.
- J. Global Positioning System may be used with or in place of stationing as directed by ENGINEER.
- K. When video coverage is required in areas not accessible by conventional wheeled vehicle, the coverage shall be executed by walking or special conveyance approved by ENGINEER.

3.04 NONELECTRONIC RECORD

- A. A runsheet log shall be provided that accurately catalogs the contents of each video. Information contained in runsheet will include:
 - 1. Street name, easement designation, or address.
 - 2. Sheet number or numbers relative to line entry of a particular area of coverage.
 - 3. Roll numbers.
 - 4. Real-time code indexing for each project segment indicating hours, minutes, and seconds.
 - 5. Direction of travel for each segment.
 - 6. Viewing side for each segment.
 - 7. Starting and ending points for each segment.
 - 8. Project information such as Project title, Owner, date.
- B. Videos shall be labeled with appropriate project information and shall be able to be cross-referenced with runsheets. Information on labels shall include roll number, Project title, Project location, date, particular set (if multiple copies), and a quick reference list of tape contents.

END OF SECTION

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals, including, but not necessarily limited to, the following:
 - 1. CONTRACTOR's Construction Schedule.
 - 2. Shop Drawings.
 - 3. Product data.
- B. Topics covered elsewhere include, but are not limited to:
 - 1. Permits.
 - 2. Applications for payment.
 - 3. Performance and payment bonds.
 - 4. Insurance certificates.
 - 5. List of subcontractors.

1.02 SUBMITTALS

- A. Bonds and Insurance Certificates shall be submitted to and approved by OWNER and ENGINEER prior to the initiation of any construction on Site.
- B. Permits, Licenses, and Certificates: For OWNER's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents; correspondence and records established in conjunction with compliance with standards; and regulations bearing upon performance of the Work.

1.03 SUBMITTAL PROCEDURES

- A. Coordination:
 - 1. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 3. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - 4. ENGINEER reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing:
 - 1. Allow sufficient review time so that installation shall not be delayed as a result of the time required to process submittals, including time for resubmittals.
 - 2. ENGINEER will review and return submittals with reasonable promptness, or advise CONTRACTOR when a submittal being processed must be delayed for coordination or receipt of additional information by putting the submittal "On Hold" and returning a transmittal identifying the reasons for the delay.

3. No extension of Contract Time will be authorized because of failure to transmit submittals to ENGINEER sufficiently in advance of the Work to permit processing.

C. Submittal Preparation:

1. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
2. Provide a space approximately 4 inches by 5 inches on the label or beside the title block on submittals not originating from CONTRACTOR to record CONTRACTOR's review and approval markings and the action taken.
3. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of ENGINEER.
 - d. Name and address of CONTRACTOR.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
4. Any markings done by CONTRACTOR shall be done in a color other than red. Red is reserved for ENGINEER's marking.
5. The number of electronic and hard copies to be submitted will be determined at the pre-construction conference. Reproducibles may be submitted and will be marked and returned to CONTRACTOR. Blue or black line prints shall be submitted in sufficient quantity for distribution to ENGINEER and OWNER recipients.

D. Submittal Transmittal:

1. Package each submittal appropriately for shipping and handling. This shall include an index either on the transmittal or within the submittal itself. Transmit each submittal from CONTRACTOR to ENGINEER using a transmittal form. Submittals received from sources other than CONTRACTOR will be returned without action. Use separate transmittals for items from different specification sections. Number each submittal consecutively beginning with the specification section. Resubmittals should have the same number as the original, plus a letter designation for each resubmittal (i.e., 01 33 00-1-A, 01 33 00-1-B, etc.).
2. Indicate on the transmittal relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include CONTRACTOR's certification that information complies with Contract Document requirements. On resubmittal, all changes shall be clearly identified for ease of review. Resubmittals shall be reviewed for the clearly identified changes only. Any changes not clearly identified will not be reviewed and original submittal shall govern.

1.04 CONSTRUCTION SCHEDULE

- A. Within fourteen (14) days after issuance of the Notice to Proceed, the CONTRACTOR shall prepare three (3) copies of the proposed schedule and submit two (2) copies to the ENGINEER for review and approval. Hard copies of project schedule shall be in color with critical path shown. CONTRACTOR shall also submit electronic copy of schedule.
 1. Prepare Schedule on a sheet, or series of sheets, of stable transparency or other reproducible media, of sufficient width to show data for the entire construction period.

2. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on Schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
- B. Schedule Updating: Revise Schedule after each meeting or activity where revisions have been recognized or made within 2 weeks following the meeting or activity.

1.05 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
1. Dimensions.
 2. Identification of products and materials included.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
- C. Measurements given on Shop Drawings or standard catalog sheets, as established from Contract Drawings and as approved by ENGINEER, shall be followed. When it is necessary to verify field measurements, they shall be checked and established by CONTRACTOR. The field measurements so established shall be followed by CONTRACTOR and by all affected trades.
- D. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 inches by 11 inches but no larger than 36 inches by 48 inches.
- E. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

1.06 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as Shop Drawings.
- B. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
1. Manufacturer's printed recommendations.
 2. Compliance with recognized trade association standards.
 3. Compliance with recognized testing agency standards.
 4. Application of testing agency labels and seals.

5. Notation of dimensions verified by field measurement.
 6. Notation of coordination requirements.
- C. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

1.07 ENGINEER'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, ENGINEER will review each submittal, mark to indicate action taken, and return promptly.
1. Compliance with specified characteristics is CONTRACTOR's responsibility.
- B. Action Stamp: ENGINEER will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 2. Final-But-Restricted Release: When submittals are marked "Furnish as Corrected," that part of the Work covered by the submittal may proceed, provided it complies with notation or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 3. Returned for Resubmittal: When submittal is marked "Rejected" or "Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Rejected" or "Revise and Resubmit" to be used at Site, or elsewhere where Work is in progress.
 4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Acknowledge Receipt."
 5. The approval of ENGINEER shall not relieve CONTRACTOR of responsibility for errors on Drawings or submittals as ENGINEER's checking is intended to cover compliance with Drawings and Specifications and not enter into every detail of the shop work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies procedural and administrative requirements for temporary services and facilities.
- B. Temporary Utilities include, but are not limited to:
 - 1. Water service and distribution.
 - 2. Temporary electric power.
 - 3. Public and private utilities coordination.
 - 4. Storm and sanitary sewer.
- C. Temporary Construction and Support Facilities include, but are not limited to:
 - 1. CONTRACTOR's field offices and storage sheds.
 - 2. Temporary roads and paving.
 - 3. Sanitary facilities.
 - 4. Dewatering facilities and drains.
- D. Construction Buildings and Facilities include, but are not limited to.
 - 1. Temporary Project identification signs.
 - 2. Temporary Project bulletin boards.
 - 3. Ongoing construction cleanup.
- E. Security and Protection Facilities required include, but are not limited to:
 - 1. Barricades, warning signs, lights.
 - 2. Security enclosure and lockup.
 - 3. Environmental protection.
 - 4. Control of noise.
 - 5. On-site burning.
 - 6. Dust control.
- F. Traffic Control Facilities required include, but are not limited to:
 - 1. Traffic control plan of action.
 - 2. Maintenance of traffic.
 - 3. Temporary pavement markings.
 - 4. Special requirements.
- G. Sedimentation Control Facilities required include, but are not limited to:
 - 1. Soil erosion and sedimentation control.
 - 2. Stormwater discharge control.
 - 3. Dewatering trenches and disposal of excess excavated material.

4. Stream bank protection.
5. Slope protection - adjacent to stream crossings.
6. Slope protection.

1.02 REFERENCES

- A. Natural Resources and Environmental Protection Act, P.A. 451 (Act 451) of 1994.
- B. Guidebook of Best Management Practices for Michigan Watersheds.
- C. Local Soil Erosion Control Ordinance or requirements.
- D. Michigan Manual of Uniform Traffic Control Devices (MMUTCD).
- E. Codes and Standards:
 1. Comply with NFPA Code 241, "Building Construction and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library, "Temporary Electrical Facilities."
 2. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services," prepared jointly by AGC and ASC, for industry recommendations.
 3. Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

1.03 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01 33 00, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
 1. CONTRACTOR shall submit the Plan of Action for Traffic Control in 6 copies within 10 days after the Notice to Proceed is issued. CONTRACTOR shall not commence Work on any State trunk line or major artery without written approval of the Plan for that portion of the Contract.
 2. Soil Erosion and Sedimentation Control Program prepared by CONTRACTOR, as specified in this Section, shall be reviewed and have received at least preliminary concurrence from the local Enforcing Agent before it will be presented and discussed at the Pre-Construction Conference, at which time final revisions may be made. Copies of the final agreed program, and Act 451 Permit, shall be delivered to ENGINEER a minimum of 2 weeks prior to beginning any Work on Site.
 3. Temporary Utilities: Submit a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to OWNER, change over from use of temporary service to use of the permanent service.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to:
 1. Building Code requirements.
 2. Health and Safety regulations.
 3. Utility Company regulations.
 4. Police, Fire Department, and Rescue Squad rules.

5. Environmental Protection regulations.
 6. State and Local Soil Erosion and Sedimentation Control regulations.
- B. Inspection: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

- A. Unless otherwise provided in these Specifications, CONTRACTOR shall make CONTRACTOR's own arrangements for electricity, gas, water, and sewer services for use during the construction of the Work and shall pay for all temporary facilities, connections, extensions, and services.
1. Cost or use charges for temporary facilities are not chargeable to OWNER or ENGINEER, and will not be accepted as a basis of claims for a Change Order.
- B. Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do no overload facilities or permit them to interfere with progress. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on Site.
- C. Special Requirements: Special requirements of OWNER and MDOT being specified for traffic control on State trunk lines and major arteries due to the magnitude of traffic disruption involved in this Contract.

1.06 SEQUENCING AND SCHEDULING

- A. CONTRACTOR shall inform the local Fire Department in advance of CONTRACTOR's program of street obstruction and detours, so that the Fire Department can set up plans for servicing the area in case of an emergency.
1. CONTRACTOR shall also notify the public agency having jurisdiction over the roads at least 1 week prior to obstructing any street.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide new materials; if acceptable to ENGINEER, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Water: Provide potable water approved by local health authorities.
- C. Traffic Control Devices:
1. Signs: Standard sign sizes and colors, as shown in "MMUTCD," shall be used to make the approach to construction areas and to direct motorists on any detour route. All signs shall be reflectorized.

2.02 EQUIPMENT

- A. Provide new equipment; if acceptable to ENGINEER, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110 to 120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- C. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- D. Temporary Offices: Provide prefabricated or mobile units or similar on-site construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air conditioned units on foundations adequate for normal loading. CONTRACTOR to locate temporary offices at one of the two sites, but not both. Office must be located within area of anticipated Work.
- E. Temporary Toilet Units: Provide self-contained single-occupant toilet units, properly vented and fully enclosed with a glass fiber-reinforced polyester shell or similar nonabsorbent material.
- F. First Aid Supplies: Comply with governing regulations.
- G. Fire Extinguishers: Provide hand-carried, portable, UL rated, Class "A" fire extinguishers for temporary offices and similar spaces.
 - 1. In other locations, provide hand-carried, portable, UL rated, Class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - 2. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.
- H. Project Identification Signs: Provide 8-foot wide by 4-foot high Project sign as detailed, of solid cedar wood and MDO plywood, painted, with exhibit lettering by a professional sign painter, with final graphics as approved by ENGINEER.
- I. Bulletin Board: Provide a weather-protected enclosed bulletin board at Site. The bulletin board shall be mounted in a conspicuous and public outside location.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they shall serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

- A. Water Service and Distribution: CONTRACTOR shall at all times provide for CONTRACTOR's employees an abundant and convenient supply of cool drinking water taken from a potable source.
- B. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground fault interrupters, and main distribution switchgear.
 - 1. Except where overhead service must be used, install electric power service underground.
 - 2. Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- C. Public and Private Utilities: Where any utilities, water, sewer, gas, telephone, or any other either public or private, are encountered, CONTRACTOR must provide adequate protection for them, and CONTRACTOR shall be held responsible for any damages to such utilities arising from CONTRACTOR's operations.
 - 1. When it is apparent that construction operations may endanger the foundation of any utility conduit or the support of any structure, CONTRACTOR shall notify the utility Owner of this possibility and CONTRACTOR shall take such steps as may be required to provide temporary bracing or support of conduits or structures.
 - 2. Where it is the policy of utility Owners to make repairs to damaged conduit or other structures, CONTRACTOR shall cooperate to the fullest extent with the utility, and CONTRACTOR shall see that CONTRACTOR's operations interfere as little as possible with those operations.
 - 3. When it is necessary to carry out the Work, that an electric, telephone, or light pole be moved to a new location, or moved and replaced after construction, CONTRACTOR shall arrange for the moving of such poles and the lines thereof, and shall pay any charges therefor.
 - 4. Where existing utilities are encountered along the line of Work, CONTRACTOR shall perform CONTRACTOR's operations in such a manner that service will not be interrupted, and shall, at CONTRACTOR's own expense, make all temporary provisions to maintain service.
 - 5. Unless otherwise indicated on Drawings, CONTRACTOR shall replace any disturbed sewer or drain, or relay same at a new grade to be established by ENGINEER, such that sufficient clearance for the sewer will be provided.
 - 6. CONTRACTOR will receive no extra compensation for replacement of sewers or drains encountered, or for relaying at a new grade and/or line where necessary, except where specifically noted otherwise on Drawings or Specifications.
 - 7. Where existing gas mains and services are encountered, CONTRACTOR shall arrange with the gas company for any necessary relaying, and shall pay for the cost of such work.
 - 8. Materials used in repairing or relaying utilities shall be the same type and strength as the existing Work.

3.03 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
 - 1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to OWNER.
 - 2. Provide incombustible construction for offices, shops, and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- B. CONTRACTOR's Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at Site. Keep the office clean and orderly for use for small progress meetings.
- C. Temporary Roads and Paving: Construct and maintain temporary roads and paving to adequately support the indicated loading and to withstand exposure to traffic during the construction period. Locate temporary paving for roads, storage areas and parking where the same permanent facilities will be located. Review proposed modifications to permanent paving with ENGINEER.
- D. Sanitary Facilities: Sanitary facilities include temporary toilets, wash facilities, and drinking water fixtures. Comply with regulations and health Codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best service the Project's needs.
 - 1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
 - 2. Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
 - 3. Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
 - 4. Provide safety showers, eyewash fountains and similar facilities where needed for safety and sanitation of personnel.
- E. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain the Site, excavations, and construction free of water.

3.04 CONSTRUCTION BUILDINGS AND FACILITIES INSTALLATION

- A. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
 - 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
 - 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.

- B. Temporary Project Identification Signs: Project sign to be installed by Contract No. 1. CONTRACTOR responsible for maintaining the sign throughout the project, and for the removal of the sign at project substantial completion.
- C. Temporary Project Bulletin Board: As a minimum, the following items must be posted:
 - 1. Wage Rates (when applicable).
 - 2. Safety Poster (OSHA or State OSHA).
 - 3. Nondiscrimination Poster.
 - 4. Equal Employment Opportunity Statement signed by a Company official.
 - 5. Grading Permit (Soil Erosion and Sedimentation Control Act 451).
- D. Ongoing Construction Cleanup: Project cleanup shall be an ongoing operation. CONTRACTOR shall maintain an order of neatness and good housekeeping comparable to that maintained by OWNER. Project cleanup applies to the Site and all areas affected by construction operations. CONTRACTOR shall:
 - 1. Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.
 - 2. Maintain dirt and debris resulting from CONTRACTOR's operations in designated spoil piles as approved by ENGINEER or remove from the Site daily. Dirt and debris shall not collect or interfere with OWNER's facility operations. Excess dirt and debris shall be removed from the Site as needed to confine spoil piles in designated areas.
 - 3. Perform general cleanup inside of OWNER's buildings at least once every two weeks. Cleanup shall include consolidation of stored materials, removal of waste material and debris, and sweeping of flooring surfaces.
 - 4. Maintain clear access to all properties affected by construction activities. Maintain unobstructed access to existing buildings, equipment, safety equipment, and other items requiring OWNER access for facility operation.
 - 5. Keep tools, equipment, and materials in a neat and orderly arrangement.
 - 6. Maintain culverts, sewers, and drainage structures by removing sediment and debris from construction operations.
 - 7. Repair all holes and ruts resulting from construction operations that affect OWNER's use of property with approved material; compact, level, and restore.

3.05 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Barricades, Warning Signs, and Lights: Comply with Standards and Code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- B. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
 - 1. Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

- C. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the Site.
- D. Control of Noise: CONTRACTOR shall eliminate noise to as great an extent as possible at all times. Air compressors shall be equipped with silencers, and the exhaust of all gasoline motors and other power equipment shall be provided with mufflers. Generators shall include sound attenuation.
 - 1. In the vicinity of hospitals, neighborhoods, libraries, and schools, special precautions shall be taken to avoid noise and other nuisance, and CONTRACTOR shall require strict observances of all pertinent ordinances and regulations.
- E. On-Site Burning: Burning of waste materials resulting from the Work under this Contract will not be allowed unless authorized in writing by OWNER. Where burning is not allowed, CONTRACTOR shall haul all waste materials from Site and dispose of same in a manner acceptable to ENGINEER.
 - 1. The costs of hauling and disposal of waste materials shall be included in other items of the Work under this Contract.
- F. Dust Control: CONTRACTOR shall take all steps necessary for the alleviation or prevention of dust nuisance caused by or resulting from CONTRACTOR's operations and shall apply water or dust palliative, or both, as required. No direct payment will be made for any such Work performed or materials used to control dust from this Contract.

3.06 TRAFFIC CONTROL FACILITIES INSTALLATION

- A. Traffic Control Plan of Action: CONTRACTOR's Plan of Action shall be based upon OWNER's requirements for Traffic Control and shall detail specific detour routes including individual sign markings and locations. CONTRACTOR shall also propose CONTRACTOR's intended method for lane control within the construction Work areas. The Plan of Action shall include long-term maintenance of traffic control devices for Work that is not completed during a construction season or for extended periods when Work is not performed.
 - 1. OWNER shall approve the proposed Plan of Action. Modifications to the proposed Plan of Action resulting in changes to the Bid quantities shall be adjusted as required during CONTRACTOR's submittal of monthly payment estimates.
 - 2. In addition to the Plan of Action, this Work shall consist of the furnishing, installation, operation, maintenance, and removal of the traffic control devices described in this Section.
 - 3. The location, type, and wording of warning and guide signs shall be proposed by CONTRACTOR as part of CONTRACTOR's required Plan of Action for Traffic Control.
- B. Maintenance of Traffic: During the progress of Work, CONTRACTOR shall accommodate both vehicular and pedestrian traffic as provided in these Specifications and as indicated on Drawings.
 - 1. In the absence of specific requirements, CONTRACTOR shall maintain such traffic. Access to fire hydrants, water, and gas valves shall always be maintained.
 - 2. CONTRACTOR's truck and equipment operations on public streets shall be governed by all local traffic ordinances and regulations of the Fire and Police Departments and the Department of Public Works. Work within State highway rights-of-way shall be under the jurisdiction of the Michigan Department of Transportation.

3. Where streets are partially obstructed, CONTRACTOR shall place and maintain temporary driveways, ramps, bridges and crossings which, in the opinion of ENGINEER, are necessary to accommodate the public. As part of the Work under this Contract, CONTRACTOR shall be responsible for providing and maintaining flagpersons, warning lights, signs, and/or barricades, including necessary detour signs outside the Project limits as required to direct and protect vehicular and pedestrian traffic. In the event of CONTRACTOR's failure to comply with the foregoing provisions, OWNER may, with or without notice, cause the same to be done and deduct the cost of such Work from any monies due or to become due CONTRACTOR under this Contract; but the performance of such Work by OWNER, or at OWNER's insistence, shall serve in no way to release CONTRACTOR from CONTRACTOR's liability for the safety of the traveling public.
4. CONTRACTOR shall inform the local Fire Department in advance of CONTRACTOR's program of street obstruction and detours, so that the Fire Department can set up plans for servicing the area in case of an emergency. CONTRACTOR shall also notify the public agency having jurisdiction over the roads at least 1 week prior to obstructing a road.

C. Special Requirements:

1. CONTRACTOR may not utilize Cooley Street or Sunset Road across Wines Elementary School property to access the sites with any construction traffic.

3.07 SEDIMENTATION CONTROL FACILITIES INSTALLATION

- A. Soil Erosion and Sedimentation Control: CONTRACTOR shall take all precautions necessary to prevent soil erosion of areas disturbed by the construction and shall ensure that all soil erosion be contained within the construction Site. CONTRACTOR shall provide temporary slope protection, temporary dikes, etc., as required to prevent eroded materials from entering any sewers or natural watercourses.
1. CONTRACTOR shall comply with Natural Resources and Environmental Protection Act, P.A. 451 (Act 451) of 1994, Part 91 of the Michigan Compiled Laws and local city or county soil erosion control programs.
 2. CONTRACTOR shall prepare a Soil Erosion and Sedimentation Control Program for submittal to and approval by Local Soil Erosion and Sedimentation Control Agent prior to start of construction, as required in the following paragraphs. Copies of State guidelines "Better Environment through Soil Erosion and Sedimentation Control" and "Protection of Natural Resources" DEQ Handbook of Specifications may be obtained at no charge from the Michigan Department of Environmental Quality (MDEQ). The "Michigan Soil Erosion and Sedimentation Control Guidebook" and the "Guidebook of Best Management Practices for Michigan Watersheds" may also be obtained from MDEQ.
 3. Since it is impractical to identify specific potential soil erosion problems along a water main route, CONTRACTOR, after award but prior to the Pre-Construction Conference, together with the local soil erosion Enforcing Agent, shall identify all potential soil erosion problem areas and prepare a detailed Soil Erosion and Sedimentation Control Program satisfying CONTRACTOR's specific method of operation. This program shall include as a minimum, but not necessarily be limited to, the following:
 - a. Identify on a separate set of Drawings all soil erosion problem areas.
 - b. Identify specific control structure using DEQ United Keying System from the "Michigan Soil Erosion and Sedimentation Control Guidebook" to be placed to control erosion and to prevent soil from entering storm sewers and streams.
 - c. Indicate timing of placement and removal of structures both in relationship to time of year and to sequence of construction.

- d. Indicate timing of completion of cleanup and surface restoration after control structures are removed.
 4. The Soil Erosion and Sedimentation Control Program, prepared by CONTRACTOR, shall be reviewed and have received at least preliminary concurrence from the local Enforcing Agent before it will be presented and discussed at the Pre-Construction Conference, at which time final revisions may be made. Copies of the final agreed program shall be made available for ENGINEER and the local Enforcing Agent. Should the local regulatory agency determine at any time during construction that the construction operation is in violation of the Act and cite OWNER, CONTRACTOR or subcontractor shall take immediate action, as directed by OWNER, to ensure compliance with the Act.
- B. Stormwater Discharge Control:
1. CONTRACTOR shall comply with Natural Resources and Environmental Protection Act, P.A. 451 (Act 451) of 1994, Part 31 of the Michigan Compiled Laws and local city or county stormwater discharge control programs.
 2. CONTRACTOR shall not begin any Work at Site until the stormwater discharge permit has been obtained for the Project.
 - a. CONTRACTOR shall indemnify OWNER against any and all fines for discharge permit violations which are assessed against OWNER, and which are due to CONTRACTOR's actions or failure to maintain the sedimentation control measures.
 3. CONTRACTOR shall utilize the appropriate Best Management Practices to prevent any of CONTRACTOR's activities from resulting in an unlawful discharge of pollutants to the waters of the State. CONTRACTOR shall correct any deficiencies noted by ENGINEER, Local Enforcement Agency or MDEQ within 24 hours of receiving written notice that corrections are necessary. Should CONTRACTOR fail to take action within the allotted time, OWNER shall have the right to perform the work and deduct all costs from amounts due CONTRACTOR under this Contract.
- C. Dewatering and Disposal of Excess Material:
1. Pumping or draining from the dewatering equipment must be as shown on the contract drawings and at no time shall it be discharged to any sanitary or storm sewers without written permission from the OWNER.
 2. CONTRACTOR shall dewater the lime residuals to the existing storm sewer system as shown on the drawings. All discharge from dewatering equipment discharged onto the ground ahead of being piped to a natural watercourse or lake via an existing storm sewer system or by a temporary piping system shall have built at the point of entry into such storm sewer a silt/excess lime residual retention structure.
 3. The silt/excess lime residual retention structure may consist of several straw bales adequately anchored and placed as directed by ENGINEER. Any eventual silt or solids retained in the area of these structures shall be removed prior to removal of the structure. This sewer discharges to the sedimentation at the Lime Lagoon site. CONTRACTOR responsible for setting up adequate protective measures in the sedimentation basin to capture any silt or excess lime residual material in the filtrate discharge. Upon completion of all dewatering work, CONTRACTOR shall remove the retention structure and all measures at the sedimentation basins, and clean up all deposited residuals.
- D. Slope Protection: On slopes greater than 20 percent, but not immediately adjacent to stream crossing, mulch shall be anchored with a spray of asphalt, Type SS-1S emulsion mixed with an equal amount of water at a rate of 200 gallons per acre. Chemical self-adhering mulch may be used. Mulch shall be anchored on slopes greater than 10 percent if immediately adjacent to stream crossings. Mulch may

also be held in place by discing with a farm disc. If mulch materials such as netting or excelsior blankets are used, they may have to be pegged.

3.08 FIELD QUALITY CONTROL

- A. Any unforeseen situations that may be encountered during the course of construction that may cause accelerated erosion and deposition of sediment into waterways and/or lakes shall be controlled by methods that may include sediment traps, sediment basins, or holding ponds. Any slope failures or development of gullies after construction has been completed shall be corrected immediately.
- B. Should the local Regulatory Agency determine at any time during construction that the construction operation is in violation of the Natural Resources and Environmental Protection Act, P.A. 451 (Act 451) of 1994 and cite OWNER, CONTRACTOR or Subcontractor shall take immediate action, as directed by OWNER, to ensure compliance with the Act.

3.09 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour-day basis where required to achieve indicated results and to avoid possibility of damage.
- C. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- D. Termination and Removal: Unless ENGINEER requires that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of CONTRACTOR. OWNER reserves the right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period including, but not limited to:

END OF SECTION

SECTION 01 77 00 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for Contract closeout including, but not limited to:
 - 1. Requirements for Substantial Completion.
 - 2. Final cleaning.
- B. Refer to the General Conditions for terms of CONTRACTOR's special warranty of workmanship and materials.
- C. Specific requirements for warranties for the Work and products and installation that are specified to be warranted, are included in the individual Sections of Divisions 2 through 16.
- D. Certifications and other commitments and agreements for continuing services to OWNER are specified elsewhere in the Contract Documents.

1.02 SUBSTANTIAL COMPLETION

- A. Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documents for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Price.
 - 2. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 3. Advise OWNER of pending insurance changeover requirements.
 - 4. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - 5. Obtain and submit releases enabling OWNER unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates, and similar releases.
- B. Inspection Procedures: On receipt of a request for inspection, ENGINEER will either proceed with inspection or advise CONTRACTOR of unfilled requirements.
 - 1. ENGINEER will prepare the Certificate of Substantial Completion following inspection, or advise CONTRACTOR of construction that must be completed or corrected before the certificate will be issued.
 - 2. ENGINEER will repeat inspection when requested and assured that the Work has been substantially completed.
 - 3. Results of the completed inspection will form the basis of requirements for final acceptance.

1.03 FINAL ACCEPTANCE

- A. Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Price.
 3. Submit a copy of ENGINEER's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by ENGINEER.
 4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when OWNER took possession of and responsibility for corresponding elements of the Work.
 5. Submit consent of surety to final payment.
 6. Submit a final liquidated damages settlement statement.
 7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 8. Deliver tools, spare parts, extra stock, and similar items.
 9. Make final changeover of permanent locks and transmit keys to OWNER. Advise OWNER's personnel of changeover in security provisions.
- B. Reinspection Procedure: ENGINEER will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to ENGINEER.
1. Upon completion of reinspection, ENGINEER will prepare a certificate of final acceptance, or advise CONTRACTOR of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, reinspection will be repeated.

1.04 SUBMITTALS

- A. Refer to individual Sections of Divisions 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 FINAL CLEANING

- A. Upon completion of all pumping operations. The CONTRACTOR shall be responsible for cleaning filtrate from the City infrastructure used to convey fluids between the lagoon and WTP sites.

The sewers shall be flushed until clean water is observed. Pipeline shall be inspected by CCTV to confirm cleaning efforts were effective. Copies of these videos shall be made available to the ENGINEER for review prior to final acceptance.

The force main shall be flushed until clean water is observed. The force main shall be pigged per the detail in the contract documents.

After completion of all flushing efforts, the basin at the lagoon site shall be thoroughly cleaned to remove all excess lime residual from the surface and any damage to the basin or interior BMPs shall be repaired.

- B. Clean Site, including landscape development areas, of rubbish, litter, and foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth even-textured surface.
- C. Comply with regulations of authorities having jurisdiction and safety standards for cleaning.
 - 1. Do not burn waste materials. Do not bury debris or excess materials on OWNER's property.
 - 2. Do not discharge volatile, harmful, or dangerous materials into drainage systems.
 - 3. Remove waste materials from Site and dispose of in a lawful manner.
- D. Where extra materials of value remaining after completion of associated Work have become OWNER's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 01 80 00 – CERTIFIED PAYROLL COMPLIANCE AND REPORTING

PART 1 - GENERAL

1.01 SUMMARY

This specification covers all administrative requirements, payroll reporting procedures to be followed by Contractors performing work on City-sponsored public improvements projects, and all other miscellaneous and incidental costs associated with complying with the applicable sections of the City of Ann Arbor Code of Ordinances with regard to payment of prevailing wages and its Prevailing Wage Compliance policy.

This specification is **not** intended to include the actual labor costs associated with the payment of prevailing wages as required. Those costs should be properly incorporated in all other items of work bid.

1.02 GENERAL

The Contractor is expected to comply with all applicable sections of Federal and State prevailing wage laws, duly promulgated regulations, the City of Ann Arbor Code of Ordinances, and its Prevailing Wage Compliance Policy as defined within the contract documents. The Contractor shall provide the required certified payrolls, city-required declarations, and reports requested elsewhere in the contract documents within the timeline(s) stipulated therein.

The Contractor shall also provide corrected copies of any submitted documents that are found to contain errors, omissions, inconsistencies, or other defects that render the report invalid. The corrected copies shall be provided when requested by the Supervising Professional.

The Contractor shall also attend any required meetings as needed to fully discuss and ensure compliance with the contract requirements regarding prevailing wage compliance. The Contractor shall require all employees engaged in on-site work to participate in, provide the requested information to the extent practicable, and cooperate in the interview process. The City of Ann Arbor will provide the needed language interpreters in order to perform wage rate interviews or other field investigations as needed.

Certified Payrolls may be submitted on City-provided forms or forms used by the Contractor, as long as the Contractor's forms contain all required payroll information. If the Contractor elects to provide their own forms, the forms shall be approved by the Supervising Professional prior to the beginning of on-site work.

1.03 UNBALANCED BIDDING

The City of Ann Arbor will examine the submitted cost for this item of work prior to contract award. If the City determines, in its sole discretion, that the costs bid by the Contractor for complying with the contract requirements are not reasonable, accurately reported, or may contain discrepancies, the City reserves the right to request additional documentation that fully supports and justifies the price as bid. Should the submitted information not be determined to be reasonable or justify the costs, the City reserves the right to pursue award of the contract to the second low bidder without penalty or prejudice to any other remedies that it may have or may elect to exercise with respect to the original low-bidder.

The Contract Completion date will not be extended as a result of the City's investigation of the as-bid amount for this item of work, even if the anticipated contract award date must be adjusted. The only exception will be if the Contractor adequately demonstrates that their costs were appropriate and justifiable. If so, the City will adjust the contract completion date by the number of calendar days commensurate with the length of the investigation, if the published Notice to Proceed date of the work cannot be met. The contract unit prices for all other items of work will not be adjusted regardless of an adjustment of the contract completion date being made.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 02 24 50 – RESIDUAL DEWATERING AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Work includes dewatering of residual lime, moisture analysis, weighing of trucks and material being disposed offsite, and disposal.
- B. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1, apply to Work of this Section.

1.02 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01 33 00, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
 - 1. Equipment Calibration Certificates: Provide copies of calibration certificates for all equipment used to measure dewatered (pressed) residual moisture content and weight.
 - 2. Manifests – Copies of trucking manifests documenting where pressed lime is disposed.
 - 3. Reports of moisture analysis and truck weights as defined below shall be submitted on a weekly basis.

1.03 DEWATERING EQUIPMENT

- A. Dewatering Equipment - CONTRACTOR responsible for furnishing all equipment, power supply, chemical additives, and other materials and resources to perform any on site manipulation of the moisture content of the lime residual to suit the needs of the selected disposal methods. Selected methods must be able to be executed within the site limits and constraints as shown on the contract drawings and be capable of achieving the goal for residual removal.
- B. CONTRACTOR responsible for selecting the type and number of pieces of equipment needed in order to meet the output needed to reach the targeted removal volumes.

1.04 TRUCKS

- A. Trucks are to be furnished capable of hauling loaded lime without violating any local weight restrictions for the given time of year. Tandem trucks will not be allowed.
- B. All trucks are to be equipped with bed liners capable preventing any leakage of filtrate from the bed during hauling. CONTRACTOR is responsible for the immediate cleanup of any surface spills outside of the WTP or lagoon sites, including any necessary notifications, fees or fines related to the spill.

1.05 TRUCK SCALES

- A. Contractor shall utilize certified truck scales including:
 - 1. Michigan DOT weigh stations
 - 2. Other certified scale approved by the Engineer

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 DOCUMENTATION OF WORK

- A. CONTRACTOR shall conform to the following documentation plan in order to monitor payment for the work completed.
- B. Moisture Content Analysis – CONTRACTOR shall perform moisture analysis for each truckload of dewatered residual lime hauled off site.
 - 1. Results shall include:
 - a. Truck ID
 - b. Date and time sample taken
 - c. Wet weight
 - d. Dry weight
 - e. Moisture content percentage
 - 2. Moisture content equipment shall be calibrated at the beginning and end of the project by comparing results of a split sample as tested by the OWNER.
 - 3. OWNER shall be permitted to observe moisture content analysis at any time as requested.
 - 4. Additional split samples shall be made available for independent testing by OWNER upon request.
- C. Weights – Each truck used to haul dewatered lime will be required to be weighed empty at the start of the project and at one other time during the execution of the contract work at the OWNER’s request. Should the variance in weight exceed 5% the original weight, the average of the two weights will be used in calculating load weights.
 - 1. Certified truck weight tickets shall be submitted for use in verifying calculations
 - 2. Up to 5% of trucks may be sent to an alternate scale within ten miles of project site if directed by owner to achieve a quality control measure.
- D. Reporting and Payment
 - 1. Contractor shall provide summarized reports of daily residual removed for use in tracking payment. Reports shall be in the following format:

Date	Time	Truck ID	Empty Weight	Loaded Weight	Moisture %	Dry Tons
------	------	----------	--------------	---------------	------------	----------

- 2. Pay applications shall be submitted with all documentation and calculations showing the dry tonnage removed. 85 percent of the Unit Price for residual removal will be paid in each application until the target goal of 8,000 dry tons is met. When 8,000 dry tons have been removed, the 15 percent of cost that was withheld will be released as a lump sum in the subsequent pay application. If the 8,000 dry ton goal is not met, the 15 percent withheld will not be disbursed. All payment for removal above the 8,000 dry ton target will be paid at the unit price listed in the Alternates section of the Bid Form.

E. Disposal

1. Contractor is responsible for all aspects of disposal of dewatered lime – including laboratory analysis as may be required.
2. Laboratory analysis and geotechnical report for the lime in the lagoon is included in the Appendix.
3. Site will be made available for CONTRACTOR to extract residual material for additional lab sampling during bid phase of project.

END OF SECTION

SECTION 02 80 50 - RESTORATION WORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Work including the replacement of all permanent type roadway bases and surfaces, concrete sidewalks, curbs and gutters, trees, lawns, and driveways damaged or removed due to the construction of the pipe and appurtenant structures. All such Work shall be in accordance with the Best Modern Practice, OWNER's standards, and/or as specified herein.
- B. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1, apply to Work of this Section.

1.02 REFERENCES

- A. Michigan Department of Transportation (MDOT):
 - 1. 4.00 Construction Mix Designs.
 - 2. 4.00.04 Trench Surface Conditioning.
 - 3. 4.06 Bituminous Seal Coats.
 - 4. 4.06.06 Bituminous Seal Coats.
 - 5. 4.06.09 Application of Cover Material.
 - 6. 4.06.10 Weather Limitations.
 - 7. 4.06.12 Maintenance of Surface.
 - 8. 6AA Coarse Aggregate.
 - 9. 7.10 Plant Hot Mix Method.

1.03 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01 33 00, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
 - 1. Material Certificates: Provide copies of materials certificates signed by materials producer and CONTRACTOR, certifying that each materials item complies with or exceeds specified requirements.
- B. Warranty: Submit in accordance with requirements of Section 01 77 00, warranties covering the items included under this Section.

1.04 QUALITY ASSURANCE

- A. Certification: CONTRACTOR shall submit certificates of compliance with applicable MDOT Standard Specifications.

1.05 SITE CONDITIONS

- A. Weather Conditions: Construct asphalt concrete surface course when atmospheric temperature is above 40 degrees F (4 degrees C), and when base is dry. Bituminous base course over 2 inches thick may be placed when air temperature is above 35 degrees F (-1 degree C) and rising. Asphalt may not be placed between November 15 and May 5.

1.06 WARRANTY

- A. Special Warranty: Provide, in accordance with Section 01 77 00, warranties covering the items included under this Section.
 - 1. Warranty Period: 1 year from the time of planting.
 - 2. This warranty includes furnishing new plants as well as labor and materials for installation of replacements. Replacement plantings shall meet or exceed all requirements for original plant materials as specified herein.
 - 3. CONTRACTOR shall not assume responsibility for damages or loss of plants or trees caused by fire, flood, lightning storms, freezing rains, winds over 60 miles per hour, or vandalism.

PART 2 - PRODUCTS

2.01 AGGREGATE BASE

- A. Aggregate base shall be constructed with not less than 12 inches of compacted aggregate placed in two 6-inch layers. Aggregate base shall meet requirements of MDOT Specification for 21A or 22A aggregate. Aggregate base shall extend beyond pavements to match existing aggregate or a minimum of 24 inches.

2.02 BITUMINOUS PAVEMENT

- A. Bituminous pavement shall be 3 inch, MDOT 3C leveling course over aggregate base with 2 inch, MDOT 4C, wearing course.
- B. Bituminous mixtures shall be furnished and placed in accordance with MDOT Specification 7.10 with no restriction for the "Aggregate Wear Index."
- C. Asphalt cement shall have an asphalt penetration (viscosity) rate of 120-150. Aggregate required shall be 20AA. When tested at the optimum asphalt content in accordance with ASTM D 1559, the bituminous mixture shall meet the requirements for stability; 1,100 pounds; flow, 8-18 hundredths of an inch; and voids in mineral aggregate, 15.0 percent, as specified in Table 7.10-1 of MDOT Specifications. The maximum allowable deviations permitted from the approved Job-Mix Formula shall be as shown in Table 7.10-3 of MDOT Specifications.
- D. At CONTRACTOR's expense, a qualified laboratory shall furnish ENGINEER a Job-Mix Formula in accordance with above criteria. After Job-Mix Formula is established, the aggregate gradation and the bitumen content of the bituminous mixture furnished for Work shall be maintained within the uniformity tolerance limits permitted in Table 7.10-3, and within the master gradation range as specified in Table 7.10-2 of MDOT Specifications.

2.03 CONCRETE CURB AND GUTTER

- A. Concrete curb and gutter to be replaced shall have the same cross-section as that removed, or as shown on Drawings, using Class P concrete and in accordance with OWNER's standards.

2.04 CONCRETE SIDEWALKS

- A. Concrete sidewalks shall be replaced with walks 4 inches thick (8 inches thick at driveway crossings) and to the same width as the existing walks. Concrete shall be Class B.

2.05 SEEDING

- A. Seeding shall be one of the following types:
 1. Slope Area, or Flat Field: 4 inches of topsoil, 20 pounds of 10-6-4 commercial fertilizer per 1,000 square feet of area, and 5 pounds of MDOT mixture roadside per 1,000 square feet of area.
 2. Flat Lawn Area: 4 inches of topsoil, fertilizer as specified above and 3 pounds of MDOT mixture Class A per 1,000 square feet of area.

PART 3 - EXECUTION

3.01 COORDINATION OF WORK

- A. Type of restoration shall be as noted on Drawings regardless of existing surface.
- B. The placing of base and surface courses shall follow immediately after backfilling the trench Any material placed in the trench other than that specified shall be considered as a temporary surface and shall be removed.
- C. All utilities, such as catch basins, manhole castings, water valve boxes, etc., shall be adjusted prior to installation of new pavement so that the finished surface will meet such utilities smoothly when surfacing is completed.

3.02 SAW CUT JOINTS

- A. Damaged areas shall be removed by sawing a straight-cut parallel with longitudinal and transverse construction or contraction joints. No saw cuts shall be nearer than 5 feet to a longitudinal or transverse joint or to the edge of the pavement. If the damaged area is less than 5 feet from an existing joint, the existing surface shall be saw-cut 5 feet from the damaged area, removed, and replaced. If the damaged area is less than 5 feet from the edge of the pavement, the removal and replacement shall be extended to said edge of pavement.
- B. Saw cutting of concrete shall be done with a carborundum saw to a minimum depth of half the slab thickness or that depth required to cut reinforcing steel. Bituminous surfaces shall be cut full depth.
- C. After the trench is backfilled and before the pavement over the trench is replaced, all angular and ragged irregularities on the edges of the cut pavement shall be removed giving a smooth and regular edge of pavement. Payment for cut joints required shall be included under the unit price of pavement restoration.

3.03 EXCAVATION

- A. Before repaving is started, all trenches and area around structures shall be excavated or backfilled to the level of the subgrade as required by the type of pavement replacement and cross-section specified. All existing pavement that has been undercut by the excavation for the pipe or structures shall be removed. The finished subgrade shall be smoothed, trimmed, and compacted to the required grade and cross-section. Compaction of the finish subgrade shall be obtained by suitable means approved by ENGINEER.

3.04 AGGREGATE BASE

- A. Place aggregate base on a prepared subbase or subgrade in accordance with construction methods described in Section 3.01 of MDOT Specifications.

3.05 BITUMINOUS PAVEMENTS

- A. Pavement surfaces shall be replaced with bituminous concrete of the type and in locations shown on Drawings. Work shall consist of saw cutting existing surfaces as herein specified under Saw Cut Joints, conditioning and treating the base course with prime or bond material and constructing thereon a bituminous concrete surface consisting of mineral aggregate, mineral filler, and bituminous material combined by a plant hot mix method per MDOT Specification. Construction methods and equipment for placing bituminous materials shall be as specified in MDOT Standard Specifications.
- B. Pavement surfaces shall be replaced to match existing widths but new pavements shall not be less than 22 feet wide.
- C. Conditioning of Base: Bituminous base shall be treated with a bond coat applied at the rate of 0 - 0.10 gallon per square yard. Bond coat shall be SS-1h or MS-2a.
- D. Leveling Course: Bituminous leveling course mixture shall be placed in one or more layers to the cross-section shown on Drawings. When the total application rate exceeds 220 pounds per square yard, the leveling course shall be applied in 2 courses. A bond coat shall be applied at the rate of 0 - 0.10 gallon per square yard between courses.
- E. Wearing Course: Following completion of the leveling course or courses, the surface shall be treated with a bond coat of 0 - 0.10 gallon per square yard. The wearing course mixture shall be placed according to the cross-section shown on Drawings in one or more courses as required.
- F. All joints in the bituminous pavements shall be vertical joints. Where the joints are allowed to set before the adjoining pavement is placed, such joints shall be treated with bond coat material.
- G. Feathering to connect new pavement to an existing pavement will not be allowed.

3.06 CONCRETE CONSTRUCTION

- A. Curb and Gutter: Concrete curb and gutter shall be placed prior to the placement of other types of roadway surfaces including concrete pavements.
 - 1. Curb and gutter to be replaced shall be determined by ENGINEER and shall include any cracked or broken sections and any sections which have settled 0.25 inch or more.

2. Forms shall be complete front and back type. Back forms resulting in hand forming the curb and gutter will not be allowed. Forms shall be of metal, straight and free of distortion and of sufficient strength to resist springing during the placing of concrete. Forms shall be securely staked, braced, and tied to the required line and grade. Flexible steel or adequately sized lumber may be used for short radius forms.
 3. One-inch expansion joints shall be placed opposite expansion joints in an abutting pavement. If curb or curb and gutter do not abut a concrete pavement, place expansion joints at all spring lines of street returns. If intersecting streets are more than 300 feet apart, place expansion joints at 200-foot intervals. For MDOT Standard Details A, B, C5, C6, and D curb and gutter, place expansion joints in abutting pavement.
 4. If the structure does not abut a concrete pavement or base, contraction joints shall be placed at approximately 100-foot intervals.
 5. Intermediate plane of weakness joints shall be placed at approximately 10-foot intervals between other joints as called for above.
 6. Curb returns and curb cuts for driveways shall be installed as required.
 7. The gutter and top of curb shall not vary more than 3/16 inch in 10 feet when checked with a 10-foot straightedge.
 8. After the back forms are removed, honeycomb and minor defects shall be filled with mortar, composed of 1 part Portland cement and 2 parts sand.
 9. As soon as concrete surfaces have hardened sufficiently to prevent marring, they shall be covered by an approved curing compound, or they shall be thoroughly wetted and cured by an approved method for a period of 6 days unless otherwise directed by ENGINEER.
- B. Sidewalks: Forms shall be of metal or wood, straight and free of distortion, and of sufficient strength to resist springing during the placing of concrete. Forms shall be securely staked, braced, and tied to the required line and grade. Flexible steel or adequately sized lumber may be used for short radius forms.
1. The walk subgrade shall be compacted to 95 percent compaction by tamping. After wetting the subgrade, the concrete shall be placed to the proper depth and spaded along the form faces.
 2. Concrete shall be alternately tamped and screeded until all voids are removed and the surface has been brought to the required grade. The surface shall then be floated to produce a smooth, dense surface, free from irregularities. All edges and joints shall be rounded to a radius of 1/4 inch with an edging tool and trowel. As soon as all excess moisture has disappeared, the surface shall be finished by light brooming.
 3. Walks shall be divided into blocks approximately square, using slab division forms or by cutting joints after floating. These joints shall be 1/2-inch-deep by 1/8- to 1/4-inch in width, and shall be finished smooth and true to line. Bituminous expansion joints shall be provided at intervals of 50 feet and at junctions with structures and curbs. Control joints shall be located between expansion joints at intervals equal to the sidewalk width.
 4. As soon as concrete surfaces have hardened sufficiently to prevent marring, they shall be covered by an approved curing compound, or they shall be thoroughly wetted and cured by an approved method for a period of 6 days unless otherwise directed by ENGINEER.

3.07 SEEDING

- A. Wherever the pipe trench passes through an area to be seeded, the backfilling shall be carried up to the surface except the top 4 inches, which shall be selected topsoil preserved or secured elsewhere for this purpose. This topsoil shall be rich, black surface earth, free from sod, weed stalks, or debris. The trench surface shall be carefully raked to an even surface, and all stones, sticks and other debris removed therefrom.

- B. Seeded areas shall receive a proper mulch of chopped straw, jute matting, or woven Kraft paper yarn. Seed shall not be sown between June 15 and August 15, or between October 15 and April 15, or at any time when the soil has insufficient moisture to ensure proper germination, or CONTRACTOR shall provide sufficient application of water by sprinkling until a growing catch of grass is established.

3.08 RECONDITIONING EXISTING LAWNS

- A. Recondition existing lawn areas damaged by CONTRACTOR's operations including storage of materials and equipment and movement of vehicles. Also recondition existing lawn areas where minor regrading is required.
- B. Provide fertilizer, seed or sod, and soil amendments as specified for new lawns, and as required, to provide a satisfactorily reconditioned lawn.
- C. Provide new topsoil, as required, to fill low spots and meet new finish grades.
- D. Cultivate bare and compacted areas thoroughly to provide a satisfactory planting bed.
- E. Remove diseased and unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from CONTRACTOR's operations, including oil drippings, stone, gravel, and other loose building materials.
- F. Where substantial lawn remains but is thin, mow, rake, aerate if compacted, fill low spots, remove humps, and cultivate soil, fertilize, and seed. Remove weeds before seeding, or if extensive, apply selective chemical weed killers as required. Apply a seedbed mulch, if required, to maintain moist condition.
- G. Water newly planted lawn areas and keep moist until new grass is established.

3.09 PROTECTION

- A. Protection and Maintenance: CONTRACTOR shall assume responsibility for maintaining CONTRACTOR's Work to the end of the guarantee period. During this period, CONTRACTOR shall make a minimum of 1 maintenance trip every 4 weeks during the growing season, and as many more as necessary to keep the plantings in a thriving condition.
 - 1. Maintenance of plants shall consist of pruning, cultivating, weeding, watering, keeping guying taut and trees erect, raising tree balls which settle below grade, and providing such sprays as are necessary to keep the planting free of insects and diseases.
- B. Acceptance: At the end of the warranty period, final acceptance will be made by ENGINEER and OWNER, provided all requirements of the Specifications have been fulfilled.
 - 1. Inspection of the plantings will be made jointly by CONTRACTOR and ENGINEER at completion of planting. All plants not in a healthy growing condition shall be removed and replaced with plants of like kind, size, and quality as originally specified before close of next planting season.

END OF SECTION

APPENDIX

Geotechnical Services Report



1915 North 12th Street
Toledo, OH 43604-5305
T 419-324-2222
F 419-241-1808
www.ttlassoc.com

June 20, 2017

Project No. 14725.01

Mr. Brian M. Rubel, P.E.
Tetra Tech
710 Avis Drive
Ann Arbor, Michigan 48108

**Geotechnical Services
Lime Sludge Lagoon Dredging
Ann Arbor, Michigan**

Dear Mr. Rubel:

TTL Associates, Inc. (TTL) has completed the geotechnical subsurface investigation for the referenced project. This study was performed in general accordance with TTL Proposal No. 14725.01, dated September 26, 2016, and was authorized by a Tetra Tech Subconsultant Services Agreement dated February 3, 2017.

PROJECT DESCRIPTION

Based on the provided information, the project consists of improvements to an existing lime sludge lagoon off of Cooley Avenue in Ann Arbor, Michigan. We further understand that the scope of the improvements includes dredging to remove some accumulated solids.

INVESTIGATIVE PROCEDURES

Field Procedures

This investigation included three (3) hand auger borings, designated as Boring B-1 through B-3, performed by TTL on June 7, 2017. The borings were located in the field by TTL with guidance from Tetra Tech. The borings were extended to termination at a depth of 10 feet below existing grade. The approximate locations of the test borings are indicated on the attached Test Boring Location Plan (Plate 1.0).

The hand auger borings were advanced in accordance with ASTM D 1452 utilizing a manually operated bucket auger and Housel sampling equipment. Samples were obtained at 2½-foot intervals to the planned completion depth of 10 feet below existing grades.

Penetration tests were performed at the sample intervals using a hand-operated Housel hammer. The penetration test method consisted of driving a 2-inch outside diameter split-barrel sampler into the soil with an approximately 39-pound weight falling freely through a distance of

30 inches. The sampler was driven in three successive 6-inch increments with the number of blows per increment being recorded. The sum of the number of blows required to advance the sampler the second and third six-inch increments was then converted into an equivalent Standard Penetration Test (SPT) resistance, or N-value, for a 140-pound hammer falling through a distance of 30-inches (ASTM D 1586). The equivalent SPT blow counts and N-values are presented on the Logs of Test Borings for the hand auger boring attached to this report. The split-spoon samples were sealed in jars and transported to our laboratory for further classification and testing.

This investigation did not include an environmental assessment of the surface or subsurface materials at the site. However, a portion of each split-spoon sample was retained for the City of Ann Arbor to perform environmental testing.

Laboratory Procedures

All recovered soils samples were visually classified in our laboratory and were tested for moisture content determinations in accordance with ASTM D 2216. The results of these tests are presented in the following table.

Boring No.	Sample Number	Sample Interval Depth, (feet)	Natural Moisture Content, (%)	Solids Content (%)
B-1	SS-1	1.0 – 2.5	70.8	29.2
	SS-2	3.5 – 5.0	75.1	24.9
	SS-3	6.0 – 7.5	85.5	14.5
	SS-4	8.5 – 10.0	83.9	16.1
B-2	SS-1	1.0 – 2.5	69.1	30.9
	SS-2	3.5 – 5.0	89.9	10.1
	SS-3	6.0 – 7.5	81.1	18.9
	SS-4	8.5 – 10.0	61.4	38.6
B-3	SS-1	1.0 – 2.5	72.4	27.6
	SS-2	3.5 – 5.0	96.4	3.6
	SS-3	6.0 – 7.5	80.4	19.6
	SS-4	8.5 – 10.0	64.2	35.8

ENCOUNTERED CONDITIONS

Each of the test boring locations encountered lime sludge materials for the full sampling depth. SPT N-values were 0 blows per foot (full 18” advancement by weight of hammer) for the full sampling depth of 10 feet below the surface of the sludge indicating a **very soft** consistency. Moisture contents varied in each of the borings as indicated in the previous table. In general, Boring B-1 encountered a decreasing solids content (increasing moisture content) with depth.

Borings B-2 and B-3 encountered higher solids content at the beginning and end of sampling, with fewer solids from 3½ to 8½ feet below the surface of the sludge.

Native soil materials (i.e., from the bottom of the lagoon) were not encountered prior to boring termination at 10 feet.

QUALIFICATION OF RECOMMENDATIONS

The encountered conditions presented in this report have been based data obtained during our field investigation. The general subsurface conditions presented were based on three test borings performed at specific locations. Regardless of the thoroughness of a subsurface investigation, there is the possibility that conditions will differ from those at the test boring locations or that conditions are not as anticipated by the designers.

The nature and extent of variations may not become evident until the course of construction. If such variations are encountered, it will be necessary to reevaluate the recommendations of this report after on-site observations of the conditions.

Our professional services have been performed, our findings derived in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. TTL is not responsible for the conclusions, opinions, or recommendations of others based on this data.

Soil samples collected during this investigation will be stored at our laboratory for 90 days from the date of this report. The samples will be discarded after this time unless you request that they be saved or delivered to you.

Should you have any questions regarding this report or require additional information, please contact our office.

Sincerely,

TTL Associates, Inc.



Katherine C. Hennicken, P.E.
Geotechnical Engineer



Curtis E. Roupe, P.E.
Vice President

Attachments: Plate 1.0 Test Boring Location Plan
Log of Test Borings B-1, B-2, and B-3
Legend Key



LEGEND

B-1 APPROXIMATE TEST BORING LOCATION

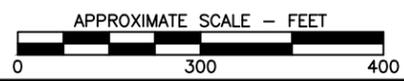


PLATE 1.0
TEST BORING LOCATION PLAN
 LIME SLUDGE LAGOON DREDGING
 ANN ARBOR, MICHIGAN

PREPARED FOR
TETRA TECH
 ANN ARBOR, MICHIGAN

DRAWN	TRR/6-19-17	CHECKED	KCH/6-19-17
REVISED		APPROVED	

JOB NO. 14725.01
 DRAWING NUMBER
1472501-01G



NOTE: BASE DRAWING RETRIEVED FROM GOOGLE EARTH 2017.



TTL Associates, Inc.
 1915 N 12th Street
 Toledo, Ohio 43624
 Telephone: 419-324-2222
 Fax: 419-241-1808

BORING NUMBER B-1

PAGE 1 OF 1

CLIENT Tetra Tech **PROJECT NAME** Lime Sludge Lagoon Dredging
PROJECT NUMBER 14725.01 **PROJECT LOCATION** Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates NW CW **RIG NO.** Hand Auger **GROUND ELEVATION** _____
DRILLING METHOD Hand Auger w/Housel Sampling (See Text) **GROUND WATER LEVELS:**
DATE STARTED 6/7/17 **COMPLETED** 6/7/17 **▽ AT TIME OF DRILLING** 0.0 ft
LOGGED BY KKC **CHECKED BY** KCH **▽ AT END OF DRILLING** 0.0 ft
NOTES _____ **0hrs AFTER DRILLING** Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0		▼	FILL - Wet Very Soft Gray LIME SLUDGE (Free Water Noted in Jar)									
	2.5			SS 1	100	0-0-0 (0)	NI	▲				71
	5.0		@3.5': (Free Water Noted in Jar)	SS 2	100	0-0-0 (0)	NI	▲				75
	7.5		@6': (Free Water Noted in Jar)	SS 3	100	0-0-0 (0)	NI	▲				86
	10.0		@8.5': (Free Water Noted in Jar)	SS 4	100	0-0-0 (0)	NI	▲				84
			Bottom of hole at 10.0 feet.									

TTL_GEOTECH_STANDARD_14725.01.GPJ GINT US LAB.GDT 6/20/17



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 1915 N 12th Street
 Toledo, Ohio 43624
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BORING NUMBER B-2

PAGE 1 OF 1

CLIENT Tetra Tech	PROJECT NAME Lime Sludge Lagoon Dredging
PROJECT NUMBER 14725.01	PROJECT LOCATION Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates NW CW	RIG NO. Hand Auger GROUND ELEVATION
DRILLING METHOD Hand Auger w/Housel Sampling (See Text)	GROUND WATER LEVELS:
DATE STARTED 6/7/17 COMPLETED 6/7/17	▽ AT TIME OF DRILLING 0.0 ft
LOGGED BY KKC CHECKED BY KCH	▽ AT END OF DRILLING 0.0 ft
NOTES	0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0		▼	FILL - Wet Very Soft Gray LIME SLUDGE (Free Water Noted in Jar)									
2.5				SS 1	100	0-0-0 (0)	NI	▲			69	
5.0			@3.5': (Free Water Noted in Jar)	SS 2	100	0-0-0 (0)	NI	▲			90	
7.5			@6': (Free Water Noted in Jar)	SS 3	100	0-0-0 (0)	NI	▲			81	
10.0			@8.5': (Free Water Noted in Jar)	SS 4	100	0-0-0 (0)	NI	▲			61	
			Bottom of hole at 10.0 feet.									

TTL_GEOTECH_STANDARD_14725.01.GPJ GINT US LAB.GDT 6/20/17



TTL Associates, Inc.
 1915 N 12th Street
 Toledo, Ohio 43624
 Telephone: 419-324-2222
 Fax: 419-241-1808

BORING NUMBER B-3

PAGE 1 OF 1

CLIENT Tetra Tech **PROJECT NAME** Lime Sludge Lagoon Dredging
PROJECT NUMBER 14725.01 **PROJECT LOCATION** Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates NW CW **RIG NO.** Hand Auger **GROUND ELEVATION** _____
DRILLING METHOD Hand Auger w/Housel Sampling (See Text) **GROUND WATER LEVELS:**
DATE STARTED 6/7/17 **COMPLETED** 6/7/17 **▽ AT TIME OF DRILLING** 0.0 ft
LOGGED BY KKC **CHECKED BY** KCH **▼ AT END OF DRILLING** 0.0 ft
NOTES _____ **0hrs AFTER DRILLING** Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0		▼	FILL - Wet Very Soft Gray LIME SLUDGE (Free Water Noted in Jar)									
2.5				SS 1	100	0-0-0 (0)	NI	▲				72
5.0			@3.5': (Free Water Noted in Jar)	SS 2	100	0-0-0 (0)	NI	▲				96
7.5			@6': (Free Water Noted in Jar)	SS 3	100	0-0-0 (0)	NI	▲				80
10.0			@8.5': (Free Water Noted in Jar)	SS 4	100	0-0-0 (0)	NI	▲				64
			Bottom of hole at 10.0 feet.									

TTL_GEOTECH_STANDARD_14725.01.GPJ GINT US LAB.GDT 6/20/17

LEGEND KEY

Unified Soil Classification System Soil Symbols

 GW - WELL GRADED GRAVEL Includes Gravel-Sand mixtures, little or no fines.	 GP - POORLY GRADED GRAVEL Includes Gravel-Sand mixtures, little or no fines.	 GM - SILTY GRAVEL Includes Gravel-Sand-Silt mixtures.	 GC - CLAYEY GRAVEL Includes Gravel-Sand-Clay mixtures.
 SW - WELL GRADED SAND Includes Gravelly Sands, little or no fines.	 SP - POORLY GRADED SAND Includes Gravelly Sands, little or no fines.	 SM - SILTY SAND Includes Sand-Silt mixtures.	 SC - CLAYEY SAND Includes Sand-Clay mixtures.
 ML - SILT Includes Silt with Sand and Sandy Silt.	 CL - LEAN CLAY Includes Sandy Lean Clay and Lean Clay with Sand and Gravel.	 MH - ELASTIC SILT Includes Sandy Elastic Silt and Elastic Silt with Sand.	 CH - FAT CLAY Includes Sandy Fat Clay and Fat Clay with Sand.
 CL-ML - SILTY CLAY Includes Clayey Silt of low plasticity.	 OL - ORGANIC SILT and ORGANIC CLAY of low plasticity.	 OH - ORGANIC SILT and ORGANIC CLAY of medium to high plasticity.	 Pt - PEAT Includes humus, swamp and other soils with high organic content.
 FILL MATERIAL - Includes controlled and non-controlled soil and non-soil materials.	 TOPSOIL	 ASPHALT - Bituminous Asphalt	 CONCRETE - Includes broken concrete rubble.

Sample Symbols

 SS - Split Spoon	 ST - Shelby Tube	 RC - Rock Core	 GS - Geoprobe Sleeve
	 AU - Auger Cuttings	 GB - Grab	

Notes:

1. Hand auger borings were performed on June 7, 2017 and were advanced using a bucket auger.
2. These logs are subject to the limitations, conclusions, and recommendations in the report and should not be interpreted separate from the report.
3. The test borings were located in the field by TTL with guidance from Tetra Tech. Ground surface elevations at the boring locations were not available at the time of preparation of this report.
4. Unconfined Compressive Strength (tsf):
NI = Not Intact



Analytical Lab Report No. 1



Analytical Laboratory Report

Report ID: S81691.01(01)
Generated on 06/15/2017

Report to

Attention: Wendy Schultz
City of Ann Arbor
919 Sunset
Ann Arbor, MI 48103

Phone: (734)794-6426 FAX: (734)994-0151
Email: wschultz@a2gov.org

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
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Contacts for report questions:

John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S81691.01-S81691.06
Project: WTP Lime Sludge
Collected Date: 06/07/2017
Submitted Date/Time: 06/08/2017 09:40
Sampled by: Unknown
P.O. #:

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Method Summary (Page 4)
Sample Summary (Page 5)

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods



Analytical Laboratory Report

Method Summary

Method	Version
SM2540B	Standard Method 2540 B 20th Edition
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW3550C	SW 846 Method 3550C Revision 3 February 2007
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S81691.01	WTP Lime Sludge B-1 4-5'	Sludge	06/07/17 09:00
S81691.02	WTP Lime Sludge B-1 8-9'	Sludge	06/07/17 09:01
S81691.03	WTP Lime Sludge B-2 4.5'	Sludge	06/07/17 09:02
S81691.04	WTP Lime Sludge B-2 8-9'	Sludge	06/07/17 09:03
S81691.05	WTP Lime Sludge B-3 4.5'	Sludge	06/07/17 09:04
S81691.06	WTP Lime Sludge B-3 8-9'	Sludge	06/07/17 09:05



Analytical Laboratory Report

Lab Sample ID: S81691.01
 Sample Tag: WTP Lime Sludge B-1 4-5'
 Collected Date/Time: 06/07/2017 09:00
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	8oz Amber Glass	None	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
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Extraction / Prep.

BNA Extraction	Completed			SW3550C	06/14/17 12:52	EMR		
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Inorganics

Total Solids*	59	%	1	SM2540B	06/09/17 17:05	JBL		
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Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ

Acenaphthene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	83-32-9	
Acenaphthylene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	208-96-8	
Anthracene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	120-12-7	
Benzo(a)anthracene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	56-55-3	
Benzo(b)fluoranthene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	205-99-2	
Benzo(k)fluoranthene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	207-08-9	
Benzo(ghi)perylene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	191-24-2	
Benzo(a)pyrene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	111-91-1	
bis(2-Chloroethyl)ether*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	108-60-1	
bis(2-Ethylhexyl)phthalate*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	117-81-7	
4-Bromophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	101-55-3	
Butyl benzyl phthalate	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	85-68-7	
4-Chloroaniline	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	106-47-8	
2-Chloronaphthalene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	91-58-7	
4-Chloro-3-methylphenol	Not detected	ug/kg	280	SW8270D	06/14/17 23:10	PL	59-50-7	
2-Chlorophenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	7005-72-3	
Chrysene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	218-01-9	
p,m-Cresol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	3/4-CRESOL	
o-Cresol*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	95-48-7	
Dibenzo(ah)anthracene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	53-70-3	
Dibenzofuran*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	132-64-9	
di-n-Butyl phthalate	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	84-74-2	
1,2-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	95-50-1	
1,3-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	541-73-1	
1,4-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	106-46-7	
3,3'-Dichlorobenzidine	Not detected	ug/kg	2,000	SW8270D	06/14/17 23:10	PL	91-94-1	
2,4-Dichlorophenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	120-83-2	
Diethyl phthalate	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	84-66-2	
2,4-Dimethylphenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	105-67-9	
Dimethyl phthalate	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	ug/kg	830	SW8270D	06/14/17 23:10	PL	534-52-1	
2,4-Dinitrophenol	Not detected	ug/kg	830	SW8270D	06/14/17 23:10	PL	51-28-5	
2,4-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	121-14-2	



Analytical Laboratory Report

Lab Sample ID: S81691.01 (continued)
Sample Tag: WTP Lime Sludge B-1 4-5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Semi-Volatiles (continued)								
Semi-Volatile Organics - MDEQ (continued)								
2,6-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	606-20-2	
1,2-Diphenylhydrazine	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	122-66-7	
di-n-Octyl phthalate	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	117-84-0	
Fluoranthene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	206-44-0	
Fluorene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	86-73-7	
Hexachlorobenzene*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	118-74-1	
Hexachlorobutadiene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	87-68-3	
Hexachlorocyclopentadiene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	77-47-4	
Hexachloroethane	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	193-39-5	
Isophorone	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	78-59-1	
2-Methylnaphthalene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	91-57-6	
Naphthalene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	91-20-3	
2-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/14/17 23:10	PL	88-74-4	
3-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/14/17 23:10	PL	99-09-2	
4-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/14/17 23:10	PL	100-01-6	
Nitrobenzene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	98-95-3	
2-Nitrophenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	88-75-5	
4-Nitrophenol	Not detected	ug/kg	830	SW8270D	06/14/17 23:10	PL	100-02-7	
N-Nitrosodiphenylamine	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	86-30-6	
N-Nitrosodi-n-propylamine*	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	621-64-7	
Pentachlorophenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	87-86-5	
Phenanthrene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	85-01-8	
Phenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	108-95-2	
Pyrene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	129-00-0	
1,2,4-Trichlorobenzene	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	120-82-1	
2,4,5-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	95-95-4	
2,4,6-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/14/17 23:10	PL	88-06-2	
Organics - Volatiles								
Volatile Organics								
Diethyl ether	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	60-29-7	
Acetone	Not detected	ug/kg	800	SW5035A/8260C	06/09/17 08:11	JML	67-64-1	
Methyl iodide	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	74-88-4	
Carbon disulfide	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-15-0	
tert-Methyl butyl ether (MTBE)*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	1634-04-4	
Acrylonitrile	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	107-13-1	
2-Butanone (MEK)*	Not detected	ug/kg	800	SW5035A/8260C	06/09/17 08:11	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-71-8	
Chloromethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	74-87-3	
Vinyl chloride	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-01-4	
Bromomethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	74-83-9	
Chloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-35-4	
Methylene chloride	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:11	JML	75-09-2	
trans-1,2-Dichloroethene*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-34-3	
cis-1,2-Dichloroethene*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	156-59-2	



Analytical Laboratory Report

Lab Sample ID: S81691.01 (continued)
 Sample Tag: WTP Lime Sludge B-1 4-5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
Tetrahydrofuran*	Not detected	ug/kg	2,000	SW5035A/8260C	06/09/17 08:11	JML	109-99-9	
Chloroform	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	67-66-3	
Bromochloromethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	71-55-6	
4-Methyl-2-pentanone (MIBK)*	Not detected	ug/kg	800	SW5035A/8260C	06/09/17 08:11	JML	108-10-1	
2-Hexanone*	Not detected	ug/kg	800	SW5035A/8260C	06/09/17 08:11	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	56-23-5	
Benzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	107-06-2	
Trichloroethene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	78-87-5	
Bromodichloromethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-27-4	
Dibromomethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	10061-01-5	
Toluene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	79-00-5	
Tetrachloroethene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	110-57-6	
Dibromochloromethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	124-48-1	
1,2-Dibromoethane*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	106-93-4	M
Chlorobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	630-20-6	
Ethylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	100-41-4	
p,m-Xylene	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:11	JML		
o-Xylene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	95-47-6	
Styrene*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	100-42-5	
Isopropylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	98-82-8	
Bromoform*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	96-18-4	
n-Propylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	103-65-1	
Bromobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	108-67-8	
tert-Butylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	95-63-6	
sec-Butylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	135-98-8	
p-Isopropyltoluene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	526-73-8	
n-Butylbenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	104-51-8	
Hexachloroethane	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	67-72-1	
1,2-Dibromo-3-chloropropane*	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/kg	80	SW5035A/8260C	06/09/17 08:11	JML	87-61-6	
Naphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:11	JML	91-20-3	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S81691.01 (continued)
Sample Tag: WTP Lime Sludge B-1 4-5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
2-Methylnaphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:11	JML	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S81691.02
 Sample Tag: WTP Lime Sludge B-1 8-9'
 Collected Date/Time: 06/07/2017 09:01
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	8oz Amber Glass	None	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Mercury Digestion	Completed			SW7471B	06/14/17 09:00	JRH		
Metal Digestion	Completed			SW3050B	06/12/17 11:00	PER		
Inorganics								
Total Solids*	54	%	1	SM2540B	06/09/17 17:05	JBL		
Metals								
Arsenic	2.52	mg/kg	0.20	SW6020A	06/12/17 13:45	PER	7440-38-2	
Barium	167	mg/kg	1.0	SW6020A	06/12/17 13:45	PER	7440-39-3	
Cadmium	Not detected	mg/kg	0.20	SW6020A	06/12/17 13:45	PER	7440-43-9	
Chromium	0.81	mg/kg	0.50	SW6020A	06/12/17 13:45	PER	7440-47-3	
Copper	2.18	mg/kg	0.50	SW6020A	06/12/17 13:45	PER	7440-50-8	
Lead	0.83	mg/kg	0.20	SW6020A	06/12/17 13:45	PER	7439-92-1	
Mercury	Not detected	mg/kg	0.050	SW7471B	06/14/17 12:30	JRH	7439-97-6	
Selenium	Not detected	mg/kg	0.40	SW6020A	06/12/17 13:45	PER	7782-49-2	
Silver	Not detected	mg/kg	0.20	SW6020A	06/12/17 13:45	PER	7440-22-4	
Zinc	10.9	mg/kg	0.50	SW6020A	06/12/17 13:45	PER	7440-66-6	



Analytical Laboratory Report

Lab Sample ID: S81691.03
 Sample Tag: WTP Lime Sludge B-2 4.5'
 Collected Date/Time: 06/07/2017 09:02
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	8oz Amber Glass	None	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
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Extraction / Prep.

BNA Extraction	Completed			SW3550C	06/14/17 12:52	EMR		
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Inorganics

Total Solids*	58	%	1	SM2540B	06/09/17 17:05	JBL		
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Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ

Acenaphthene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	83-32-9	
Acenaphthylene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	208-96-8	
Anthracene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	120-12-7	
Benzo(a)anthracene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	56-55-3	
Benzo(b)fluoranthene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	205-99-2	
Benzo(k)fluoranthene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	207-08-9	
Benzo(ghi)perylene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	191-24-2	
Benzo(a)pyrene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	111-91-1	
bis(2-Chloroethyl)ether*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	108-60-1	
bis(2-Ethylhexyl)phthalate*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	117-81-7	
4-Bromophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	101-55-3	
Butyl benzyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	85-68-7	
4-Chloroaniline	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	106-47-8	
2-Chloronaphthalene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	91-58-7	
4-Chloro-3-methylphenol	Not detected	ug/kg	280	SW8270D	06/15/17 00:36	PL	59-50-7	
2-Chlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	7005-72-3	
Chrysene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	218-01-9	
p,m-Cresol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	3/4-CRESOL	
o-Cresol*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	95-48-7	
Dibenzo(ah)anthracene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	53-70-3	
Dibenzofuran*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	132-64-9	
di-n-Butyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	84-74-2	
1,2-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	95-50-1	
1,3-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	541-73-1	
1,4-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	106-46-7	
3,3'-Dichlorobenzidine	Not detected	ug/kg	2,000	SW8270D	06/15/17 00:36	PL	91-94-1	
2,4-Dichlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	120-83-2	
Diethyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	84-66-2	
2,4-Dimethylphenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	105-67-9	
Dimethyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	ug/kg	830	SW8270D	06/15/17 00:36	PL	534-52-1	
2,4-Dinitrophenol	Not detected	ug/kg	830	SW8270D	06/15/17 00:36	PL	51-28-5	
2,4-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	121-14-2	



Analytical Laboratory Report

Lab Sample ID: S81691.03 (continued)

Sample Tag: WTP Lime Sludge B-2 4.5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Semi-Volatiles (continued)								
Semi-Volatile Organics - MDEQ (continued)								
2,6-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	606-20-2	
1,2-Diphenylhydrazine	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	122-66-7	
di-n-Octyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	117-84-0	
Fluoranthene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	206-44-0	
Fluorene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	86-73-7	
Hexachlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	118-74-1	
Hexachlorobutadiene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	87-68-3	
Hexachlorocyclopentadiene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	77-47-4	
Hexachloroethane	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	193-39-5	
Isophorone	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	78-59-1	
2-Methylnaphthalene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	91-57-6	
Naphthalene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	91-20-3	
2-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/15/17 00:36	PL	88-74-4	
3-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/15/17 00:36	PL	99-09-2	
4-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/15/17 00:36	PL	100-01-6	
Nitrobenzene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	98-95-3	
2-Nitrophenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	88-75-5	
4-Nitrophenol	Not detected	ug/kg	830	SW8270D	06/15/17 00:36	PL	100-02-7	
N-Nitrosodiphenylamine	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	86-30-6	
N-Nitrosodi-n-propylamine*	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	621-64-7	
Pentachlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	87-86-5	
Phenanthrene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	85-01-8	
Phenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	108-95-2	
Pyrene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	129-00-0	
1,2,4-Trichlorobenzene	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	120-82-1	
2,4,5-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	95-95-4	
2,4,6-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 00:36	PL	88-06-2	
Organics - Volatiles								
Volatile Organics								
Diethyl ether	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	60-29-7	
Acetone	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:30	JML	67-64-1	
Methyl iodide	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	74-88-4	
Carbon disulfide	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-15-0	
tert-Methyl butyl ether (MTBE)*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	1634-04-4	
Acrylonitrile	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	107-13-1	
2-Butanone (MEK)*	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:30	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-71-8	
Chloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	74-87-3	
Vinyl chloride	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-01-4	
Bromomethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	74-83-9	
Chloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-35-4	
Methylene chloride	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:30	JML	75-09-2	
trans-1,2-Dichloroethene*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-34-3	
cis-1,2-Dichloroethene*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	156-59-2	



Analytical Laboratory Report

Lab Sample ID: S81691.03 (continued)

Sample Tag: WTP Lime Sludge B-2 4.5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
Tetrahydrofuran*	Not detected	ug/kg	2,000	SW5035A/8260C	06/09/17 08:30	JML	109-99-9	
Chloroform	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	67-66-3	
Bromochloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	71-55-6	
4-Methyl-2-pentanone (MIBK)*	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:30	JML	108-10-1	
2-Hexanone*	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:30	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	56-23-5	
Benzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	107-06-2	
Trichloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	78-87-5	
Bromodichloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-27-4	
Dibromomethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	10061-01-5	
Toluene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	79-00-5	
Tetrachloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	110-57-6	
Dibromochloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	124-48-1	
1,2-Dibromoethane*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	106-93-4	M
Chlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	630-20-6	
Ethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	100-41-4	
p,m-Xylene	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:30	JML		
o-Xylene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	95-47-6	
Styrene*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	100-42-5	
Isopropylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	98-82-8	
Bromoform*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	96-18-4	
n-Propylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	103-65-1	
Bromobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	108-67-8	
tert-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	95-63-6	
sec-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	135-98-8	
p-Isopropyltoluene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	526-73-8	
n-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	104-51-8	
Hexachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	67-72-1	
1,2-Dibromo-3-chloropropane*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:30	JML	87-61-6	
Naphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:30	JML	91-20-3	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S81691.03 (continued)
Sample Tag: WTP Lime Sludge B-2 4.5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
2-Methylnaphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:30	JML	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S81691.04
 Sample Tag: WTP Lime Sludge B-2 8-9'
 Collected Date/Time: 06/07/2017 09:03
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	8oz Amber Glass	None	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Mercury Digestion	Completed			SW7471B	06/14/17 09:00	JRH		
Metal Digestion	Completed			SW3050B	06/12/17 11:00	PER		
Inorganics								
Total Solids*	53	%	1	SM2540B	06/09/17 17:05	JBL		
Metals								
Arsenic	3.86	mg/kg	0.20	SW6020A	06/12/17 13:47	PER	7440-38-2	
Barium	160	mg/kg	1.0	SW6020A	06/12/17 13:47	PER	7440-39-3	
Cadmium	Not detected	mg/kg	0.20	SW6020A	06/12/17 13:47	PER	7440-43-9	
Chromium	1.21	mg/kg	0.50	SW6020A	06/12/17 13:47	PER	7440-47-3	
Copper	2.52	mg/kg	0.50	SW6020A	06/12/17 13:47	PER	7440-50-8	
Lead	1.58	mg/kg	0.20	SW6020A	06/12/17 13:47	PER	7439-92-1	
Mercury	Not detected	mg/kg	0.050	SW7471B	06/14/17 12:32	JRH	7439-97-6	
Selenium	Not detected	mg/kg	0.40	SW6020A	06/12/17 13:47	PER	7782-49-2	
Silver	Not detected	mg/kg	0.20	SW6020A	06/12/17 13:47	PER	7440-22-4	
Zinc	14.4	mg/kg	0.50	SW6020A	06/12/17 13:47	PER	7440-66-6	



Analytical Laboratory Report

Lab Sample ID: S81691.05
 Sample Tag: WTP Lime Sludge B-3 4.5'
 Collected Date/Time: 06/07/2017 09:04
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	8oz Amber Glass	None	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
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Extraction / Prep.

BNA Extraction	Completed			SW3550C	06/14/17 12:52	EMR		
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Inorganics

Total Solids*	58	%	1	SM2540B	06/09/17 17:05	JBL		
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Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ

Acenaphthene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	83-32-9	
Acenaphthylene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	208-96-8	
Anthracene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	120-12-7	
Benzo(a)anthracene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	56-55-3	
Benzo(b)fluoranthene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	205-99-2	
Benzo(k)fluoranthene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	207-08-9	
Benzo(ghi)perylene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	191-24-2	
Benzo(a)pyrene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	111-91-1	
bis(2-Chloroethyl)ether*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	108-60-1	
bis(2-Ethylhexyl)phthalate*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	117-81-7	
4-Bromophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	101-55-3	
Butyl benzyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	85-68-7	
4-Chloroaniline	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	106-47-8	
2-Chloronaphthalene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	91-58-7	
4-Chloro-3-methylphenol	Not detected	ug/kg	280	SW8270D	06/15/17 01:05	PL	59-50-7	
2-Chlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	7005-72-3	
Chrysene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	218-01-9	
p,m-Cresol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	3/4-CRESOL	
o-Cresol*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	95-48-7	
Dibenzo(ah)anthracene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	53-70-3	
Dibenzofuran*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	132-64-9	
di-n-Butyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	84-74-2	
1,2-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	95-50-1	
1,3-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	541-73-1	
1,4-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	106-46-7	
3,3'-Dichlorobenzidine	Not detected	ug/kg	2,000	SW8270D	06/15/17 01:05	PL	91-94-1	
2,4-Dichlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	120-83-2	
Diethyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	84-66-2	
2,4-Dimethylphenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	105-67-9	
Dimethyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	ug/kg	830	SW8270D	06/15/17 01:05	PL	534-52-1	
2,4-Dinitrophenol	Not detected	ug/kg	830	SW8270D	06/15/17 01:05	PL	51-28-5	
2,4-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	121-14-2	



Analytical Laboratory Report

Lab Sample ID: S81691.05 (continued)

Sample Tag: WTP Lime Sludge B-3 4.5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Semi-Volatiles (continued)								
Semi-Volatile Organics - MDEQ (continued)								
2,6-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	606-20-2	
1,2-Diphenylhydrazine	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	122-66-7	
di-n-Octyl phthalate	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	117-84-0	
Fluoranthene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	206-44-0	
Fluorene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	86-73-7	
Hexachlorobenzene*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	118-74-1	
Hexachlorobutadiene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	87-68-3	
Hexachlorocyclopentadiene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	77-47-4	
Hexachloroethane	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	193-39-5	
Isophorone	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	78-59-1	
2-Methylnaphthalene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	91-57-6	
Naphthalene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	91-20-3	
2-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/15/17 01:05	PL	88-74-4	
3-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/15/17 01:05	PL	99-09-2	
4-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/15/17 01:05	PL	100-01-6	
Nitrobenzene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	98-95-3	
2-Nitrophenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	88-75-5	
4-Nitrophenol	Not detected	ug/kg	830	SW8270D	06/15/17 01:05	PL	100-02-7	
N-Nitrosodiphenylamine	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	86-30-6	
N-Nitrosodi-n-propylamine*	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	621-64-7	
Pentachlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	87-86-5	
Phenanthrene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	85-01-8	
Phenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	108-95-2	
Pyrene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	129-00-0	
1,2,4-Trichlorobenzene	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	120-82-1	
2,4,5-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	95-95-4	
2,4,6-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/15/17 01:05	PL	88-06-2	
Organics - Volatiles								
Volatile Organics								
Diethyl ether	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	60-29-7	
Acetone	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:49	JML	67-64-1	
Methyl iodide	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	74-88-4	
Carbon disulfide	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-15-0	
tert-Methyl butyl ether (MTBE)*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	1634-04-4	
Acrylonitrile	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	107-13-1	
2-Butanone (MEK)*	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:49	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-71-8	
Chloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	74-87-3	
Vinyl chloride	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-01-4	
Bromomethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	74-83-9	
Chloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-35-4	
Methylene chloride	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:49	JML	75-09-2	
trans-1,2-Dichloroethene*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-34-3	
cis-1,2-Dichloroethene*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	156-59-2	



Analytical Laboratory Report

Lab Sample ID: S81691.05 (continued)

Sample Tag: WTP Lime Sludge B-3 4.5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
Tetrahydrofuran*	Not detected	ug/kg	2,000	SW5035A/8260C	06/09/17 08:49	JML	109-99-9	
Chloroform	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	67-66-3	
Bromochloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	71-55-6	
4-Methyl-2-pentanone (MIBK)*	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:49	JML	108-10-1	
2-Hexanone*	Not detected	ug/kg	900	SW5035A/8260C	06/09/17 08:49	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	56-23-5	
Benzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	107-06-2	
Trichloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	78-87-5	
Bromodichloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-27-4	
Dibromomethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	10061-01-5	
Toluene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	79-00-5	
Tetrachloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	110-57-6	
Dibromochloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	124-48-1	
1,2-Dibromoethane*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	106-93-4	M
Chlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	630-20-6	
Ethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	100-41-4	
p,m-Xylene	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:49	JML		
o-Xylene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	95-47-6	
Styrene*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	100-42-5	
Isopropylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	98-82-8	
Bromoform*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	96-18-4	
n-Propylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	103-65-1	
Bromobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	108-86-1	
1,3,5-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	108-67-8	
tert-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	95-63-6	
sec-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	135-98-8	
p-Isopropyltoluene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	526-73-8	
n-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	104-51-8	
Hexachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	67-72-1	
1,2-Dibromo-3-chloropropane*	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/09/17 08:49	JML	87-61-6	
Naphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:49	JML	91-20-3	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S81691.05 (continued)
Sample Tag: WTP Lime Sludge B-3 4.5'

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
2-Methylnaphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/09/17 08:49	JML	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S81691.06
 Sample Tag: WTP Lime Sludge B-3 8-9'
 Collected Date/Time: 06/07/2017 09:05
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	8oz Amber Glass	None	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
Mercury Digestion	Completed			SW7471B	06/14/17 09:00	JRH		
Metal Digestion	Completed			SW3050B	06/12/17 11:00	PER		
Inorganics								
Total Solids*	55	%	1	SM2540B	06/09/17 17:05	JBL		
Metals								
Arsenic	2.71	mg/kg	0.20	SW6020A	06/12/17 13:49	PER	7440-38-2	
Barium	147	mg/kg	1.0	SW6020A	06/12/17 13:49	PER	7440-39-3	
Cadmium	Not detected	mg/kg	0.20	SW6020A	06/12/17 13:49	PER	7440-43-9	
Chromium	0.63	mg/kg	0.50	SW6020A	06/12/17 13:49	PER	7440-47-3	
Copper	1.77	mg/kg	0.50	SW6020A	06/12/17 13:49	PER	7440-50-8	
Lead	0.92	mg/kg	0.20	SW6020A	06/12/17 13:49	PER	7439-92-1	
Mercury	Not detected	mg/kg	0.050	SW7471B	06/14/17 12:33	JRH	7439-97-6	
Selenium	Not detected	mg/kg	0.40	SW6020A	06/12/17 13:49	PER	7782-49-2	
Silver	Not detected	mg/kg	0.20	SW6020A	06/12/17 13:49	PER	7440-22-4	
Zinc	11.4	mg/kg	0.50	SW6020A	06/12/17 13:49	PER	7440-66-6	



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C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Wendy Schultz
 COMPANY City of Ann Arbor WTP
 ADDRESS 919 Sunset Rd
 CITY Ann Arbor STATE MI ZIP CODE 48103
 PHONE NO. 734-794-6426 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS w Schultz@a2gov.org QUOTE NO. _____

CONTACT NAME _____ SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS _____

PROJECT NO./NAME WTP Lime Sludge SAMPLER(S) - PLEASE PRINT/SIGN NAME _____
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	# Containers & Preservatives	Ammonia-N mg/kg	Chloride mg/kg	Kjeldahl Nitrogen mg/kg	Nitrate-N mg/kg	Nitrite-N mg/kg	pH/Corrosivity	Metals*	Sulfate mg/kg	Total Solids %	8260 and 8270	Certifications		Project Locations		Special Instructions	
	DATE	TIME																						<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input checked="" type="checkbox"/> NPDES		<input type="checkbox"/> Detroit
81691.01	6/7/17	9:00	WTP Lime Sludge B-1 4-5'	SL	1	X																		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
.02	6/7/17	9:01	WTP Lime Sludge B-1 8-9'	SL	1	X														✓			✓	*Arsenic, Barium, Cadmium					
.03	6/7/17	9:02	WTP Lime Sludge B-2 4-5'	SL	1	X														✓			✓	Chromium, Copper, Lead					
.04	6/7/17	9:03	WTP Lime Sludge B-2 8-9'	SL	1	X														✓			✓	Mercury, Selenium, Silver					
.05	6/7/17	9:04	WTP Lime Sludge B-3 4-5'	SL	1	X														✓			✓	Zinc					
.06	6/7/17	9:05	WTP Lime Sludge B-3 8-9'	SL	1	X														✓			✓						

RELINQUISHED BY: Ashley Spears AA WTP Sampler DATE 6/7/17 TIME 14:42
 RECEIVED BY: FedEx DATE _____ TIME _____
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: FedEx DATE 6/8/17 TIME 0940
 RECEIVED BY: M Chilcote DATE 6/8/17 TIME 0940
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
 NOTES: TEMP. ON ARRIVAL 4.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Analytical Lab Report No. 2



Analytical Laboratory Report

Supplemental Report

Report ID: S81960.01(02)
Generated on 07/11/2017

Report to

Attention: Wendy Schultz
City of Ann Arbor
919 Sunset
Ann Arbor, MI 48103

Phone: (734)794-6426 FAX: (734)994-0151
Email: wschultz@a2gov.org

Report produced by

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2680 East Lansing Drive
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Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S81960.01-S81960.02
Project: MI0022217
Collected Date: 06/20/2017
Submitted Date/Time: 06/21/2017 09:45
Sampled by: Unknown
P.O. #:

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Maya Murshak
Technical Director



Analytical Laboratory Report

Supplemental Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Report Narrative

Molybdenum and Nickel added to samples per client request



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods



Analytical Laboratory Report

Supplemental Report

Method Summary

Method	Version
SM2540B	Standard Method 2540 B 20th Edition
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW3550C	SW 846 Method 3550C Revision 3 February 2007
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Supplemental Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S81960.01	Pt 306	Sludge	06/20/17 09:40
S81960.02	Pt 337	Sludge	06/20/17 10:00



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.01
 Sample Tag: Pt 306
 Collected Date/Time: 06/20/2017 09:40
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	8oz Amber Glass	None	Yes	4.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
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Extraction / Prep.

BNA Extraction	Completed			SW3550C	06/22/17 19:42	EMR		
Mercury Digestion	Completed			SW7471B	06/28/17 09:00	JRH		
Metal Digestion	Completed			SW3050B	06/26/17 12:00	PER		

Inorganics

Total Solids*	53	%	1	SM2540B	06/22/17 12:00	JBL		
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Metals

Arsenic	4.36	mg/kg	0.20	SW6020A	06/26/17 13:56	PER	7440-38-2	
Barium	148	mg/kg	1.0	SW6020A	06/26/17 13:56	PER	7440-39-3	
Cadmium	Not detected	mg/kg	0.20	SW6020A	06/26/17 13:56	PER	7440-43-9	
Chromium	0.63	mg/kg	0.50	SW6020A	06/26/17 13:56	PER	7440-47-3	
Copper	1.84	mg/kg	0.50	SW6020A	06/26/17 13:56	PER	7440-50-8	
Lead	0.46	mg/kg	0.20	SW6020A	06/26/17 13:56	PER	7439-92-1	
Mercury	Not detected	mg/kg	0.050	SW7471B	06/28/17 12:18	JRH	7439-97-6	
Molybdenum	0.56	mg/kg	0.50	SW6020A	06/26/17 13:56	PER	7439-98-7	
Nickel	11.6	mg/kg	0.50	SW6020A	06/26/17 13:56	PER	7440-02-0	
Selenium	Not detected	mg/kg	0.40	SW6020A	06/26/17 13:56	PER	7782-49-2	
Silver	Not detected	mg/kg	0.20	SW6020A	06/26/17 13:56	PER	7440-22-4	
Zinc	13.0	mg/kg	0.50	SW6020A	06/26/17 13:56	PER	7440-66-6	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ

Acenaphthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	83-32-9	
Acenaphthylene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	208-96-8	
Anthracene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	120-12-7	
Benzo(a)anthracene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	56-55-3	
Benzo(b)fluoranthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	205-99-2	
Benzo(k)fluoranthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	207-08-9	
Benzo(ghi)perylene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	191-24-2	
Benzo(a)pyrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	111-91-1	
bis(2-Chloroethyl)ether*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	108-60-1	
bis(2-Ethylhexyl)phthalate*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	117-81-7	
4-Bromophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	101-55-3	
Butyl benzyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	85-68-7	
4-Chloroaniline	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	106-47-8	
2-Chloronaphthalene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	91-58-7	
4-Chloro-3-methylphenol	Not detected	ug/kg	280	SW8270D	06/24/17 01:17	PL	59-50-7	
2-Chlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	7005-72-3	
Chrysene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	218-01-9	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.01 (continued)

Sample Tag: Pt 306

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Semi-Volatiles (continued)								
Semi-Volatile Organics - MDEQ (continued)								
p,m-Cresol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	3/4-CRESOL	
o-Cresol*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	95-48-7	
Dibenzo(ah)anthracene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	53-70-3	
Dibenzofuran*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	132-64-9	
di-n-Butyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	84-74-2	
1,2-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	95-50-1	
1,3-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	541-73-1	
1,4-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	106-46-7	
3,3'-Dichlorobenzidine	Not detected	ug/kg	2,000	SW8270D	06/24/17 01:17	PL	91-94-1	
2,4-Dichlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	120-83-2	
Diethyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	84-66-2	
2,4-Dimethylphenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	105-67-9	
Dimethyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	ug/kg	830	SW8270D	06/24/17 01:17	PL	534-52-1	
2,4-Dinitrophenol	Not detected	ug/kg	830	SW8270D	06/24/17 01:17	PL	51-28-5	
2,4-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	121-14-2	
2,6-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	606-20-2	
1,2-Diphenylhydrazine	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	122-66-7	
di-n-Octyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	117-84-0	
Fluoranthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	206-44-0	
Fluorene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	86-73-7	
Hexachlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	118-74-1	
Hexachlorobutadiene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	87-68-3	
Hexachlorocyclopentadiene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	77-47-4	
Hexachloroethane	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	193-39-5	
Isophorone	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	78-59-1	
2-Methylnaphthalene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	91-57-6	
Naphthalene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	91-20-3	
2-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/24/17 01:17	PL	88-74-4	
3-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/24/17 01:17	PL	99-09-2	
4-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/24/17 01:17	PL	100-01-6	
Nitrobenzene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	98-95-3	
2-Nitrophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	88-75-5	
4-Nitrophenol	Not detected	ug/kg	830	SW8270D	06/24/17 01:17	PL	100-02-7	
N-Nitrosodiphenylamine	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	86-30-6	
N-Nitrosodi-n-propylamine*	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	621-64-7	
Pentachlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	87-86-5	
Phenanthrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	85-01-8	
Phenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	108-95-2	
Pyrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	129-00-0	
1,2,4-Trichlorobenzene	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	120-82-1	
2,4,5-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	95-95-4	
2,4,6-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:17	PL	88-06-2	
Organics - Volatiles								
Volatile Organics								
Diethyl ether	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	60-29-7	
Acetone	Not detected	ug/kg	900	SW5035A/8260C	06/27/17 17:57	JML	67-64-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.01 (continued)

Sample Tag: Pt 306

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
Methyl iodide	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	74-88-4	
Carbon disulfide	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-15-0	
tert-Methyl butyl ether (MTBE)*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	1634-04-4	
Acrylonitrile	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	107-13-1	
2-Butanone (MEK)*	Not detected	ug/kg	900	SW5035A/8260C	06/27/17 17:57	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-71-8	
Chloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	74-87-3	
Vinyl chloride	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-01-4	
Bromomethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	74-83-9	
Chloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-35-4	
Methylene chloride	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 17:57	JML	75-09-2	
trans-1,2-Dichloroethene*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-34-3	
cis-1,2-Dichloroethene*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	156-59-2	
Tetrahydrofuran*	Not detected	ug/kg	2,000	SW5035A/8260C	06/27/17 17:57	JML	109-99-9	
Chloroform	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	67-66-3	
Bromochloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	71-55-6	
4-Methyl-2-pentanone (MIBK)*	Not detected	ug/kg	900	SW5035A/8260C	06/27/17 17:57	JML	108-10-1	
2-Hexanone*	Not detected	ug/kg	900	SW5035A/8260C	06/27/17 17:57	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	56-23-5	
Benzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	107-06-2	
Trichloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	78-87-5	
Bromodichloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-27-4	
Dibromomethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	10061-01-5	
Toluene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	79-00-5	
Tetrachloroethene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	110-57-6	
Dibromochloromethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	124-48-1	
1,2-Dibromoethane*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	106-93-4	
Chlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	630-20-6	
Ethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	100-41-4	
p,m-Xylene	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 17:57	JML		
o-Xylene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	95-47-6	
Styrene*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	100-42-5	
Isopropylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	98-82-8	
Bromoform*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	96-18-4	
n-Propylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	103-65-1	
Bromobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	108-86-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.01 (continued)

Sample Tag: Pt 306

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
1,3,5-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	108-67-8	
tert-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	95-63-6	
sec-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	135-98-8	
p-Isopropyltoluene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	526-73-8	
n-Butylbenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	104-51-8	
Hexachloroethane	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	67-72-1	
1,2-Dibromo-3-chloropropane*	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/kg	90	SW5035A/8260C	06/27/17 17:57	JML	87-61-6	
Naphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 17:57	JML	91-20-3	
2-Methylnaphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 17:57	JML	91-57-6	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.02
 Sample Tag: Pt 337
 Collected Date/Time: 06/20/2017 10:00
 Matrix: Sludge
 COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	8oz Amber Glass	None	Yes	4.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
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Extraction / Prep.

BNA Extraction	Completed			SW3550C	06/22/17 19:42	EMR		
Mercury Digestion	Completed			SW7471B	06/28/17 09:00	JRH		
Metal Digestion	Completed			SW3050B	06/26/17 12:00	PER		

Inorganics

Total Solids*	43	%	1	SM2540B	06/22/17 12:00	JBL		
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Metals

Arsenic	4.22	mg/kg	0.20	SW6020A	06/26/17 13:58	PER	7440-38-2	
Barium	156	mg/kg	1.0	SW6020A	06/26/17 13:58	PER	7440-39-3	
Cadmium	Not detected	mg/kg	0.20	SW6020A	06/26/17 13:58	PER	7440-43-9	
Chromium	1.16	mg/kg	0.50	SW6020A	06/26/17 13:58	PER	7440-47-3	
Copper	2.73	mg/kg	0.50	SW6020A	06/26/17 13:58	PER	7440-50-8	
Lead	0.97	mg/kg	0.20	SW6020A	06/26/17 13:58	PER	7439-92-1	
Mercury	Not detected	mg/kg	0.050	SW7471B	06/28/17 12:20	JRH	7439-97-6	
Molybdenum	Not detected	mg/kg	0.50	SW6020A	06/26/17 13:58	PER	7439-98-7	
Nickel	12.6	mg/kg	0.50	SW6020A	06/26/17 13:58	PER	7440-02-0	
Selenium	Not detected	mg/kg	0.40	SW6020A	06/26/17 13:58	PER	7782-49-2	
Silver	Not detected	mg/kg	0.20	SW6020A	06/26/17 13:58	PER	7440-22-4	
Zinc	10.1	mg/kg	0.50	SW6020A	06/26/17 13:58	PER	7440-66-6	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ

Acenaphthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	83-32-9	
Acenaphthylene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	208-96-8	
Anthracene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	120-12-7	
Benzo(a)anthracene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	56-55-3	
Benzo(b)fluoranthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	205-99-2	
Benzo(k)fluoranthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	207-08-9	
Benzo(ghi)perylene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	191-24-2	
Benzo(a)pyrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	111-91-1	
bis(2-Chloroethyl)ether*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	108-60-1	
bis(2-Ethylhexyl)phthalate*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	117-81-7	
4-Bromophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	101-55-3	
Butyl benzyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	85-68-7	
4-Chloroaniline	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	106-47-8	
2-Chloronaphthalene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	91-58-7	
4-Chloro-3-methylphenol	Not detected	ug/kg	280	SW8270D	06/24/17 01:46	PL	59-50-7	
2-Chlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	7005-72-3	
Chrysene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	218-01-9	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.02 (continued)

Sample Tag: Pt 337

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Semi-Volatiles (continued)								
Semi-Volatile Organics - MDEQ (continued)								
p,m-Cresol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	3/4-CRESOL	
o-Cresol*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	95-48-7	
Dibenzo(ah)anthracene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	53-70-3	
Dibenzofuran*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	132-64-9	
di-n-Butyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	84-74-2	
1,2-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	95-50-1	
1,3-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	541-73-1	
1,4-Dichlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	106-46-7	
3,3'-Dichlorobenzidine	Not detected	ug/kg	2,000	SW8270D	06/24/17 01:46	PL	91-94-1	
2,4-Dichlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	120-83-2	
Diethyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	84-66-2	
2,4-Dimethylphenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	105-67-9	
Dimethyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	ug/kg	830	SW8270D	06/24/17 01:46	PL	534-52-1	
2,4-Dinitrophenol	Not detected	ug/kg	830	SW8270D	06/24/17 01:46	PL	51-28-5	
2,4-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	121-14-2	
2,6-Dinitrotoluene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	606-20-2	
1,2-Diphenylhydrazine	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	122-66-7	
di-n-Octyl phthalate	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	117-84-0	
Fluoranthene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	206-44-0	
Fluorene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	86-73-7	
Hexachlorobenzene*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	118-74-1	
Hexachlorobutadiene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	87-68-3	
Hexachlorocyclopentadiene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	77-47-4	
Hexachloroethane	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	193-39-5	
Isophorone	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	78-59-1	
2-Methylnaphthalene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	91-57-6	
Naphthalene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	91-20-3	
2-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/24/17 01:46	PL	88-74-4	
3-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/24/17 01:46	PL	99-09-2	
4-Nitroaniline	Not detected	ug/kg	830	SW8270D	06/24/17 01:46	PL	100-01-6	
Nitrobenzene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	98-95-3	
2-Nitrophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	88-75-5	
4-Nitrophenol	Not detected	ug/kg	830	SW8270D	06/24/17 01:46	PL	100-02-7	
N-Nitrosodiphenylamine	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	86-30-6	
N-Nitrosodi-n-propylamine*	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	621-64-7	
Pentachlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	87-86-5	
Phenanthrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	85-01-8	
Phenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	108-95-2	
Pyrene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	129-00-0	
1,2,4-Trichlorobenzene	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	120-82-1	
2,4,5-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	95-95-4	
2,4,6-Trichlorophenol	Not detected	ug/kg	330	SW8270D	06/24/17 01:46	PL	88-06-2	
Organics - Volatiles								
Volatile Organics								
Diethyl ether	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	60-29-7	
Acetone	Not detected	ug/kg	1,000	SW5035A/8260C	06/27/17 18:15	JML	67-64-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.02 (continued)

Sample Tag: Pt 337

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
Methyl iodide	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	74-88-4	
Carbon disulfide	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-15-0	
tert-Methyl butyl ether (MTBE)*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	1634-04-4	
Acrylonitrile	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	107-13-1	
2-Butanone (MEK)*	Not detected	ug/kg	1,000	SW5035A/8260C	06/27/17 18:15	JML	78-93-3	
Dichlorodifluoromethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-71-8	
Chloromethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	74-87-3	
Vinyl chloride	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-01-4	
Bromomethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	74-83-9	
Chloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-00-3	
Trichlorofluoromethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-69-4	
1,1-Dichloroethene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-35-4	
Methylene chloride	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 18:15	JML	75-09-2	
trans-1,2-Dichloroethene*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	156-60-5	
1,1-Dichloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-34-3	
cis-1,2-Dichloroethene*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	156-59-2	
Tetrahydrofuran*	Not detected	ug/kg	2,000	SW5035A/8260C	06/27/17 18:15	JML	109-99-9	
Chloroform	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	67-66-3	
Bromochloromethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	74-97-5	
1,1,1-Trichloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	71-55-6	
4-Methyl-2-pentanone (MIBK)*	Not detected	ug/kg	1,000	SW5035A/8260C	06/27/17 18:15	JML	108-10-1	
2-Hexanone*	Not detected	ug/kg	1,000	SW5035A/8260C	06/27/17 18:15	JML	591-78-6	
Carbon tetrachloride	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	56-23-5	
Benzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	71-43-2	
1,2-Dichloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	107-06-2	
Trichloroethene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	79-01-6	
1,2-Dichloropropane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	78-87-5	
Bromodichloromethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-27-4	
Dibromomethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	74-95-3	
cis-1,3-Dichloropropene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	10061-01-5	
Toluene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	79-00-5	
Tetrachloroethene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	110-57-6	
Dibromochloromethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	124-48-1	
1,2-Dibromoethane*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	106-93-4	
Chlorobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	630-20-6	
Ethylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	100-41-4	
p,m-Xylene	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 18:15	JML		
o-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	95-47-6	
Styrene*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	100-42-5	
Isopropylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	98-82-8	
Bromoform*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	75-25-2	
1,1,1,2-Tetrachloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	79-34-5	
1,2,3-Trichloropropane*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	96-18-4	
n-Propylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	103-65-1	
Bromobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	108-86-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S81960.02 (continued)

Sample Tag: Pt 337

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
Volatile Organics (continued)								
1,3,5-Trimethylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	108-67-8	
tert-Butylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	98-06-6	
1,2,4-Trimethylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	95-63-6	
sec-Butylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	135-98-8	
p-Isopropyltoluene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	99-87-6	
1,3-Dichlorobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	95-50-1	
1,2,3-Trimethylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	526-73-8	
n-Butylbenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	104-51-8	
Hexachloroethane	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	67-72-1	
1,2-Dibromo-3-chloropropane*	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	96-12-8	
1,2,4-Trichlorobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	120-82-1	
1,2,3-Trichlorobenzene	Not detected	ug/kg	100	SW5035A/8260C	06/27/17 18:15	JML	87-61-6	
Naphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 18:15	JML	91-20-3	
2-Methylnaphthalene*	Not detected	ug/kg	200	SW5035A/8260C	06/27/17 18:15	JML	91-57-6	



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Wendy Schultz
 COMPANY City of Ann Arbor WTP
 ADDRESS 919 Sunset Rd
 CITY Ann Arbor STATE MI ZIP CODE 48103
 PHONE NO. 734-794-6426 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS wschultz@a2gov.org QUOTE NO. _____

CONTACT NAME SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS _____

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME MI0022217 SAMPLER(S) - PLEASE PRINT/SIGN NAME _____
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	# Containers & Preservatives	Ammonia-N mg/kg	Cyanide mg/kg	Fecal Coliform	Nitrate-N mg/kg	Oil & Grease mg/kg	pH/Corrosivity	Total Kjeldahl Nitrogen mg/kg	Total Phosphorus mg/kg	8260 and 8270	Metals*	Certifications		Project Locations		Special Instructions
	DATE	TIME																						<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input checked="" type="checkbox"/> NPDES	
<u>8P60.01</u>	<u>6/20/17</u>	<u>09:40</u>	<u>Pt 306</u>	<u>SL</u>	<u>2</u>		<u>X</u>															<u>✓</u>	<u>✓</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	* Arsenic, Barium, Cadmium,
<u>02</u>	<u>6/20/17</u>	<u>10:00</u>	<u>Pt 337</u>	<u>SL</u>	<u>2</u>		<u>X</u>															<u>✓</u>	<u>✓</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc

RELINQUISHED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____
 RECEIVED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____
 RELINQUISHED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____
 RECEIVED BY: _____ DATE 6/21/17 TIME 945
 SIGNATURE/ORGANIZATION FedEx
Sam Smith

RELINQUISHED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____
 RECEIVED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____
 SEAL NO. SEAL INTACT YES NO INITIALS _____
 SEAL NO. SEAL INTACT YES NO INITIALS _____
 NOTES: _____ TEMP. ON ARRIVAL _____

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

4.1

ATTACHMENTS

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here No. of employees__

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$13.22/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$14.75/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (a) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (b) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (c) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (d) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

Company Name

Street Address

Signature of Authorized Representative

Date

City, State, Zip

Print Name and Title

Phone/Email address

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2018 - ENDING APRIL 29, 2019

\$13.22 per hour

If the employer provides health care benefits*

\$14.75 per hour

If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

**For Additional Information or to File a Complaint Contact:
Colin Spencer at 734/794-6500 or cspencer@a2gov.org**



Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr style="border: 0; border-top: 1px solid black;"/> <input type="checkbox"/> Interest in vendor's company <input type="checkbox"/> Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	Vendor Phone Number	
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.
You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a) EMPLOYEE INFORMATION	(b) WORK CLASSIFICATION	(c) Hour Type	(d) DAY AND DATE							(e) TOTAL HOURS ON PROJECT	(f) PROJECT RATE OF PAY	(g) PROJECT RATE OF FRINGE PAY	(h) GROSS PROJECT EARNED		(i) TOTAL WEEKLY HOURS WORKED ALL JOBS	(j) DEDUCTIONS						(k) TOTAL WEEKLY WAGES PAID FOR ALL JOBS
														GROSS PROJECT EARNED		GROSS WEEKLY EARNED	FICA	FEDERAL	STATE	OTHER	TOTAL DEDUCT	
NAME:									0			\$0.00	/								\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0			\$0.00	/								\$0.00	\$0.00
NAME:									0			\$0.00	/								\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0			\$0.00	/								\$0.00	\$0.00
NAME:									0			\$0.00	/								\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0			\$0.00	/								\$0.00	\$0.00
NAME:									0			\$0.00	/								\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0			\$0.00	/								\$0.00	\$0.00
NAME:									0			\$0.00	/								\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0			\$0.00	/								\$0.00	\$0.00
NAME:									0			\$0.00	/								\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0			\$0.00	/								\$0.00	\$0.00
NAME:									0			\$0.00	/								\$0.00	\$0.00

Date _____

I, _____ (Name of Signatory Party) _____ (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the _____ (Contractor or Subcontractor)
 _____; that during the payroll period commencing on the _____ (Building or Work)
 _____ day of _____, _____, and ending the _____ day of _____, _____,
 all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full _____ (Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

- in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

- Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION
REMARKS:	
NAME AND TITLE	SIGNATURE
THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.	