

Invitation for Bids No. SW-23-016

Landfill Permit No. 588

Landfill Liquids Treatment System

Bristol Integrated Solid Waste Management
Facility



City of Bristol
300 Lee Street
Bristol, Virginia 24201
276-645-7380

SCS ENGINEERS

02218208.06 | April 19, 2023

15521 Midlothian Turnpike, Suite 305
Midlothian, VA 23113
804-378-7440

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INVITATION FOR BIDS
ITB# SW-23-016

LANDFILL PERMIT NO. 588
LANDFILL LIQUIDS TREATMENT SYSTEM
BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY

Sealed bids will be received by the City of Bristol, Virginia (referred to as City or OWNER) in the Purchasing Department Office, 300 Lee Street, Bristol, VA 24201, until **2:00 pm on Monday, May 1, 2023** and immediately thereafter publicly opened and read aloud for providing labor, material and equipment pertaining to the supply and installation of the Landfill Permit No. 588 (588) landfill liquids treatment system for benzene and ethylbenzene reduction at the Bristol Integrated Solid Waste Management Facility in Bristol, VA. The sealed envelope shall be addressed to City of Bristol Purchasing Department, attention of Sara Thompson. The City reserves the right to reject any or all bids and to waive informalities and irregularities.

All questions proposed by potential Bidders must be submitted in writing by 5:00 pm on Friday, April 21, 2023. All work will be in accordance with the Drawings and Specifications which are included as part of this Invitation for Bids and are available online and/or are on file with the City of Bristol and SCS Engineers.

Bids will be received under the Single-Prime bidding method only. Bids must be on the standard form provided in the Bid Form section. Bids may be submitted via courier, mail, or hand delivered. Bids submitted via fax or electronic mail or other means will not be accepted.

The scope of work includes, but is not limited to, installation of air stripper(s), pump systems / skid, approximately 500 linear feet ($\pm 10\%$) of HDPE, PVC, Flex-Hose or other appropriate piping, tee connection to existing HDPE pipe, isolation valves, overflow bypass piping, and controls compatible with frac tanks that will serve as equalization for the treatment system. In addition, the scope of work may also include optional equipment such as pre-air stripper filtration system(s), vapor-phase granular activated carbon (GAC) treatment, liquid-phase GAC treatment, and foam suppression systems.

The Bidding Documents may be obtained by contacting SCS Engineers at 15521 Midlothian Turnpike, Suite 305, Midlothian, Virginia 23113, (804) 486-1901. Requests for electronic copies of the Bidding Documents should be directed to Mr. Joey Lamie, Project Manager at (276) 645-3726 or joey.lamie@bristolva.org.

CITY OF BRISTOL

Jacob Chandler, PE, Director of Public Works
Joey Lamie, Project Manager

END OF SECTION 00 11 10

SECTION 00 21 10

INSTRUCTIONS TO BIDDERS

For a Bid to be considered, it must be in accordance with the following instructions:

1. BIDS

Bids must be made on the Bid Forms provided herein, and all blank spaces for Bids, Options and Prices, applicable to bidder's work, shall be properly filled in. The Bidders agree that Bids submitted on the specified Bid Forms, which are detached from specifications, will be considered and will have the same force and effect as if attached thereto. Numbers shall be stated both in writing and in figures for the Base Bids.

Any modification to the Bid Forms may disqualify the Bid and may cause the Bid to be rejected.

The Contractor shall fill in the Bid Forms as follows:

- A. If the documents are executed by a sole Owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person.
- B. If the documents are executed by a Partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.
- C. If the documents are executed on the part of a Corporation, they shall be executed by either the President or the Vice-President and attested by either the Secretary or Assistant Secretary. In all cases the title of the office of such person shall appear after their signatures.
- D. If the Bid is made by a Joint Venture, it shall be executed by each member of the Joint Venture in the above form for sole Owner, Partnership, or Corporation, whichever form is applicable.
- E. All signatures shall be properly witnessed or attested, as applicable.
- F. Each Bid shall be addressed and delivered as indicated in Item 5 of the Instructions to Bidders. The address of the Bidder, the Bidder's license number and, if applicable, the designated portion of the Work for which Bid is submitted should also be referenced on the Bid envelope.
- G. It shall be the specific responsibility of the Bidder to deliver the Bid to the proper official at the appointed place and prior to the announced time for the opening of Bids. Later delivery of a Bid for any reason, including late delivery by the United States Mail, shall disqualify the Bid.
- H. Modifications of previously deposited Bids or requests for withdrawal will be acceptable only if delivered in person or in writing to the place of the Bid opening prior to the time for opening Bids.

- I. Prices quoted in the Bid shall include overhead and profit and shall be the full compensation for the Contractor's cost involved in the work.
- J. Failure to submit a Bid on the official City of Bristol Virginia form provided for that purpose shall be a cause for rejection of the Bid. Modification of or additions to any portion of the Invitation for Bid/Request for Bid may be cause for rejection of the Bid; however, the City of Bristol Virginia reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a Bid as nonresponsive. As a precondition to its acceptance, the City of Bristol Virginia may, in its sole discretion, request that the bidder/proposer withdraw or modify nonresponsive portions of a Bid which do not affect quality, quantity, price, or delivery. No modification of or addition to the provisions of the contract shall be effective unless reduced to writing and signed by the parties.

2. QUALIFICATIONS OF BIDDERS

The Bidder shall provide a summary of relevant experience with landfill leachate and/or industrial wastewater pre-treatment system equipment supply, construction and implementation, involving air stripper systems, pump systems, pipe and valve installation, and associated control installations. The Bidder shall submit as part of the Bid, information related to previous relevant projects including job location and work summary, contract amount and duration, and contact name and phone number in writing within the Bid. A minimum of three (3) relevant landfill leachate and/or industrial wastewater pre-treatment system equipment supply; construction and implementation projects shall be submitted with the Bid. It is the Bidder's responsibility to submit sufficient documentation to demonstrate relevancy.

Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:			
As a general contractor:		As a joint venturer:	
Has Business, or a predecessor in interest, or an affiliate identified in the Bid:			
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Provide full details in a separate attachment if the response to any of these questions is Yes.			

Provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business’s key leaders as well.

Name of individual		
Years of experience as project manager		
Years of experience with this organization		
Number of similar projects as project manager		
Number of similar projects in other positions		
Current Project Assignments		
Name of assignment	Percent of time used for this project	Estimated project completion date

The City of Bristol Virginia may make such reasonable investigations as deemed proper and necessary to evaluate the ability of the bidder/proposer to perform the services/furnish the goods and the bidder/proposer shall furnish to the City of Bristol Virginia all such information and data for this purpose as may be requested. The City of Bristol Virginia reserves the right to inspect bidder’s/proposer’s physical facilities prior to award to satisfy questions regarding the bidder/proposer’s capabilities. The City of Bristol Virginia further reserves the right to reject any Bid if the evidence submitted by, or investigations of, such bidder/proposer fails to satisfy the City of Bristol Virginia that such bidder/proposer is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.

3. EXAMINATION OF CONDITIONS

It is understood and mutually agreed that by submitting a Bid the Contractor acknowledges his/her careful examination of the Bidding Documents pertaining to the work, the location, accessibility and general character of the site of the work and all existing buildings and structures within and adjacent to the site; and has satisfied himself/herself as to the nature of the work, the condition of existing infrastructure, the conformation of the ground, the character, quality and quantity of the materials to be encountered; the general and local conditions; the construction hazards; and all other matters, including but not limited to, the labor situation which can in any way affect the work under the Contract; and including all safety measures required by the latest edition of the Occupational Safety Health Act and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a Bid, the Contractor acknowledges that he/she has satisfied himself/herself as to the feasibility and meaning of the plans, drawings, specifications, and other Contract Documents for the construction of the work and that he/she accepts all the terms, conditions and stipulations contained therein; and that he/she is prepared to work in cooperation with the Owner and all other Contractors performing work on the site.

4. ADDENDA

Any Addenda to bidding documents issued during the time of bidding will be available at the City’s Procurement and Bid website, and are to be considered covered in the Bid. It is the Contractor’s responsibility to ascertain prior to Bid time, which Addenda have been issued and confirm that his/her Bid includes any changes covered by the Addenda.

Should the Bidder find discrepancies in, or omissions from, the drawings or documents or should he/she be in doubt as to their meaning, he/she shall at once notify the Licensed Professional who prepared said drawings or documents. Neither the Owner nor the Licensed Professional who prepared the bidding documents will be responsible for any oral instructions.

The Bidder on his/her Bid shall acknowledge all Addenda. Failure to do so may disqualify the Bid and may cause the Bid to be rejected.

5. RECEIPT OF BIDS

All copies of the Bid, the Bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. All sealed Bid envelopes shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof and marked on the outside of the envelope as follows:

City of Bristol Purchasing Department
Sara Thompson
City Hall
300 Lee Street
Bristol, Virginia 24201

LANDFILL PERMIT NO. 588
LANDFILL LIQUIDS TREATMENT SYSTEM

Due Date: **Monday, May 1, 2023 at 2:00 P.M. ET**
ITB# SW-23-016

In addition to the above, the address of the Bidder, the Bidder's license number and, if applicable, the designated portion of the Work for which Bid is submitted should also be referenced on the Bid envelope.

To be considered for selection, Bids must be received by the City of Bristol Virginia Purchasing Department 300 Lee Street, Bristol, VA 24201, by the designated date and hour. Bids received in the City of Bristol Virginia Purchasing Department after the date and hour designated are automatically disqualified and will not be considered. The City of Bristol Virginia is not responsible for delays in the delivery of mail by the U.S. Postal Service, private couriers, or other means of delivery. It is the sole responsibility of the bidder/proposer to ensure that its Bid reaches the City of Bristol Virginia Purchasing Department by the designated time and hour.

6. REJECTION OF BIDS

The Owner reserves the unqualified right to reject any and all Bids. Reasons for rejection may include, but shall not be limited to, the following:

- A. If the Form of Bid furnished to the Bidder is not used or is altered.
- B. If the Bidder fails to insert a price for all Bid items requested.
- C. If the Bidder adds any provisions reserving the right to accept or reject any award.

- D. If there are unauthorized additions or conditional Bids, or irregularities of any kind which tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning.
- E. If the Bidder fails to complete the Bid forms where information is requested so the Bid may be properly evaluated by the Owner.
- F. If the Prices contained in the Bid Schedule are unacceptable to the Owner.
- G. If the Bidder fails to demonstrate relevant experience to the satisfaction of the Owner in accordance with the criteria outlined under Qualifications of Bidders.
- H. If the Bidder fails to comply with other instructions stated herein.

7. BID EVALUATION AND AWARD

The City of Bristol, Virginia will make the award on a Grand Total or Total Bid Price to the lowest responsive and responsible Bidder. Should the successful Bidder default and fail to execute a Contract, the Contract may be awarded to the next lowest responsive and responsible Bidder.

In accordance with Item 2 - Qualifications of Bidders, Bidder must submit certain information pertaining to Bidder's qualifications along with the Bid. Before awarding a Contract, the Owner may require the apparent low Bidder to supply supplemental information and documentation, or request clarifications, to qualify himself/herself to be a responsible Bidder by furnishing any or all of the following data:

- A. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the Owner.
- B. A listing of similar completed projects of similar size, with contact persons and telephone numbers.
- C. Permanent name and address of place of business.
- D. The number of regular employees of the organization and length of time the organization has been in business under present name and percentage of work typically performed by the contractor's firm.
 - 1. Qualifications of key employees assigned to this Project.
 - 2. References for key employees assigned to this Project.
- E. The name and home office address of the Surety proposed and the name and address of the responsible local claim agent.
- F. The names of members of the firm who hold appropriate trade licenses, together with license numbers.
- G. Complete list of all subcontractors and suppliers proposed.
- H. Any pending arbitration or mediation cases or lawsuits. This may include all arbitration, mediation and lawsuits settled or resolved within last ten (10) years.

Failure or refusal to furnish any of the above information if requested shall constitute a basis for disqualification of any Bidder.

In determining the lowest responsible Bidder, the Owner may consider the past performance of the Bidder on construction contracts. Particular concern will be given to completion times, quality of work, budget/cost considerations, cooperation with other Contractors, and cooperation with the Designer and Owner.

Should the Owner adjudge that the apparent low Bidder is not the lowest "responsible" Bidder by virtue of the above information, said apparent low Bidder will be so notified and his/her Bid Security shall be returned to him/her.

The Owner shall have the right to accept Alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

The Owner reserves the right to reject any and all Bids, to waive all technicalities and irregularities, and to make the award as considered to be in the best interest of the Owner.

Upon the award or the announcement of the decision to award a contract as a result of this solicitation, the City of Bristol Virginia will publicly post such notice on the City of Bristol Virginia website (www.bristolva.org) if the amount of the transaction is \$30,000 or more. Award information may also be obtained by contacting the buyer whose name appears on this solicitation.

8. BID SECURITY

Each Bid shall be accompanied by bid security in accordance with the instructions specified in Section 00 43 10. Bids shall be accompanied by a cashier's or bank check or Bid Guarantee Bond in the amount of not less than five percent (5%) of the bid made payable to the City of Bristol, Virginia, Owner, and subject to the conditions provided in the Instruction to Bidders.

9. PERFORMANCE BOND

The successful Bidder, upon award of Contract, shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's requirements under such contract.

10. PAYMENT BOND

The successful Bidder, upon award of Contract, shall furnish a Payment Bond in an amount equal to one hundred percent (100%) of the Contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

11. PRE-BID CONFERENCE

Not Applicable.

12. BIDS TO BE BID

Landfill Permit No. 588: Landfill Liquids Treatment System

13. INFORMATION TO BIDDER

All questions concerning the plans and specifications should be directed to Mr. Joey Lamie, Project Manager at (276) 645-3726 or joey.lamie@bristolva.org.

Address all inquiries and correspondence regarding this ITB to:

Sara Thompson
300 Lee Street Bristol, VA 24201
Email: Sara.Thompson@bristolva.org
Phone: (276) 645-7328

END OF SECTION 00 21 10

SECTION 00 41 13**BID FORM****LANDFILL PERMIT NO. 588
LANDFILL LIQUIDS TREATMENT SYSTEM****BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY****Engineer's Project No. 02218208.06****1.0 OWNER AND BIDDER**

- 1.1 This Bid is submitted to: City of Bristol, Purchasing Department
- 1.2 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

2.0 ATTACHMENTS TO THIS BID

The following documents are submitted with and made a condition of this Bid:

- List of Proposed Subcontractors;
- List of Proposed Suppliers;
- Evidence of authority to do business in the Commonwealth of Virginia; or a written covenant to obtain such authority within the time for acceptance of Bids;
- Contractor's license number as evidence of Virginia Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids; and,
- Required Bidder Qualification Statement with supporting data.

3.0 BASIS OF BID—LUMP SUM PRICES

- 3.1 LUMP SUM PRICE BIDS

A. Lump Sum Price

#	Description	Estimated Quantity	Unit	Subtotal
1	Mobilization/Demobilization	1	Lump Sum	Include in LS cost
2	Tee connection, to replace elbow, from 8" steel piping at 588 wet well	1	EA	Include in LS cost
3	4" - 6" aboveground pipe from wet well to influent frac tanks 1	103 2	FT	Include in LS cost
4	4" - 6" aboveground pipe header to influent frac tanks 1	56 2	FT	Include in LS cost
5	6" to 4" pipe reducers 1	8	EA	Include in LS cost
6	4" aboveground pipe header to function as frac tank equalization pipe between the influent frac tanks	55 2	FT	Include in LS cost
7	4" - 6" aboveground pipe header from influent frac tanks 1	40 2	FT	Include in LS cost
8	4" - 6" aboveground pipe from influent frac tanks to air stripper / pump skid area 1	45 2	FT	Include in LS cost
9	4" - 6" aboveground pipe from air stripper / pump skid area to effluent frac tanks 1	85 2	FT	Include in LS cost
10	4" - 6" aboveground pipe from effluent frac tanks to pipe access dry-well structure ¹	33 2	FT	Include in LS cost
11	4" aboveground pipe header to function as frac tank equalization pipe between the influent frac tanks	20 2	FT	Include in LS cost
12	8" Isolation Valve at tee connection at wet well	1	EA	Include in LS cost
13	6" Inline Totalizing and instantaneous electromag flow meter	1	EA	Include in LS cost
14	Flow/level controls at frac tanks	1	EA	Include in LS cost
15	Air stripper unit (≥500 gpm flow capacity)	1	EA	Include in LS cost
16	25 Hp influent pump on skid	1	EA	Include in LS cost
17	30 Hp effluent pump on skid	1	EA	Include in LS cost
18	On-site start-up	1	Lump Sum	Include in LS cost
19	Decontamination	1	Lump Sum	Include in LS cost
20	Health and Safety Planning and Accommodations	1	Lump Sum	Include in LS cost

B. Total Bid Price

Total Base Bid Price (Items #1 through #20)	\$
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C. Optional Bid Items – Unit Price

#	Description	Estimated Quantity	Unit	Unit Price	Subtotal
21	Filtration System prior to air stripper	1	EA	\$	\$
22	Vapor-phase GAC treatment system – vessels configured in series	2	EA	\$	\$
23	Liquid-phase GAC treatment system – vessels configured in series	2	EA	\$	\$
24	Foam suppression system including chemical, feed and tankage	1	EA	\$	\$
25	Total containment for frac tanks including containment liner, sump, pipe/hose to wet well and pump/controls	6,000	SF	\$	\$

D. Total Optional Bid Price

Total Optional Bid Price (Items #21 through #25)	\$
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4.0 TIME OF COMPLETION

4.1 Bidder agrees that the Work will be substantially complete within the durations associated with the Milestone Dates outlined below, as measured after the date when the Contract Times commence to run, and will be completed and ready for final payment within the durations associated with the Milestone Dates outlined below, as measured after the date when the Contract Times commence to run. The overall schedule intention of the City of Bristol is to have the treatment system be supplied, installed and operational by June 30, 2023 in order to meet a regulatory deadline.

Milestone Schedule Governing Contract Times		
#	Description	Times
1	Installation piping, valves, and controls for complete system	Substantial Completion w/in 10 Calendar Days or other mutually acceptable time period
2	Operation and Start-up of system	Substantial Completion w/in 5 Calendar Days or other mutually acceptable time period
3	Final Completion	w/in 3 Calendar Days or other mutually acceptable time period of Achieving #2

4.2 Bidder accepts the provisions of the Agreement as to liquidated damages.

5.0 BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.1 BID ACCEPTANCE PERIOD

This Bid will remain subject to acceptance for 30 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner. At the end of the 30

calendar days, the bid/proposal may be withdrawn at the written request of the bidder/proposer. If the bid/proposal is not withdrawn at that time, it remains in effect until an award is made or the solicitation is cancelled. However, time is of the essence for Bid acceptance by the City of Bristol.

5.2 INSTRUCTIONS TO BIDDERS

Bidder accepts all of the terms and conditions of the Instructions to Bidders.

5.3 RECEIPT OF ADDENDA

Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

6.0 BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.1 BIDDER’S REPRESENTATIONS

In submitting this Bid, Bidder represents the following:

- A. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
- B. Bidder has visited the Site and/or is sufficiently familiar with the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder’s (Contractor’s) safety precautions and programs.
- E. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price,

within the Contract Times, and in accordance with the other terms and conditions of the Contract.

- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- I. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
- J. The Bid/Proposal price shall be an all-inclusive price to deliver the specified goods and/or services FOB Destination to the address specified per the specifications. Invoices must be itemized and will be paid at the unit price in the Bid. The City will not accept or pay for additional line items such as freight, shipping and handling, delivery, downtime, equipment, lost time due to inclement weather or any other charges additional to the unit prices quoted in the Bid/Proposal.
- K. By submitting their bids/proposals, all bidders/proposers certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.
- L. The bid price shall be for complete delivery of equipment, ready for use by the City of Bristol Virginia, and shall include all applicable freight and installation charges; extra charges will not be allowed.

6.2 BIDDER'S CERTIFICATIONS

The Bidder certifies the following:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding.
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 6.2.D:

1. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
2. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
3. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
4. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

6.3 BIDDER'S CERTIFICATIONS

The evaluation criteria and associated weighted scoring values are provided below:

1. Achieving treatment of target constituents below desired and regulatory thresholds using high quality equipment and controls. (30 percent value)
2. Lead time to mobilize and begin operation. (35 percent value)
3. Rental Terms and cost. (25 percent value)
4. Ability to accept the City of Bristol Virginia's preferred form of payment. (10 percent value)

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)

END OF SECTION 00 41 13



SECTION 00 43 10

BID BOND

LANDFILL PERMIT NO. 588 LANDFILL LIQUIDS TREATMENT SYSTEM

BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY

Bids shall be accompanied by a cashier's or bank check or Bid Guarantee Bond in the amount of not less than five percent (5%) of the bid made payable to the City of Bristol, Virginia, Owner, and subject to the conditions provided in the Instruction to Bidders.

BID GUARANTY

The undersigned bidder submits herewith bid guaranty in an amount of not less than five percent (5%) of the total amount of the bid offered and agrees and consents that the bid guaranty shall be forfeited to the City as liquidated damages if the required contract bond is not executed within fifteen (15) days from the date of the notice of award and work has not been started as required. The following documents are attached to and made a condition of this bid and constitute required Bid Security:

_____ Certified Check or Bank Check

_____ Bid Bond

BID AMOUNT: \$ _____

BIDDER: _____

PERSON PREPARING BID: _____

TELEPHONE NUMBER: _____

ADDRESS: _____

Submittal of signed BID Form signifies understanding and acceptance of all stated terms and conditions and acknowledgment of requirement of compliance with all applicable local, state and federal ordinances, laws, rules and regulations whether expressly stated herein or not.



SIGNATURE: _____

PRINTED NAME: _____

TITLE: _____

COMPANY: _____

DATE: _____

SECTION 00 70 00

TERMS AND CONDITIONS

The Agreement for Service ("Contract" or "Agreement") with the successful Offeror will contain the following Terms and Conditions. Offerors taking exception to these Terms and Conditions or intending to propose additional or alternative language must (a) identify with specificity the City Terms and Conditions to which they take exception or seek to amend or replace; and (b) include any additional or different language with their bid. Failure to both identify with specificity those terms and conditions Offeror takes exception to or seeks to amend or replace as well as to provide Offeror's additional or alternate terms and conditions may result in rejection of the bid.

A. Procedures

The extent and character of the services to be performed by the Offeror shall be subject to the general control and approval of the City and their authorized representative(s). Any change to the Contract must be approved in writing by the City.

B. Delays and Delivery Failures

The Offeror must keep the City advised at all times of services' status relative to the schedule as agreed upon by the parties. If delay is foreseen, the Offeror shall give immediate written notice to the Purchasing Department and include an expected resolution timeframe. Should the Offeror fail to deliver the proper item(s)/service(s) at the time and place(s) contracted for, or within the resolution timeframe submitted with the delay notification or should the Offeror fail to make a timely replacement of rejected items /services when so required, the City may purchase items/services of comparable quality and quantity in the open market to replace the undelivered or rejected items/services. The Offeror shall reimburse the City for all costs in excess of the Agreement price when purchases are made in the open market; or in the event that there is a balance the City owes to the Offeror from prior transactions, an amount equal to the additional expense incurred by the City as a result of the Offeror's nonperformance shall be deducted from the balance as payment.

C. Business, Professional, & Occupational License Requirement

All firms or individuals doing business in the City are required to be licensed in accordance with the City Code Section 18-28. - License Requirement.

Questions regarding licensing should be directed to the Office of Commissioner of Revenue, telephone (276) 645-7316.

D. Authorization to Conduct Business in the Commonwealth

A contractor organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia or as otherwise required by law. Any business entity described above that enters into a contract with a public body pursuant to the Virginia Public Procurement Act shall

not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth, if so required under Title 13.1 or Title 50, to be revoked or cancelled at any time during the term of the contract. A public body may void any contract with a business entity if the business entity fails to remain in compliance with the provisions of this section.

E. Insurance

1. The Offeror shall be responsible for its work and every part thereof, and for all materials, tools, equipment, appliances, and property of any and all description used in connection therewith. The Offeror assumes all risk of direct and indirect damage or injury to the property or persons used or employed on or in connection with the work contracted for, and of all damage or injury to any person or property wherever located, resulting from any action, omission, commission or operation under the Contract.
2. The Offeror and all sub-offerors shall, during the continuance of the work under the Contract, provide the following:
 - a. Workers' Compensation and Employer's Liability to protect the Offeror from any liability or damages for any injuries (including death and disability) to any and all of its employees, including any and all liability or damage which may arise by virtue of any statute or law in force within the Commonwealth of Virginia.
 - b. Comprehensive General Liability insurance to protect the Offeror, and the interest of the City, its officers, employees, and agents against any and all injuries to third parties, including bodily injury and personal injury, wherever located, resulting from any action or operation under the Contract or in connection with the contracted work. The General Liability insurance shall also include the Broad Form Property Damage endorsement, in addition to coverage for explosion, collapse, and underground hazards, where required.
 - c. Automobile Liability insurance, covering all owned, non-owned, borrowed, leased, or rented vehicles operated by the Offeror.
 - d. Professional Liability against any and all wrongful acts, errors, or omissions on the part of the Offeror resulting from any action or operation under the Contract or in connection with the contracted work.
3. The Offeror agrees to provide the above referenced policies with the following limits. Liability insurance limits may be arranged by General, Automobile and Professional Liability policies for the full limits required, or by a combination of underlying policies for lesser limits with the remaining limits provided by an Excess or Umbrella Liability policy.
 - a. Workers' Compensation: Statutory requirements and benefits. Coverage is compulsory for employers of three or more employees, to include the employer.
 - b. Employer's Liability:

- i. Each Accident: \$1,000,000
 - ii. Disease, Each Employee: \$1,000,000
 - iii. Disease, Policy Limit: \$2,000,000
 - c. Commercial General Liability:
 - i. General Aggregate \$2,000,000
 - ii. Each Occurrence \$1,000,000
 - iii. Commercial General Liability shall include bodily injury and property damage, personal injury, advertising injury, products and completed operations coverage. General Aggregate limit shall apply separately to the project. Contractor's insurance coverage shall be primary and non-contributory.
 - d. Automobile Liability: Combined Single Limit of \$1,000,000
 - e. Professional Liability:
 - i. General Aggregate \$2,000,000
 - ii. Each Occurrence \$1,000,000
 - f. Umbrella Liability: \$2,000,000 per occurrence.
4. The following provisions shall be agreed to by the Offeror:
- a. No change, cancellation, or non-renewal shall be made in any insurance coverage without a forty-five (45) day written notice to the City. The Offeror shall furnish a new certificate prior to any change or cancellation date. The failure of the Offeror to deliver a new and valid certificate will result in suspension of all payments until the new certificate is furnished.
 - b. Liability Insurance "Claims Made" basis:

If the liability insurance purchased by the Offeror has been issued on a "claims made" basis, the Offeror must comply with the following additional conditions. The limits of liability and the extensions to be included as described previously in these provisions, remain the same. The Offeror must either:

 - i. Agree to provide, prior to commencing work under the Contract, certificates of insurance evidencing the above coverage for a period of two (2) years after final payment for the Contract for General Liability policies and five (5) years for Professional Liability policies. This certificate shall evidence a "retroactive date" no later than the beginning of the Offeror's work under this Contract,
or
 - ii. Purchase the extended reporting period endorsement for the policy or policies in force during the term of this Contract and evidence the purchase of this extended reporting period endorsement by means of a certificate of insurance or a copy of the endorsement itself.
 - c. The Offeror must disclose the amount of deductible/self-insured retention

applicable to the General Liability, Automobile Liability and Professional Liability policies, if any. The City reserves the right to request additional information to determine if the Offeror has the financial capacity to meet its obligations under a deductible /self-insured plan. If this provision is utilized, the Offeror will be permitted to provide evidence of its ability to fund the deductible /self-insured retention.

- d. Origin of Insurance
 - i. The Offeror agrees to provide insurance issued by companies admitted within the Commonwealth of Virginia, with the Best's Key Rating of at least A:VII.
 - ii. European markets including those based in London, and the domestic surplus lines market that operate on a non-admitted basis are exempt from this requirement provided that the Offeror's broker can provide financial data to establish that a market's policyholder surpluses are equal to or exceed the surpluses that correspond to Best's A:VII Rating.
 - e. Required Certificates
 - i. The Offeror will provide an original signed Certificate of Insurance and such endorsements as prescribed herein.
 - ii. The Offeror will provide on request certified copies of all insurance coverage related to the Contract within ten (10) business days of request by the City. These certified copies will be sent to the City from the Offeror's insurance agent or representative. Any request made under this provision shall be deemed confidential and proprietary.
 - iii. Any certificates provided shall indicate the Contract name and number.
 - f. The City, its officers and employees shall be Endorsed to the Offeror's Automobile and General Liability policies as an "additional insured" with the provision that this coverage "is primary to all other coverage the City may possess." (Use "loss payee" where there is an insurable interest). A Certificate of Insurance evidencing the additional insured status must be presented to the City along with a copy of the Endorsement.
 - g. Compliance by the Offeror with the foregoing requirements as to carrying insurance shall not relieve the Offeror of their liabilities provisions of the Contract.
5. Contractual and other Liability insurance provided under this Contract shall not contain a supervision, inspection or engineering services exclusion that would preclude the City from supervising and/or inspecting the project as to the end result. The Offeror shall assume all on-the-job responsibilities as to the control of persons directly employed by it.
6. Precaution shall be exercised at all times for the protection of Persons (including employees) and property.
7. The Offeror is to comply with the Occupational Safety and Health Act of 1970,

Public Law 91-956, as it may apply to this Contract.

8. If an "ACORD" Insurance Certificate form is used by the Offeror's insurance agent, the words "endeavor to" and ". . . but failure to mail such notice shall impose no obligation or liability of any kind upon the company" in the "Cancellation" paragraph of the form shall be deleted.
9. The Offeror agrees to waive all rights of subrogation against the City, its officers, employees, and agents.

F. Hold Harmless

The Offeror shall indemnify and hold harmless the City, including its officials and employees, from all liability, losses, costs, damages, claims, causes of action, and suits of any nature (specifically including reasonable attorney's fees and defense costs incurred with the defense of third party claims) incidental to or brought as a consequence of any negligent act, error, omission, or breach of the applicable professional standard of care by the Offeror and /or its subcontractors. The Offeror agrees that this clause shall include, but is not limited to, claims involving infringement of patent or copyright. This section shall survive completion of the Contract. The City is prohibited from indemnifying Offeror and/or any other third parties.

G. Safety

All Offerors and sub-offerors performing services for the City are required and shall comply with all Occupational Safety and Health Administration (OSHA), State and City Safety and Occupational Health Standards and any other applicable rules and regulations. Also, all Offerors and sub-offerors shall be held responsible for the safety of their employees and any unsafe acts or conditions that may cause injury or damage to any persons or property within and around the work site area under this Contract.

H. Anti-Discrimination

The City of Bristol, VA in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

By submitting their bids, offerors certify to the City that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the Virginia Public Procurement Act (VPPA). If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender sexual orientation, gender identity, or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public

funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (Code of Virginia, § 2.2-4343.1E).

In every contract over \$10,000 the provisions in 1. and 2. below apply:

1. During the performance of this contract, the contractor agrees as follows:
 - a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
 - d. If the contractor employs more than five employees, the contractor shall (i) provide annual training on the contractor's sexual harassment policy to all supervisors and employees providing services in the Commonwealth, except such supervisors or employees that are required to complete sexual harassment training provided by the Department of Human Resource Management, and (ii) post the contractor's sexual harassment policy in (a) a conspicuous public place in each building located in the Commonwealth that the contractor owns or leases for business purposes and (b) the contractor's employee handbook.
 - e. The requirements of these provisions 1. and 2. are a material part of the contract. If the Contractor violates one of these provisions, the City may terminate the affected part of this contract for breach, or at its option, the whole contract. Violation of one of these provisions may also result in debarment from State contracting regardless of whether the specific contract is terminated.
 - f. In accordance with Executive Order 61 (2017), a prohibition on discrimination by the contractor, in its employment practices, subcontracting practices, and delivery of goods or services, on the basis of race, sex, color, national origin, religion, sexual orientation, gender identity, age, political affiliation, disability, or veteran status, is hereby incorporated in this contract.
2. The contractor will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

I. Ethics in Public Contracting

The provisions contained in § 2.2-4367 through § 2.2-4377 of the Virginia Public Procurement Act as set forth in the 1950 Code of Virginia, as amended, shall be applicable to all Contracts solicited or entered into by the City. A copy of these provisions may be obtained from the Purchasing Department upon request.

The above-stated provisions supplement, but do not supersede, other provisions of law including, but not limited to, the Virginia State and Local Government Conflict of Interests Act (§ 2.2-3100 et seq.), the Virginia Governmental Frauds Act (§ 18.2-498.1 et seq.) and Articles 2 and 3 of Chapter 10 of Title 18.2. The provisions apply notwithstanding the fact that the conduct described may not constitute a violation of the Virginia Conflict of Interests Act.

J. Drug-free Workplace

Every Contract of over \$10,000 shall include the following provisions:

During the performance of this Contract, the Offeror agrees to (i) provide a drug-free workplace for the Offeror's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Offeror's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Offeror that the Offeror maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each sub-offeror or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific Contract awarded to an Offeror in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the Contract.

K. Immigration Reform and Control Act of 1986

By entering this Contract, the Offeror certifies that it does not and will not during the performance of this Contract violate the provisions of the Federal Immigration Reform and Control Act of 1986, which prohibits employment of illegal aliens.

L. Exemption from Taxes

Pursuant to Va. Code § 58.1-609.1, the City is exempt from Virginia State Sales or Use Taxes and Federal Excise Tax, therefore the Offeror shall not charge the City for Virginia State Sales or Use Taxes or Federal Excise Tax on the finished goods or products provided under the Contract. However, this exemption does not apply to the Offeror, and the Offeror shall be responsible for the payment of any sales, use, or excise tax it incurs in providing the goods required by the Contract, including, but not limited to, taxes on materials purchased by an Offeror for incorporation in or use on a construction project. Nothing in this section shall prohibit the Offeror from including its own sales tax expense in connection with the Contract in its Contract price.

M. Ordering, Invoicing and Payment

All work requested under this Contract shall be placed on a City issued Purchase Order. The Offeror shall not accept credit card orders or payments.

The Offeror shall submit invoices, at the completion of tasks and submission of deliverables; such statement to include a detailed breakdown of all charges for that deliverable.

Payments for services are to be requested as monthly billings submitted by Offeror by the end of the calendar month and payable by the City within 30 days of receipt.

All such invoices will be paid timely by the City unless any items thereon are questioned, in which event payment will be withheld pending verification of the amount claimed and the validity of the claim. The Offeror shall provide complete cooperation during any such investigation.

All invoices shall be forwarded to the following address:

Director of Public Works
City of Bristol, Virginia
2515 Valley Drive
Bristol, VA 24201

Individual Offerors shall provide their social security numbers and proprietorships, partnerships, and corporations shall provide their federal employer identification number on the pricing form.

Offeror shall provide a current Form W-9 – Request for Taxpayer Identification Number and Certification.

N. Payments to Subcontractors

Within seven (7) days after receipt of amounts paid by the City for work performed by a subcontractor under this Contract, the Offeror shall either:

1. Pay the subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the subcontractor under this Contract; or
2. Notify the City and subcontractor, in writing, of his/her intention to withhold all or a part of the subcontractor's payment and the reason for non-payment.

The Offeror shall pay interest to the subcontractor on all amounts owed that remain unpaid beyond the seven (7) day period except for amounts withheld as allowed in item 2 above.

Unless otherwise provided under the terms of this Contract interest shall accrue at the rate of one percent (1 %) per month.

The Offeror shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and

interest requirements as set forth above with respect to each lower-tier subcontractor.

The Offeror's obligation to pay an interest charge to a subcontractor pursuant to this provision may not be construed to be an obligation of the City.

O. Substitutions

NO substitutions, additions or cancellations, including those of key personnel are permitted after Contract award without written approval by the Purchasing Department. Where specific employees are proposed by the Offeror for the work, those employees shall perform the work as long as that employee works for the Offeror, either as an employee or subcontractor unless the City agrees to the substitution. Requests for substitutions will be reviewed by the City and approval may be given by the City at its sole discretion. The City shall be notified immediately by the Offeror when the substitution of key personnel or those identified in the bid may be necessary. The substitution process shall be complete within 14 calendar days of the Offerors notification to the City.

P. Assignment

The Agreement may not be assigned in whole or in part without the prior written consent of the Purchasing Department. The rights and obligations of the Offeror are personal and may be performed only by the Offeror. Any purported assignment that does not comply with this provision is void. This Agreement is binding upon and inures to the benefit of the parties and their respective permitted successors and assigns.

Q. Termination

Subject to the provisions below, the Contract may be terminated by the City upon thirty (30) days advance written notice to the Offeror; but if any work or service hereunder is in progress, but not completed as of the date of termination, then the Contract may be extended upon written approval of the City until said work or services are completed and accepted.

1. Termination for Convenience

The City may terminate this Contract for convenience at any time in which case the parties shall negotiate reasonable termination costs.

2. Termination for Cause

In the event of Termination for Cause, the thirty (30) days advance notice is waived and the Offeror shall not be entitled to termination costs.

3. Termination Due to Unavailability of Funds in Succeeding Fiscal Years

If funds are not appropriated or otherwise made available to support continuation of the performance of this Contract in a subsequent fiscal year, then the Contract shall be canceled and, to the extent permitted by law, the Offeror shall be reimbursed for the reasonable value of any non-recurring costs incurred but not amortized in the price of the supplies or services delivered under the Contract.

4. Availability of Funds

It is understood and agreed between the parties herein that the City of Bristol Virginia shall be bound hereunder only to the extent of the funds appropriated and available or which may hereafter become available for the purpose of this agreement.

R. Contractual Disputes

The Offeror shall give written notice to the City Manager of intent to file a claim for money or other relief within ten (10) calendar days of the occurrence giving rise to the claim or at the beginning of the work upon which the claim is to be based, whichever is earlier.

The Offeror shall submit its invoice for final payment within thirty (30) days after completion or delivery.

The claim, with supporting documentation, shall be submitted to the City Manager by US Mail, return receipt requested, courier, or overnight delivery service, no later than sixty (60) days after final payment. If the claim is not disposed of by agreement, the City Manager shall reduce his decision to writing and mail via U.S. mail or otherwise forward a copy thereof to the Offeror within thirty (30) days of the City's receipt of the claim.

The City Manager's decision shall be final unless the Offeror appeals within thirty (30) days by submitting a written letter of appeal to the City Manager, or his designee. The City Manager shall render a decision within sixty (60) days of receipt of the appeal.

No Offeror shall institute any legal action until all statutory requirements have been met. Each party shall bear its own costs and expenses resulting from any litigation, including attorney's fees.

S. Prime Offeror Responsibilities

The Offeror(s) shall be responsible for completely supervising and directing the work under the resulting Contract(s) and all subcontractors that they may utilize. Subcontractors who perform work under the resulting Contract shall be responsible to the prime Offeror. The Offeror agrees to be fully responsible for the acts and omissions of their subcontractors and of persons employed by them.

T. Ownership of Documents

Any reports, specifications, drawings, blueprints, negatives, electronic files or other documents prepared by the Offeror in the performance of its obligations under the Contract shall be the exclusive property of the City, and all such materials shall be returned to the City upon completion, termination, or cancellation of this Contract. The Offeror shall not use, willingly allow, or cause such materials to be used for any purpose other than performance of all Offeror's obligations under the resulting Contract without the prior written consent of the City. However, the Offeror may retain file copies which cannot be used without prior written consent of the City. The City agrees that the Offeror shall not be liable for damages, loss, or injury resulting from the future use of the provided documents for other than the project specified when the Offeror is not the firm of record.

U. Submissions

All Project correspondence, design/review documents, reports etc., prepared by the Offeror shall be distributed to the City Manager for each major phase and sub phase of the Project in the quantities as directed. Within thirty (30) days of completion of each Project phase, submit a Project phase completion report with phase documents to the City Manager.

V. Responsibility for Claims and Liabilities

The City's review, approval, or acceptance of, or payment for, any services required shall not be construed to operate as a waiver by the City of any rights or of any cause of action arising out of the Contract. The Offeror shall be and remains liable to the City for the accuracy and competency of plans, specifications, or other documents or work and Offeror is responsible to the City for any costs incurred resulting from any errors, acts or omissions in the performance of any services furnished.

W. Severability

In the event that any provision shall be adjudged or decreed to be invalid, by a court of competent jurisdiction, such ruling shall not invalidate the entire Agreement but shall pertain only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect.

X. Governing Law /Forum

This Agreement shall be governed and construed in all respects by its terms and by the laws of the Commonwealth of Virginia, without giving effect to its conflicts of law's provisions. Any judicial action shall be filed in the Circuit Court for the City of Bristol, Virginia. Offeror expressly waives any objection to venue or jurisdiction of the Circuit Court for the City of Bristol, Virginia. Offeror expressly consents to waiver of service of process in an action pending in the Circuit Court for the City of Bristol, Virginia pursuant to Virginia Code § 8.01-286.1.

Y. Notices

All notices and other communications hereunder shall be deemed to have been given when made in writing and either (a) delivered in person, (b) delivered to an agent, such as an overnight or similar delivery service, or (c) deposited in the United States mail, postage prepaid, certified or registered, addressed as follows:

TO OFFEROR:
TBD

TO CITY OF BRISTOL VIRGINIA:
City of Bristol Virginia
Purchasing Department
Attn: Emily Compton
300 Lee Street
Bristol, VA 24201

Notice is deemed to have been received: (i) on the date of delivery if delivered in person; (ii) on the first business day after the date of delivery if sent by same day or overnight courier service; or (iii) on the third business day after the date of mailing, if sent by certified or registered United States Mail, return receipt requested, postage and charges

prepaid.

Z. Counterparts

This Contract and any amendments or renewals hereto may be executed in a number of counterparts, and each counterpart signature, when taken with the other counterpart signatures, is treated as if executed upon one original of this Contract or any amendment or renewal. A signature by any party to this Contract provided by facsimile or electronic mail is binding upon that party as if it were the original.

AA. Force Majeure

A party is not liable for failure to perform the party's obligations if such failure is as a result of Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, strikes at national level or industrial disputes at a national level, or strike or industrial disputes by labor not employed by the affected party, its subcontractors or its suppliers and which affect an essential portion of the contracted for works but excluding any industrial dispute which is specific to the performance of the works or this contract, interruption or failure of electricity or telephone service.

If a party asserts Force Majeure as an excuse for failure to perform the party's obligation, that party must immediately notify the other party giving full particulars of the event of force majeure and the reasons for the event of force majeure preventing that party from, or delaying that party in performing its obligations under this contract that party must use its reasonable efforts to mitigate the effect of the event of force majeure upon its or their performance of the contract and to fulfill its or their obligations under the contract.

An event of force majeure does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured prior to the occurrence of that event.

The Offeror has no entitlement and City has no liability for: (1) any costs, losses, expenses, damages or the payment of any part of the contract price during an event of force majeure; and (2) any delay costs in any way incurred by the Offeror due to an event of force majeure.

BB. Survival of Terms

Upon discharge of this Agreement, Sections (Notice, Hold Harmless, Warranties, Governing Law/Forum, Contractual Disputes) of these Terms and Conditions continue and survive in full force and effect.

CC. Non-Waiver

No waiver of any provision of this Agreement shall constitute a waiver of any other provision nor shall any waiver of this Agreement constitute a continuing waiver unless otherwise expressly provided.

DD. Workmanship and Inspection

All services provided under this Contract shall be performed in a skillful, workmanlike and professional manner. The Offeror and its employees shall be professional and courteous at all times. The City may, in writing, require the Offeror to remove any employee from work for reasonable cause, as determined by the City. Further, the City may, from time to time, make inspections of the services performed under this Agreement. Any inspection by the City does not relieve the Offeror of any responsibility in meeting the Agreement requirements. Offeror employees that have been removed at the direction of the City shall be replaced within seven calendar days after City notification.

EE. Debarment Status

By participating in this procurement, the vendor certifies that they are not currently debarred by the Commonwealth of Virginia or Federal Government from submitting a response for the type of goods and/or services covered by this solicitation. Vendor further certifies that they are not debarred from filling any order or accepting any resulting order, or that they are an agent of any person or entity that is currently debarred by the Commonwealth of Virginia or Federal Government. If a vendor is created or used for the purpose of circumventing a debarment decision against another vendor, the nondebarred vendor will be debarred for the same time period as the debarred vendor.

FF. Supremacy Clause

Notwithstanding any provision in the bidder's/proposer's response to the contrary, the bidder/proposer agrees that the terms and conditions contained in the City of Bristol, Virginia's Invitation to Bid or Request for Proposal prevail over contrary terms and conditions contained in the bidder's/proposer's response.

GG. Equal Employment Opportunity

The offeror hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment

advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The offeror further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the offeror so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The offeror agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The offeror further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the offeror agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the offeror under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such offeror; and refer the case to the Department of Justice for appropriate legal proceedings.

HH. Antitrust

By entering into a contract, the contractor conveys, sells, assigns, and transfers to the City of Bristol Virginia all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or

acquired by the City of Bristol Virginia under said contract.

II. Liquidated Damages

If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor, as Step One Liquidated Damages and not as a penalty, the following per diem amount commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed Substantial Completion of the Work:

One Thousand Dollars (\$1,000.00) per consecutive calendar day for up to 15 Calendar Days beyond expiration of the Contract Times; then,

Two Thousand Dollars (\$2,000.00) per consecutive calendar day after 15 Calendar Days beyond expiration of the Contract Times

If the Contractor fails to achieve Final Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor, as Step Two Liquidated Damages and not as a penalty, the following per diem amount commencing upon the first day following the actual date of Substantial Completion and continuing until the actual date of Final Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed Final Completion of the Work:

One Thousand Dollars (\$1,000.00) per consecutive calendar day for up to 15 Calendar Days beyond expiration of the Contract Times; then,

Two Thousand Dollars (\$2,000.00) per consecutive calendar day after 15 Calendar Days beyond expiration of the Contract Times

The Owner may deduct liquidated damages described above from any unpaid amounts then or thereafter due the Contractor under this Agreement. Should the amount of any liquidated damages exceed the amount due or to become due to the Contractor, then the Contractor and his sureties shall be liable for and shall pay to the Owner the amount of any such excess.

JJ. Good Housekeeping

In accordance with the Clean Water Act, established by the Environmental Protection Agency (EPA) and enforced by the Virginia Department of Environmental Quality (DEQ), the City of Bristol Virginia is required to implement and enforce written procedures as part of the Municipal Separate Storm Sewer System (MS4) permit program requirements to prevent, to the maximum extent practicable, potential pollutants that will lead to a point discharge at a natural drainage way. The City of Bristol Virginia's written procedures are provided in the Good Housekeeping/Pollution Prevention (GH/PP) manual provided to the Contractor. The Contractor shall employ good housekeeping practices outlined in the GH/PP manual and as directed in response to City inspection reports on all City properties and immediately remediate all spills containing potential

pollutants as directed in the manual. If, through an audit or inspection, the EPA or DEQ renders fines to the City on account of poor practices determined to be the fault of Contractor, the City reserves the right to collect compensation from the Contractor. Contractors applying pesticides and herbicides shall provide evidence of appropriate certification in accordance with Virginia Law.

By signing the Contract, the Contractor acknowledges receipt of the GH/PP manual and certifies Contractor's understanding of its roles, responsibilities and liabilities associated with the City's MS4 Program. If the Contractor has any questions during the term of this contract concerning the Good Housekeeping and Pollution Prevention Manual, the Contractor may contact the Landfill Environmental & Safety Compliance Officer.

KK. Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

1. All contracts awarded in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations, 29 CFR Part 5. Each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. No laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
2. Contracts in excess of \$150,000 must contain a provision requiring compliance with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Contract Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency.
3. A contract award will not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180.
4. Contractors that apply or bid for an award exceeding \$100,000 must file the required certification per the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). The contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award will be disclosed.
5. As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cements, and other manufactured products). The requirements of this section

must be included in all subawards including all contracts and purchase orders for work or products under this award. For purposes of this section:

- a. “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 - b. “Manufactured products” means items and construction materials composed in whole or in part of nonferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.
6. Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximized energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

ATTACHMENT A

Sample Contract

(to be completed later)

CONTRACT FOR

Contract Number:

This contract entered into this ___ day of _____ 2023, by _____ hereinafter called the "Contractor" and the City of Bristol Virginia, hereinafter called the "City".

WITNESSETH that the Contractor and the City, in consideration of mutual covenants, promises and agreements herein contained, agree as follows:

SCOPE OF SERVICES: The Contractor shall provide the services to the City as set forth in the Invitation for Bid attached hereto.

CONTRACT PERIOD: The contract period is from _____.

COMPENSATION AND METHOD OF PAYMENT: The Contractor shall be paid in accordance with the Contract Documents in the amount of _____, subject to the Contract Document, Section 01 22 00 Measurement and Payment and Section 00 41 13 Bid Form. There shall be no addition(s) or deletion(s) to the Contract without the prior written approval of a Change Order issued by the City.

CONTRACT DOCUMENTS: The Contract Documents shall consist of the contract, Invitation for Bid and all attachments to the Invitation for Bid.

CONTRACTOR:

CITY OF BRISTOL VIRGINIA:

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

END OF SECTION 00 70 00

APPENDIX A

Contractor/ Consultant/Supplier Agreement: U.S. DOT 1050.2A -- Appendix A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX E

Contractor/ Consultant/Supplier Agreements: U.S. DOT 1050.2A -- Appendix E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Nondiscrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*)

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.1 PROJECT DESCRIPTION

- A. Scope: The project work to be performed by the CONTRACTOR consists of furnishing all labor, materials, equipment, tools, transportation, services, incidentals, and performing all work necessary to complete the project, in place and ready for service in accordance with the plans and specifications prepared for the Landfill Liquids Treatment System. The Work herein is for leachate pre-treatment process equipment supply and installation work to support the leachate air stripper pre-treatment plant for the purpose of volatile organic compound (e.g., benzene and ethylbenzene) reduction. Although there are multiple components that are described in the Specifications and shown on the Drawing, the entire pre-treatment plant, including its sub-systems, controls and complimentary equipment, will need to act in unison seamlessly for the success of the overall system to perform to meet the projected pre-treated leachate effluent concentration standards given below.

The major items of Work include, but are not limited to, the supply and installation and/or performance of the following, to be supplied, completed and operational by June 30, 2023:

1. Mobilization/Demobilization: Transportation of equipment and materials
2. Project Management and Coordination: To include, but not limited to scheduling, budget control, project meetings, record keeping, temporary office facilities (if needed), surveying, preparation of as-built drawings and organize storage areas throughout the Work (Note: Permits will be prepared by the Engineer and City of Bristol, with cooperation provided by the Contractor)
3. Utility Marking: be aware of and, as needed, locate and mark private and public utilities
4. Site Preparation:
 - a. The existing site includes a large paved parking area and two existing aboveground accessible liquids supply and discharge piping access points, which should not require excavation or site preparation. If based on the Contractor's review of the existing facilities, site preparation and access improvements, are needed then that site work that is identified by the Contractor, and approved by Owner, to facilitate access to, or complete, the Work shall be completed by the Contractor as part of the overall installation Work
 - b. Stripping and stockpiling topsoil and any over-excavation materials, if that Work is required, based on Contractor's review of the existing facilities
5. Erosion Controls (if soil disturbance is necessary, which is not projected by the Engineer as being necessary):
 - a. Installation of initial erosion control measures, if necessary
 - b. Installation of additional erosion control measures required to ensure

- interim conditions created by the Contractor's sequence of work will comply with limiting erosion from occurring at the site
- c. Maintenance of all erosion controls throughout construction and until vegetation is established
 - d. Removal of erosion controls once restoration is completed and vegetation has been established
6. Existing Utility Protection and Tie-in with the City of Bristol providing the electric power supply tie-in
 7. Raw Leachate and Pre-Treated Leachate Tie-Ins and Pipe Extension Supply/Installation:
 - a. Location and exposing (e.g., partial removal of pipe insulation) of existing raw leachate piping at locations where pipe tie-in and related work will be conducted (588 and Gradient Control wet well and existing dry well location)
 - b. Modify existing 588 and Gradient Control pumps discharge pipe at the existing elbow located downstream of the pump discharges and replace with a tee connection and two isolation valves
 - c. Set proposed 4-inch to 6-inch diameter aboveground piping or hoses from tee connection and isolation valve to influent frac tank header location
 - d. Prepare pipe or hose header system to connect the 4-inch to 6-inch diameter aboveground piping from the 588 and Gradient Control wet well to the top openings of all four influent frac tanks.
 8. Raw Leachate and Pre-Treated Leachate Storage Tanks Installation and Piping Supply/Installation:
 - a. Contractor shall install a total of six frac tanks (tanks are supplied by Others) placed on existing hardscaped parking lot and piped in the configurations shown in the drawings:
 - i. Four parallel configured frac tanks for influent equalization prior to leachate pre-treatment with 4-inch to 6-inch influent piping or hoses and four valves supplying the 588 leachate and Gradient Control liquids to the four frac tanks in addition to a separate common discharge header to the air stripper supply pump and a common 4-inch frac tank level equalization header connecting all four frac tanks
 - ii. Two parallel configured frac tanks for effluent equalization prior to discharge to dry well location with 4-inch to 6-inch air stripper effluent piping or hoses and two valves supplying the treated 588 leachate and Gradient Control liquids from the air stripper to each of the two frac tanks in addition to a separate common discharge header to the effluent pump and a common 4-inch frac tank level equalization header to both frac tanks
 - b. New aboveground influent equalization tank supply header piping to be 4-inch to 6-inch diameter piping or hoses with reducers (if needed, 6-inch to 4-inch) to fit the 4-inch diameter, flanged fitting at the frac tanks for top-entry. Supply header to allow common connection of leachate being pumped into the four parallel configured influent equalization tanks from the 588 and Gradient Control wet well pumps.
 - c. Appropriately sized 4-inch to 6-inch diameter piping or hoses to new Air Stripper supply pump suction header piping to allow for leachate to be pumped out of the four parallel influent equalization tanks and

- into the air stripper. Frac tank inlet and outlet connections are 4-inch diameter, flanged fittings that would require reducers to accommodate 6-inch diameter header, if 4-inch is not used.
- d. Appropriately sized 4-inch to 6-inch diameter piping or hoses for new treated leachate air stripper discharge duplex pumps will pump liquids from the new air stripper bottom pumping chamber to the top entry into the two parallel configured effluent equalization frac tanks. Piping to effluent frac tanks require reducers (6-inch to 4-inch) to fit the 4-inch diameter, flanged fitting at the frac tanks for top-entry, if 4-inch is not used.
 - e. Appropriately sized 4-inch to 6-inch diameter (with 6-inch to 4-inch reducer attachment for outlet) discharge piping from the two effluent equalization frac tanks to suction of a pump skid.
 - i. Appropriately sized 4-inch to 6-inch diameter pipe or hoses (with 6-inch to 4-inch reducer attachment for quick connection at dry well, if 4-inch is not used) to the suction of a pump skid to existing 4-inch wye, quick connection at the existing dry well discharge pipe vault.
 - f. Valves, instruments and controls, as described in Part 1.3.
9. VOC/Benzene Treatment System (Air stripper with ≥ 500 GPM flow capacity) :
- a. Air Stripper Feed Pumps (Contractor to connect frac tank header to the suction of these pumps)
 - b. Air Stripper Treatment System (VOC/Benzene treatment unit)
 - c. Blowers (for air supply to air stripper)
 - d. Air Stripper Sump Discharge Pumps (Contractor to connect discharge pipe from these pumps to the Contractor provided discharge piping)
 - e. Valves, instruments and controls
 - f. e
10. Site Restoration (after initial construction and after temporary treatment system is removed from the site, after rental term is over):
- a. Restore all paved areas to the preconstruction condition or better.
 - b. Restore all disturbed grassed areas using topsoil, fertilizer, seed, and mulch.

1.2 BACKGROUND INFORMATION

A. BACKGROUND: The project work to be performed by the CONTRACTOR

1. The local regulatory agency limit for the targeted constituents in leachate discharged from the site (benzene and ethylbenzene) are **0.070 milligrams per liter (mg/L)** for benzene (instantaneous measurement) and **0.030 mg/L AND 0.30 pounds per day (ppd)** for ethylbenzene (average daily loading measurement). As such, the treatment system must provide appropriate treatment to reduce concentrations below these thresholds. These concentrations will be measured at the BVU Discharge Sample Location identified in **Attachment 1** using Analytical Method EPA 8260D and flow measurements provided by the City of Bristol and/or BVU in order to demonstrate that the treatment system achieves the desired reduction of these constituents in wastewater.
2. Based on two composite samples, the current concentrations of constituents in leachate are provided in **Attachment 2**.

3. Additional concentration information is provided in **Attachment 3**, from historical analytical results for untreated landfill liquids discharged to the local POTW. The assumed raw leachate concentrations are based on the available limited analytical data and are summarized as follows:

Leachate Constituents	Minimum (mg/L)	Maximum (mg/L)	Assumed Average (mg/L)	BVUA Permit Limit (mg/L)
Acetone	0.62	3.3	1.33	N/A
Benzene	0.16	2.15	1.1	0.070
Chlorobenzene	<0.002	0.011	0.006	2.35
Ethylbenzene	0.03	0.28	0.12	1.59
Toluene	0.01	0.13	0.10	1.35
Xylenes	0.027	0.32	0.12	N/A
Arsenic	0.16	0.44	0.22	0.5
Chromium	0.02	0.16	0.1	16.8
Selenium	<0.005	0.011	0.008	1.15
Ammonia	103	667	365	N/A
Phenols	<0.04	3.14	1.02	7.5
Biochemical Oxygen Demand (BOD)	177	2,860	1,512	N/A
Chemical Oxygen Demand (COD)	1,570	5,640	3,476	N/A
Chloride	1,240	1,700	1,523	N/A
Calcium	80	150	107	N/A
Magnesium	58	86	68	N/A
Total Dissolved Solids	3,710	8,100	5,790	N/A
Total Suspended Solids	14	80	51	N/A
Oil and Grease	4	25	11.8	N/A

4. The proposed leachate equalization capacity will consist of four (4) 18,000-gallon rented transportable storage tanks and effluent storage capacity will consist of two (2) 18,000-gallon rented storage tanks (all six of these storage tanks to be provided by others) that will be located adjacent to the proposed treatment system footprint.
5. The current leachate flow rate varies with the equalized flow rates assumed to extend up to 500 gallons per minute (GPM) at the BVU Discharge Sample Location.
 - a. The maximum, minimum, and average leachate flows from different City of Bristol leachate pump station locations are provided below, with graphs of the BVU flow meter output provided as **Attachment 4** (Note: The accuracy of the various sources of flow information is not known, so we are using the City of Bristol flow rate information, as tabulated below):

Source of Flow	Min Flow Rate (GPD)	Max Flow Rate (GPD)	Average Flow Rate (GPD)
588 Gradient Ctrl	3,090	1,080,000	147,874
588 Leachate	4,800	888,000	210,227
TOTALS	7,890 (5.5 GPM)	1,968,000 (1,367 GPM)	358,101 (249 GPM)

The major items of Work include, but are not limited to, the supply and installation and/or performance of:

1. Construction mobilization and demobilization including the air stripper, pump skid, pipes, valving, and optional items necessary for performance of the air stripper and pump skid. Frac tanks are scheduled to be on-site prior to mobilization.
2. Coordinating with ENGINEER.
3. Installing pipe connections to existing piping, modification of existing infrastructure (plated covers and pipe boots).
4. Installation of piping and header construction to and from influent and effluent frac tanks.
5. Installation of piping for air stripper, pump skid, and other optional items necessary for performance of the air stripper and pump skid.
6. Installation of controls in frac tank, pumps, and other systems requiring controls.
7. Restoration of treatment equipment location surface during demobilization.

1.3 WORK SEQUENCE

- A. The CONTRACTOR shall sequence construction work to accommodate continued installation of remedial measures by other contractors and/or OWNER personnel. The CONTRACTOR shall sequence construction work to accommodate continued removal of 588 landfill liquid operations at the wet well by OWNER personnel and third-party operation and monitoring (O&M) personnel.
- B. The CONTRACTOR shall sequence construction work so that transport of 588 landfill liquids to the BVUA sanitary system is continuous and uninterrupted except during existing piping construction work, to the extent practicable. Durations of 588 landfill liquids wet well pump system shutdowns shall be limited to no more than 8 hours within any 24-hour period.

1.4 PROCESS EQUIPMENT AND CONTROLS

- A. The influent equalization frac tanks' level (i.e., low level, high level and high-high level alarm) will control the Landfill 588 leachate and gradient control pumps to supply liquid to the tanks when the equalization frac tanks are at low level condition and shall turn off

when the equalization frac tanks are at high level condition. If the frac tank level reaches the high-high tank level condition (and alarm), to prevent tank overflow, the Landfill 588 leachate and gradient control pumps will have a fail-safe turn off condition.

- B. The influent equalization frac tank level will also control the operation of the air stripper / pump skid system such that when the equalization frac tank level is low the air stripper supply pump will turn off and the pump will turn back on when the equalization frac tank level is not in a low-level condition, with a time delay for start-up and will operate when the frac tank level is high.
- C. The liquid level in the air stripper sump (i.e., low level, high level and high-high level alarm) will control the operation of the air stripper discharge pump so that when the air stripper sump is at a low level condition then the air stripper discharge pump will not operate and the pump will operate when the air stripper is not in a low level condition, with a time delay for start-up and pump will operate when the air stripper sump level is high.
- D. The effluent equalization frac tank level will control the air stripper sump discharge pumps to supply liquid to the effluent tanks when the equalization frac tanks are at low level condition and shall turn off when the equalization frac tanks are at high level condition. If the frac tank level reaches the high-high tank level condition (and alarm), to prevent tank overflow, the air stripper sump discharge pump will have a fail-safe turn off condition.
- E. The effluent equalization frac tank level will also control the operation of the effluent equalization frac tank discharge pump such that when the effluent equalization frac tank level is low the pump will turn off and the effluent equalization frac tank discharge pump will turn back on when the equalization frac tank level is not in a low level condition, with a time delay for start-up and will operate when the frac tank level is high.
- F. The air stripper treatment system operator will be able to manually open/close isolation valves at the Landfill 588 leachate and gradient control piping tee such that the leachate and gradient control pump flow can either be: 1) Directed to the new treatment system, by opening the air stripper treatment system supply isolation valve and closing the existing BVUA discharge pipe valve, or 2) Directed to the existing BVUA discharge pipe by opening the existing BVUA discharge pipe valve and closing the air stripper treatment system supply isolation valve.
- G. There is assumed to be other suitable air stripper related instrumentation and controls, as well as a flow meter, with all controls connected to a CONTRACTOR supplied PLC, with telemetry such that the system can be monitored and have some control functions from remote as well as robust data and alarm condition storage capability. The PLC and other air stripper related instrumentation and controls shall be described for evaluation by the Engineer and the City of Bristol.
- H. There is an optional line item for providing a pump and level indication/controls (i.e., low level, high level and high-high level alarm) associated with a total equipment containment area to capture, collect and pump spills and overflow from any of the frac tanks or other equipment (as well as collected precipitation) and direct the pumped liquid back into the leachate and gradient control wet well. The pump would be controlled based on level in the total equipment containment area lowest elevation point sump and would turn on when the liquid level is high and would turn off when the level is low. If the high-high level

condition (and alarm) to prevent the containment area from overflowing the 588 leachate and gradient control pumps shall be turned off and an alarm transmitted to the operator.

1.5 CONTRACTOR USE OF PREMISES

- A. Limit use of premises for work, storage, and access to allow work by other contractors, owner occupancy, and normal landfill operations.
- B. Facility Hours: The CONTRACTOR shall have equipment and material delivery access to and from the site under the site's normal operating hours from 7:00 A.M. to 4:00 P.M. Longer work hours shall be coordinated through the City of Bristol, as needed.
- C. Access: No later than 5 days after notice to proceed, the CONTRACTOR shall arrange with the OWNER a sequence of procedures, means of access, space for storage of materials and equipment, and use of approaches and roadways. CONTRACTOR's use of the premises shall be confined to the areas approved by the OWNER.
- E. CONTRACTOR shall not dispose of waste oils, fuels, cleaners or other potentially hazardous substances on site.

1.6 OWNER OCCUPANCY AND LANDFILL OPERATIONS

The OWNER will occupy the site and continue to conduct landfill remedial measures and pre-closure construction activities. The CONTRACTOR shall cooperate with the OWNER during construction operations to minimize conflicts and facilitate OWNER usage. The CONTRACTOR shall cooperate with the OWNER during construction operations to minimize duration of wet well shutdown and facilitate continued wet well operations. Durations of wet well shutdowns shall be limited to no more than 8 hours within any 24-hour period. The CONTRACTOR shall perform the Work so as not to interfere with the OWNER's landfill remedial measures and pre-closure construction activities, LFG collection and control, maintenance, odor mitigation, environmental monitoring, and other OWNER activities at the site.

1.7 SITE CONDITIONS

- A. Existing Grades: The existing grades may vary from those indicated on the Plans.
- B. Existing Features: The Contract Documents require the CONTRACTOR to field verify the location of existing features.
- C. The CONTRACTOR shall enforce safety procedures to minimize hazards to workers, the public, and the environment.

1.8 SUPERINTENDENT

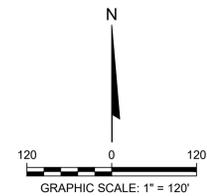
CONTRACTOR shall provide a single qualified full time English-speaking superintendent for the duration of the project. CONTRACTOR shall not change the superintendent without the OWNER's prior written permission. CONTRACTOR's proposal to change personnel must be made in writing and shall be justifiable to the OWNER, and must demonstrate that the proposed replacement possesses adequate qualifications to the satisfaction of the OWNER.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01 11 00

ATTACHMENT 1
Site Map



LEGEND

—<<— APPROXIMATE LOCATION OF LEACHATE CONVEYANCE PIPES

—>>— APPROXIMATE LOCATION OF STORM WATER DRAINAGE

REV.	DATE	DESCRIPTION

PROJECT NO.:	02218208.06
DESIGNED BY:	SJL/SC
DRAWN BY:	BWM
CHECKED BY:	
APPROVED BY:	

SCS ENGINEERS
 40 SHUMAN, SUITE 216, NAPERVILLE, IL 60563
 PHONE: (331) 806-4295

CLIENT

CITY OF BRISTOL VIRGINIA

SITE

**CITY OF BRISTOL VIRGINIA SOLID WASTE
 2655 VALLEY DR.
 BRISTOL, VIRGINIA**

EXISTING CONDITIONS

DATE: NOV. 2022

02

02 OF 13 SHEETS

ATTACHMENT 2

July and November 2022 Leachate Sample Results

July 2022 - Bristol Virginia Landfill (Benzene Treatment - Background Leachate Sampling Event)

Location ID			498 Leachate	498 Leachate	BVU Discharge*	BVU Discharge	BVU Discharge	LFG Liquids	LFG Liquids	LFG Liquids	GC Outfall	588 Leachate
Sample Type			Grab	Composite	Grab	Grab	Composite	Grab 7/19	Grab 7/21	Composite	Grab	Grab
Parameter	LOD	LOQ										
METALS (mg/L)												
Aluminum	0.002 - 0.2	0.005 - 0.5	0.0211	0.0319	0.184	0.299	0.241	1.94	1.01	1.21	0.164	0.132
Arsenic	0.0005 - 0.005	0.001 - 0.01	0.0246	0.0208	0.25	0.221	0.178	0.36	0.315	0.35	0.287	0.267
Barium	0.0008 - 0.01	0.01 - 0.05	0.303	0.273	0.925	0.351	0.443	0.515	0.514	0.62	1.08	0.944
Boron	0.05 - 0.5	0.05 - 0.5	1.39	1.33	6.51	8.41	5.8	16.5	17.2	17.2	6.9	6.76
Cadmium	0.0001	0.001	ND	ND	ND	0.0001 J	ND	0.0007 J	0.0003 J	0.0004 J	ND	ND
Calcium	0.3	5	88.6	78.4	150	80.5	92.6	147	146	160	162	153
Chromium	0.0004 - 0.004	0.001 - 0.01	0.002	0.0017	0.0878	0.169	0.105	0.404	0.361	0.402	0.0899	0.0973
Cobalt	0.0002	0.005	0.0043 J	0.0039 J	0.008	0.0136	0.0096	0.0278	0.0281	0.0279	0.009	0.0086
Copper	0.0003	0.001	0.0033	0.0035	0.0077	0.0056	0.0053	0.0155	0.0095	0.008	0.0345	0.0236
Iron	0.5	0.5	3.39	2.64	4.68	8.36	5.7	51.1	9.51	10.7	4.48	3.47
Magnesium	0.4	1	34.6	30.5	86.3	58.5	58.5	101	140	130	87.6	88.9
Manganese	0.015	0.05	0.195	0.152	0.441	0.411	0.365	1.15	0.67	0.837	0.427	0.444
Molybdenum	0.0002	0.005	0.0017 J	0.0018 J	0.0021 J	0.0066	0.0042 J	0.0176	0.0102	0.0113	0.0019 J	0.0032 J
Nickel	0.0003	0.001	0.0191	0.0179	0.0199	0.0615	0.0363	0.121	0.141	0.158	0.0209	0.0194
Potassium	20	20	79.7	72.5	281	385	273	740	784	786	293	298
Selenium	0.0008	0.001	ND	ND	0.0013	0.0009 J	0.0009 J	0.0018	0.0015	0.0019	0.0013	0.0013
Silicon	0.05 - 0.5	0.1 - 1	6.51	6.11	16.3	19.7	15.8	38	39	43.3	18.2	17.7
Sodium	20	20	232	207	826	1780	943	3420	3730	3650	861	850
Strontium	0.005	0.05	0.398	0.377	3.15	0.819	1.37	1.28	1.55	1.66	3.98	3.33
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
N-Nitrosodimethylamine	0.0028	0.0093	ND	ND	---	---	---	---	---	---	---	---
	0.0093	0.0093	---	---	---	---	---	---	---	---	---	ND
	0.0467	0.0467	---	---	ND	ND	1.72	---	---	---	---	---
	0.0485	0.0485	---	---	---	---	---	---	---	---	ND	---
	0.117	0.117	---	---	---	---	---	---	ND	ND	---	---
	0.121	0.121	---	---	---	---	---	ND	---	---	---	---
p-Cresol	0.0009	0.008	ND	ND	---	---	---	---	---	---	---	---
	0.0093	0.0093	---	---	---	---	---	---	---	---	---	ND
	0.0467	0.0467	---	---	0.201	0.899	0.39	---	---	---	---	---
	0.0485	0.0485	---	---	---	---	---	---	---	---	0.0911	---
	0.117	0.117	---	---	---	---	---	---	ND	1.36	---	---
0.121	0.121	---	---	---	---	---	ND	---	---	---	---	
Phenol	0.0023	0.0093	ND	ND	---	---	---	---	---	---	---	---
	0.0093	0.0093	---	---	---	---	---	---	---	---	---	ND
	0.0467	0.0467	---	---	0.0475	ND	1.61	---	---	---	---	---
	0.0485	0.0485	---	---	---	---	---	---	---	---	ND	---
	0.117	0.117	---	---	---	---	---	---	5.38	3.4	---	---
0.121	0.121	---	---	---	---	---	7.58	---	---	---	---	

July 2022 - Bristol Virginia Landfill (Benzene Treatment - Background Leachate Sampling Event)

Location ID			498 Leachate	498 Leachate	BVU Discharge*	BVU Discharge	BVU Discharge	LFG Liquids	LFG Liquids	LFG Liquids	GC Outfall	588 Leachate
Sample Type			Grab	Composite	Grab	Grab	Composite	Grab 7/19	Grab 7/21	Composite	Grab	Grab
Parameter	LOD	LOQ										
VOLATILE ORGANIC COMPOUNDS (mg/L)												
1,4-Dichlorobenzene	0.002	0.005	0.003 J	0.0026 J	0.0208	---	---	---	---	---	0.0346	0.032
	0.004	0.01	---	---	---	ND	ND	---	---	---	---	---
	0.008	0.02	---	---	---	---	---	ND	ND	ND	---	---
Benzene	0.002	0.005	ND	ND	1.38	---	---	---	---	---	---	---
	0.004	0.01	---	---	---	0.142	0.297	---	---	---	---	1.53
	0.008	0.02	---	---	---	---	---	0.0418	0.068	0.0634	2.18	---
Chlorobenzene	0.002	0.005	ND	ND	0.0094	---	---	---	---	---	0.0158	0.0135
	0.004	0.01	---	---	---	ND	ND	---	---	---	---	---
	0.008	0.02	---	---	---	---	---	ND	ND	ND	---	---
Chloroform	0.0025	0.0025	ND	ND	ND	---	---	---	---	---	ND	0.0048
	0.005	0.005	---	---	---	ND	ND	---	---	---	---	---
	0.01	0.01	---	---	---	---	---	ND	ND	ND	---	---
Ethylbenzene	0.002	0.005	ND	ND	0.12	---	---	---	---	---	0.198	0.183
	0.004	0.01	---	---	---	0.0114	0.0219	---	---	---	---	---
	0.008	0.02	---	---	---	---	---	ND	ND	ND	---	---
m,p-Xylenes	0.003	0.01	ND	ND	0.0664	---	---	---	---	---	0.112	0.1
	0.006	0.02	---	---	---	0.0099 J	0.0126 J	---	---	---	---	---
	0.012	0.04	---	---	---	---	---	ND	ND	ND	---	---
Methylene chloride	0.02	0.02	ND	0.0276 B	ND	---	---	---	---	---	ND	ND
	0.04	0.04	---	---	---	ND	ND	---	---	---	---	---
	0.08	0.08	---	---	---	---	---	ND	ND	ND	---	---
Naphthalene	0.0032	0.008	ND	ND	---	---	---	---	---	---	---	---
	0.0093	0.0093	---	---	---	---	---	---	---	---	---	0.0189
	0.0467	0.0467	---	---	ND	ND	ND	---	---	---	---	---
	0.0485	0.0485	---	---	---	---	---	---	---	---	ND	---
	0.117	0.117	---	---	---	---	---	---	ND	ND	---	---
0.121	0.121	---	---	---	---	---	ND	---	---	---	---	
o-Xylene	0.002	0.005	ND	ND	0.0406	---	---	---	---	---	0.069	0.0582
	0.004	0.01	---	---	---	0.0075 J	0.0087 J	---	---	---	---	---
	0.008	0.02	---	---	---	---	---	ND	ND	ND	---	---
Toluene	0.0025	0.005	ND	ND	0.0634	---	---	---	---	---	0.0968	0.0874
	0.005	0.01	---	---	---	0.0077 J	0.0143	---	---	---	---	---
	0.01	0.02	---	---	---	---	---	ND	0.0102 J	ND	---	---
Xylenes	0.005	0.015	ND	ND	0.107	---	---	---	---	---	0.181	0.158
	0.01	0.03	---	---	---	0.0174 J	0.0213 J	---	---	---	---	---
	0.02	0.06	---	---	---	---	---	ND	ND	ND	---	---

July 2022 - Bristol Virginia Landfill (Benzene Treatment - Background Leachate Sampling Event)

Location ID			498 Leachate	498 Leachate	BVU Discharge*	BVU Discharge	BVU Discharge	LFG Liquids	LFG Liquids	LFG Liquids	GC Outfall	588 Leachate
Sample Type			Grab	Composite	Grab	Grab	Composite	Grab 7/19	Grab 7/21	Composite	Grab	Grab
Parameter	LOD	LOQ										
WATER QUALITY PARAMETERS (mg/L UNLESS OTHERWISE NOTED)												
Ammonia	2 - 30	2 - 100	37.5	31.2	390	667	303	1190	1330	1450	394	406
Bicarbonate	5	5	686	617	1840	3080	1920	4230	4470	4390	3020	1960
Biological Oxygen Demand	0.2	2	29.2	33.3	177	2860	1500	3840	6270	6120	158	2170
Carbonate Alkalinity	5	5	ND	ND	ND	110	ND	530	290	600	ND	ND
Chemical Oxygen Demand	10 - 200	10 - 200	167	117	1570	5640	3220	13000	10900	10500	980	1760
Chemical Oxygen Demand, Soluble	10 - 250	10 - 250	150	124	1490	5580	3000	10500	10600	11400	1250	1580
Chloride	5 - 50	10 - 100	206	192	1700	1630	1240	3120	3830	4020	1370	1540
Fluoride	0.1	0.1	0.462	0.433	2.4	ND	ND	ND	ND	ND	0.836	ND
Nitrate+Nitrite	0.1	0.1	1.4	1.6	ND	ND	ND	0.23	ND	ND	ND	ND
Oil and Grease	2.5	5	ND	ND	6.4	25	4 J	12	49	20	ND	3.1 J
Oil and Grease - Calc	7.5	10	ND	ND	ND	ND	ND	12	32	11	ND	ND
Orthophosphate	0.02	0.02	0.02	ND	---	---	---	---	---	---	---	---
	0.1 - 0.2	0.1 - 0.2	---	---	---	---	---	---	---	---	0.67	2.55
	0.5	0.5	---	---	ND	1	ND	5.65	5.48	8.22	---	---
pH (s.u.)	2	---	7.79	7.88	7.45	8.21	8.02	8.72	8.38	8.59	7.21	7.61
Phosphate	0.0613 - 1.53	0.0613 - 1.53	0.585	0.604	1.92	5.58	3.91	15.7	27.5	3.51	2.76	3.03
Phosphorus	0.02 - 0.5	0.02 - 0.5	0.191	0.197	0.625	1.82	1.28	5.12	8.98	1.14	0.9	0.99
Specific Conductivity (uS/cm)	0	---	1884	1791	7473	8151	8024	18335	19809	20629	8123	287.6
Sulfate	0.5 - 50	1 - 100	58	36.4	345	442	---	874	13	3.5	---	10.2
	50	50	---	---	---	---	ND	---	---	---	74.6	---
Total Kjeldahl Nitrogen	2 - 20	5 - 50	32.5	39.3	434	806	538	1600	1570	1590	498	455
Total Dissolved Solids	10	10	1130	1240	3710	8100	4660	14400	15200	15700	4090	4000
Total Petroleum Hydrocarbons	5	5	ND	ND	ND	17.6	ND	ND	17	9	ND	ND
Total Suspended Solids	1	1	6.8	15	14	80	72	160	150	87	7.6	2.5

--- = not applicable/available

B = Qualifier used if reported concentration is five times less than the concentration detected in the laboratory blank. The concentration is considered to be estimated and not validated.

J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is considered to be estimated and not validated.

GC Outfall = 588 Gradient Control Outfall

LFG = Landfill Gas

LOD = laboratory's Limit of Detection

LOQ = laboratory's Limit of Quantitation

498 Leachate = Leachate Discharge associated with Bristol Landfill Permit # 498

588 Leachate = Leachate Discharge associated with Bristol Landfill Permit # 588

*BVU Discharge - Grab Sample collected with pumps on (498 Leachate, 588 Gradient Control, 588 Leachate, LFG Liquids), to mimic collection of BVU compliance sample.

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

s.u. = standard units

Composite = 24 hour sample

uS/cm = microSiemens per centimeter

November 2022 - Bristol Virginia Landfill (Benzene Treatment - Background Leachate Sampling Event #2)

Location ID			498 Leachate	498 Leachate	BVU Discharge*	BVU Discharge	BVU Discharge	LFG Liquids	LFG Liquids	LFG Liquids	GC Outfall	588 Leachate
Sample Type			Grab	Composite	Grab	Grab	Composite	Grab 11/14	Grab 11/17	Composite	Grab	Grab
Parameter	LOD	LOQ										
METALS (mg/L)												
Arsenic	0.0005 - 0.02	0.001 - 0.04	0.0118	0.0144	0.168	0.245	0.193	0.412	0.419	0.372	0.256	0.156
Arsenic, Dissolved	0.0005 - 0.02	0.001 - 0.04	0.0107	0.0137	0.155	0.241	0.108	0.354	0.301	0.339	0.23	0.151
Calcium	0.003 - 8	0.05 - 10	103	101	117	111	265	1110	2140	1230	122	105
Chromium	0.004 - 0.016	0.001 - 0.02	0.003	0.0026	0.0872	0.104	0.124	0.392	0.513	0.363	0.107	0.0779
Chromium, Dissolved	0.004 - 0.016	0.001 - 0.02	0.0023	0.0024	0.0875	0.101	0.0858	0.325	0.429	0.339	0.103	0.0802
Iron	0.02 - 50	0.02 - 50	4.32	2.94	3.25	3.85	90.8	509	806	416	3.68	4.71
Magnesium	0.004 - 0.2	0.01 - 0.2	33.3	34.5	61.5	91.3	66	687	494	295	95.3	64.2
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
p-Cresol	0.0009	0.008	ND	ND	---	---	---	---	---	---	---	---
	0.0187	0.15	---	---	0.343	---	0.809	---	---	ND	---	---
	0.0374	0.299	---	---	---	---	---	---	ND	---	---	---
	0.0467	0.0467	---	---	---	0.549	---	---	---	---	---	0.378
	0.0485	0.0485	---	---	---	---	---	---	---	---	0.457	---
	0.0935	0.0935	---	---	---	---	---	ND	---	---	---	---
Phenol	0.0023	0.0093	ND	ND	---	---	---	---	---	---	---	---
	0.0467	0.0467	---	---	---	ND	---	---	---	---	---	ND
	0.0467	0.187	---	---	0.0774 J	---	0.54	---	---	ND	---	---
	0.0485	0.0485	---	---	---	---	---	---	---	---	ND	---
	0.0935	0.0935	---	---	---	---	---	ND	---	---	---	---
	0.0935	0.374	---	---	---	---	---	---	ND	---	---	---

November 2022 - Bristol Virginia Landfill (Benzene Treatment - Background Leachate Sampling Event #2)

Location ID			498 Leachate	498 Leachate	BVU Discharge*	BVU Discharge	BVU Discharge	LFG Liquids	LFG Liquids	LFG Liquids	GC Outfall	588 Leachate
Sample Type			Grab	Composite	Grab	Grab	Composite	Grab 11/14	Grab 11/17	Composite	Grab	Grab
Parameter	LOD	LOQ										
VOLATILE ORGANIC COMPOUNDS (mg/L)												
1,2-Dichloroethane	0.0035	0.005	ND	ND	ND	ND	ND	ND	---	---	ND	ND
	0.007	0.01	---	---	---	---	---	---	0.0142	ND	---	---
1,4-Dichlorobenzene	0.002	0.005	ND	ND	0.0103	0.0116	0.004 J	0.0073	---	---	0.0191	0.0136
	0.004	0.01	---	---	---	---	---	---	0.0249	0.015	---	---
Benzene	0.002	0.005	ND	ND	0.55	0.578	0.161	0.0735	---	---	0.824	0.304
	0.004	0.01	---	---	---	---	---	---	0.137	0.103	---	---
Chlorobenzene	0.002	0.005	ND	ND	0.0036 J	0.004 J	ND	ND	---	---	0.0055	0.0028 J
	0.004	0.01	---	---	---	---	---	---	ND	ND	---	---
Chloroform	0.0025	0.0025	---	---	0.0043	---	ND	---	---	---	---	---
	0.0025	0.005	ND	ND	---	0.0029 J	---	ND	---	---	0.003 J	0.0096
	0.005	0.005	---	---	---	---	---	---	ND	---	---	---
	0.005	0.01	---	---	---	---	---	---	---	ND	---	---
Ethylbenzene	0.002	0.005	ND	ND	0.0585	0.0601	0.0136	0.0128	---	---	0.093	0.0852
	0.004	0.01	---	---	---	---	---	---	0.0385	0.0225	---	---
m,p-Xylenes	0.003	0.01	ND	ND	0.0324	0.0355	0.0095 J	0.0182	---	---	0.0539	0.0444
	0.006	0.02	---	---	---	---	---	---	0.0402	0.0214	---	---
o-Xylene	0.002	0.005	ND	ND	0.0184	0.0194	0.0054	0.011	---	---	0.0305	0.0208
	0.004	0.01	---	---	---	---	---	---	0.025	0.0159	---	---
Toluene	0.0025	0.005	ND	ND	0.0266	0.0274	0.0079	0.0142	---	---	0.0382	0.0324
	0.005	0.01	---	---	---	---	---	---	0.024	0.0134	---	---
Xylenes	0.005	0.015	ND	ND	0.0507	0.055	0.015 J	0.0292	---	---	0.0844	0.0652
	0.01	0.03	---	---	---	---	---	---	0.0652	0.0373	---	---
WATER QUALITY PARAMETERS												
pH (s.u.)	2	---	8.03	8.32	7.22	7.37	7.44	5.93	5.75	5.85	7.26	8.03
Specific Conductivity (uS/cm)	0	---	2190	2230	6400	9250	6480	32010	26930	21360	9520	2190
PHENOLICS (mg/L)												
Phenolics, Total Recoverable	0.03	0.05	ND	ND	0.478	0.806	---	---	---	---	0.736	0.892
	0.3 - 0.75	0.5 - 1.25	---	---	---	---	3.14	42	31	19.6	---	---

--- = not applicable/available

mg/L = milligrams per liter

B = Qualifier used if reported concentration is five times less than the concentration detected in the laboratory blank. The concentration is considered to be estimated and not validated.

NTU = Nephelometric Turbidity Unit

J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is considered to be estimated and not validated.

s.u. = standard units

GC Outfall = 588 Gradient Control Outfall

Composite = 24 hour sample

LFG = Landfill Gas

uS/cm = microSiemens per centimeter

LOD = laboratory's Limit of Detection

LOQ = laboratory's Limit of Quantitation

498 Leachate = Leachate Discharge associated with Bristol Landfill Permit # 498

588 Leachate = Leachate Discharge associated with Bristol Landfill Permit # 588

*BVU Discharge - Grab Sample collected with pumps on (498 Leachate, 588 Gradient Control, 588 Leachate, LFG Liquids), to mimic collection of BVU compliance sample.

ATTACHMENT 3
Historic Sample Results

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
HERBICIDES (mg/L)				
2-(4-Chloro-2-methylphenoxy) propionic acid	January-2022	ND	---	2
	February-2022	ND	---	2
	March-2022	ND	---	0.2
	April-2022	ND	---	0.1
	May-2022	ND	0.66	1
	June-2022	ND	1.3	2
	July-2022	0.003	0.0003	0.002
	August-2022	ND	0.00032	0.002
	September-2022	0.0209	0.000323	0.002
	October-2022	0.0189	0.000323	0.002
	November-2022	ND	0.66	1
2,4-DP	January-2022	ND	---	0.04
	February-2022	ND	---	0.04
	March-2022	ND	---	0.004
	April-2022	ND	---	0.002
	May-2022	ND	0.01	0.02
	June-2022	ND	0.021	0.04
	July-2022	ND	0.0003	0.002
	August-2022	ND	0.00037	0.002
	September-2022	0.00134 J	0.000367	0.002
	October-2022	0.00168 J	0.000367	0.002
	November-2022	ND	0.0104	0.02

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
VOLATILE ORGANIC COMPOUNDS (mg/L)				
1,4-Dichlorobenzene BVU Permit Max (3.54 mg/L)	November-2021	0.0139	0.0017	0.005
	December-2021	0.0205	0.0033	0.01
	January-2022	ND	---	0.0125
	February-2022	0.0605	---	0.02
	March-2022	ND	---	0.0125
	April-2022	0.0282	---	0.0125
	May-2022	ND	0.0042	0.0125
	June-2022	0.0168	0.0017	0.005
	July-2022	0.0227	0.0033	0.01
	August-2022	0.0175	0.0017	0.005
	September-2022	0.0127	0.0017	0.005
	October-2022	0.0055	0.0017	0.005
	November-2022	0.0108	0.0017	0.005
2-Butanone BVU Permit Max (200 mg/L)	November-2021	0.364	0.0198	0.025
	December-2021	0.556	0.0396	0.05
	January-2022	1.86	---	0.0625
	February-2022	0.652	---	0.1
	March-2022	0.219	---	0.0625
	April-2022	0.455	---	0.0625
	May-2022	0.389	0.0495	0.0625
	June-2022	0.535	0.0198	0.025
	July-2022	0.351	0.0396	0.05
	August-2022	0.538	0.0198	0.025
	September-2022	0.614	0.0198	0.025
	October-2022	0.74	0.0198	0.025
	November-2022	0.329	0.0198	0.025
4-Methyl 2-pentanone BVU Surveillance Parameter	November-2021	0.0215 J	0.0136	0.025
	December-2021	0.0389 J	0.0271	0.05
	January-2022	ND	---	0.0625
	February-2022	0.0581 J	---	0.1
	March-2022	ND	---	0.0625
	April-2022	ND	---	0.0625
	May-2022	ND	0.0339	0.0625
	June-2022	0.0221 J	0.0136	0.025
	July-2022	ND	0.0271	0.05
	August-2022	0.0187 J	0.0136	0.025
	September-2022	0.017 J	0.0136	0.025
	October-2022	0.02 J	0.0136	0.025
	November-2022	0.0209 J	0.0136	0.025

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
Acetone BVU Surveillance Parameter	November-2021	0.721	0.0256	0.125
	December-2021	1.29	0.0511	0.25
	January-2022	3.29	---	0.312
	February-2022	1.17	---	0.5
	March-2022	0.616	---	0.312
	April-2022	1.1	---	0.312
	May-2022	0.964	0.0639	0.312
	June-2022	1.7	0.0256	0.125
	July-2022	1.03	0.0511	0.25
	August-2022	1.39	0.0256	0.125
	September-2022	1.52	0.0256	0.125
	October-2022	1.73	0.0256	0.125
	November-2022	0.672	0.0256	0.125
Benzene BVU Permit Max (0.07 mg/L)	May-2021	1.02	---	0.001
	November-2021	0.494	0.0017	0.005
	December-2021	1.3	0.0034	0.01
	January-2022	2.15	---	0.0125
	February-2022	1.76	---	0.02
	March-2022	1.2	---	0.0125
	April-2022	1.84	---	0.0125
	May-2022	1.22	0.0043	0.0125
	June-2022	0.952	0.0017	0.005
	July-2022	1.23	0.0034	0.01
	August-2022	0.939	0.0017	0.005
	September-2022	0.478	0.0017	0.005
	October-2022	0.158	0.0017	0.005
November-2022	0.512	0.0017	0.005	
Chlorobenzene BVU Permit Max (2.35 mg/L)	November-2021	0.0035 J	0.0014	0.005
	December-2021	0.0049 J	0.0028	0.01
	January-2022	ND	---	0.0125
	February-2022	0.0096 J	---	0.02
	March-2022	ND	---	0.0125
	April-2022	0.0109 J	---	0.0125
	May-2022	ND	0.0036	0.0125
	June-2022	0.0074	0.0014	0.005
	July-2022	0.0097 J	0.0028	0.01
	August-2022	0.0076	0.0014	0.005
	September-2022	0.0048 J	0.0014	0.005
	October-2022	0.002 J	0.0014	0.005
	November-2022	0.0033 J	0.0014	0.005

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
Chloroform BVU Permit Max (0.42 mg/L)	November-2021	0.0032 J	0.0022	0.005
	December-2021	ND	0.0043	0.01
	January-2022	ND	---	0.0125
	February-2022	ND	---	0.02
	March-2022	ND	---	0.0125
	April-2022	ND	---	0.0125
	May-2022	ND	0.0054	0.0125
	June-2022	0.0037 J	0.0022	0.005
	July-2022	0.0144	0.0043	0.01
	August-2022	0.005	0.0022	0.005
	September-2022	0.0058	0.0022	0.005
	October-2022	0.0064	0.0022	0.005
	November-2022	0.0036 J	0.0022	0.005
Ethylbenzene BVU Permit Max (1.59 mg/L)	November-2021	0.0722	0.0015	0.005
	December-2021	0.0986	0.003	0.01
	January-2022	0.206	---	0.0125
	February-2022	0.275	---	0.02
	March-2022	0.11	---	0.0125
	April-2022	0.158	---	0.0125
	May-2022	0.114	0.0038	0.0125
	June-2022	0.0961	0.0015	0.005
	July-2022	0.129	0.003	0.01
	August-2022	0.0904	0.0015	0.005
	September-2022	0.0536	0.0015	0.005
	October-2022	0.0334	0.0015	0.005
	November-2022	0.0586	0.0015	0.005
Methylene chloride BVU Permit Max (2.07 mg/L)	November-2021	ND	0.0098	0.025
	December-2021	ND	0.0195	0.05
	January-2022	ND	---	0.0625
	February-2022	ND	---	0.1
	March-2022	0.0251 J	---	0.0625
	April-2022	ND	---	0.0625
	May-2022	0.0267 J	0.0244	0.0625
	June-2022	ND	0.0098	0.025
	July-2022	0.0208 J	0.0195	0.05
	August-2022	ND	0.0098	0.025
	September-2022	ND	0.0098	0.025
	October-2022	ND	0.0098	0.025
	November-2022	0.0103 J	0.0098	0.025

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
Toluene BVU Permit Max (1.35 mg/L)	November-2021	0.0397	0.0024	0.005
	December-2021	0.0565	0.0048	0.01
	January-2022	0.128	---	0.0125
	February-2022	0.122	---	0.02
	March-2022	0.054	---	0.0125
	April-2022	0.0866	---	0.0125
	May-2022	0.0557	0.0061	0.0125
	June-2022	0.0537	0.0024	0.005
	July-2022	0.0619	0.0048	0.01
	August-2022	0.0408	0.0024	0.005
	September-2022	0.0229	0.0024	0.005
	October-2022	0.0123	0.0012	0.005
	November-2022	0.0266	0.0012	0.005
Xylenes BVU Surveillance Parameter	November-2021	0.1	0.0017	0.005
	December-2021	0.106	0.0034	0.01
	January-2022	0.21	---	0.0125
	February-2022	0.322	---	0.02
	March-2022	0.0918	---	0.0125
	April-2022	0.137	---	0.0125
	May-2022	0.107	0.0042	0.0125
	June-2022	0.087	0.0017	0.005
	July-2022	0.122	0.0034	0.01
	August-2022	0.0826	0.0017	0.005
	September-2022	0.0494	0.0017	0.005
	October-2022	0.0267	0.0017	0.005
	November-2022	0.0499	0.0017	0.005

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
METALS (mg/L)				
Arsenic BVU Permit Max (0.5 mg/L)	November-2021	0.168	0.0047	0.01
	December-2021	0.295	0.0047	0.01
	January-2022	0.442	---	0.01
	February-2022	0.0536	---	0.01
	March-2022	0.19	---	0.01
	April-2022	0.134	---	0.01
	May-2022	0.233	0.0025	0.005
	June-2022	0.179	0.001	0.002
	July-2022	0.264	0.0047	0.01
	August-2022	0.26	0.0047	0.01
	September-2022	0.246	0.0047	0.01
	October-2022	0.204	0.0047	0.01
	November-2022	0.167	0.0047	0.01
Barium BVU Permit Max (1.0 mg/L)	November-2021	0.581	0.0035	0.005
	December-2021	0.914	0.0035	0.005
	January-2022	0.916	---	0.005
	February-2022	0.35	---	0.005
	March-2022	0.663	---	0.005
	April-2022	0.517	---	0.005
	May-2022	0.893	0.0025	0.005
	June-2022	0.651	0.001	0.002
	July-2022	0.782	0.0035	0.005
	August-2022	0.862	0.0035	0.005
	September-2022	0.751	0.0035	0.005
	October-2022	0.688	0.0035	0.005
	November-2022	0.786	0.0035	0.005
Cadmium BVU Permit Max (0.13 mg/L)	November-2021	ND	0.0004	0.001
	December-2021	ND	0.0004	0.001
	January-2022	0.0004 J	---	0.001
	February-2022	0.0004 J	---	0.001
	March-2022	ND	---	0.001
	April-2022	ND	---	0.001
	May-2022	ND	0.0002	0.0005
	June-2022	ND	0.0001	0.0002
	July-2022	ND	0.0004	0.001
	August-2022	ND	0.0004	0.001
	September-2022	0.0035	0.0004	0.001
	October-2022	ND	0.0004	0.001
	November-2022	ND	0.0004	0.001

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
Chromium BVU Permit Max (16.8 mg/L)	November-2021	0.0882	0.0037	0.005
	December-2021	0.159	0.0037	0.005
	January-2022	0.139	---	0.005
	February-2022	0.0211	---	0.005
	March-2022	0.0629	---	0.005
	April-2022	0.0533	---	0.005
	May-2022	0.109	0.0025	0.005
	June-2022	0.0766	0.001	0.002
	July-2022	0.114	0.0037	0.005
	August-2022	0.109	0.0037	0.005
	September-2022	0.112	0.0037	0.005
	October-2022	0.116	0.0037	0.005
	November-2022	0.0842	0.0037	0.005
Copper BVU Permit Max (9.4 mg/L)	November-2021	0.0052	0.0043	0.005
	December-2021	0.0129	0.0043	0.005
	January-2022	0.0093	---	0.005
	February-2022	0.0078	---	0.005
	March-2022	0.0626	---	0.005
	April-2022	0.0117	---	0.005
	May-2022	0.0089	0.0046	0.005
	June-2022	0.005	0.0019	0.002
	July-2022	0.0602	0.0043	0.005
	August-2022	ND	0.0043	0.005
	September-2022	0.0608	0.0043	0.005
	October-2022	0.0159	0.0043	0.005
	November-2022	0.0104	0.0043	0.005
Lead BVU Permit Max (3 mg/L)	November-2021	0.0052	0.0045	0.005
	December-2021	ND	0.0045	0.005
	January-2022	0.0048 J	---	0.005
	February-2022	0.0061	---	0.005
	March-2022	ND	---	0.005
	April-2022	ND	---	0.005
	May-2022	ND	0.0011	0.005
	June-2022	ND	0.0004	0.002
	July-2022	0.0047 J	0.0045	0.005
	August-2022	0.0068	0.0045	0.005
	September-2022	ND	0.0045	0.005
	October-2022	ND	0.0045	0.005
	November-2022	0.0053	0.0045	0.005

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
Nickel BVU Permit Max (3.44 mg/L)	November-2021	0.028	0.0035	0.005
	December-2021	0.0316	0.0035	0.005
	January-2022	0.0363	---	0.005
	February-2022	0.0269	---	0.005
	March-2022	0.0139	---	0.005
	April-2022	0.012	---	0.005
	June-2022	0.0189	0.0012	0.002
	July-2022	0.0214	0.0035	0.005
	August-2022	0.0211	0.0035	0.005
	September-2022	0.0275	0.0035	0.005
	October-2022	0.033	0.0035	0.005
	November-2022	0.0184	0.0035	0.005
Selenium BVU Permit Max (1.15 mg/L)	November-2021	0.0066 J	0.0047	0.01
	December-2021	0.0054 J	0.0047	0.01
	January-2022	0.0113	---	0.01
	February-2022	ND	---	0.01
	March-2022	0.0081 J	---	0.01
	April-2022	ND	---	0.01
	May-2022	ND	0.0062	0.01
	June-2022	ND	0.0025	0.004
	July-2022	0.0095 J	0.0047	0.01
	August-2022	0.0075 J	0.0047	0.01
	September-2022	0.0108	0.0047	0.01
	October-2022	0.0097 J	0.0047	0.01
	November-2022	ND	0.0047	0.01
Zinc BVU Permit Max (11.4 mg/L)	November-2021	0.0396	0.0095	0.01
	December-2021	0.0274	0.0095	0.01
	January-2022	0.0737	---	0.01
	February-2022	0.0422	---	0.01
	March-2022	0.0709	---	0.01
	April-2022	0.0618	---	0.01
	May-2022	ND	0.0214	0.025
	June-2022	0.0094 J	0.0086	0.01
	July-2022	0.0364	0.0095	0.01
	August-2022	ND	0.0095	0.01
	September-2022	0.0272	0.0095	0.01
	October-2022	0.0184	0.0095	0.01
	November-2022	0.0137	0.0095	0.01

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
WATER QUALITY INDICATOR PARAMETERS (mg/L unless otherwise noted)				
Ammonia	May-2021	103	---	2.5
BOD	May-2021	9.8	---	2
Chemical Oxygen Demand	May-2021	342	---	25
Nitrate	May-2021	0.53	---	0.04
Nitrate+Nitrite	May-2021	0.59	---	0.04
Nitrite as N	May-2021	0.059	---	0.04
pH (s.u.)	November-2021	7.5	0.1	0.1
BVU Permit Max (> 5 s.u., < 10.0 s.u.)	December-2021	7.5	0.1	0.1
	January-2022	7.5	---	0.1
	February-2022	7.6	---	0.1
	March-2022	7.1	---	0.1
	April-2022	7.1	---	0.1
	May-2022	7.1	0.1	0.1
	June-2022	7.1	0.1	0.1
	July-2022	7.2	0.1	0.1
	August-2022	7.2	0.1	0.1
	September-2022	7.2	0.1	0.1
	October-2022	7	0.1	0.1
	November-2022	7.3	0.1	0.1
Total Kjeldahl Nitrogen	May-2021	84.2	---	2.5

Bristol Landfill - Monthly Compliance Detects Summary

Parameter	Monitoring Event	BVU Discharge	LOD	LOQ
CYANIDE AND PHENOLICS (mg/L)				
Cyanide BVU Permit Max (2.61 mg/L)	November-2021	0.034	0.006	0.008
	December-2021	ND	0.012	0.016
	January-2022	ND	---	0.024
	February-2022	ND	---	0.016
	March-2022	ND	---	0.008
	April-2022	ND	---	0.008
	May-2022	ND	0.025	0.05
	June-2022	ND	0.025	0.05
	July-2022	ND	0.01	0.02
	August-2022	ND	0.025	0.05
	September-2022	ND	0.025	0.05
	October-2022	ND	0.025	0.05
	November-2022	ND	0.025	0.05
Phenolics, Total Recoverable BVU Permit Max (7.5 mg/L)	November-2021	0.57	0.076	0.2
	December-2021	0.65	0.053	0.14
	January-2022	1.2	---	0.6
	February-2022	0.44	---	0.12
	March-2022	0.46	---	0.12
	April-2022	0.47	---	0.1
	May-2022	0.38	0.038	0.1
	June-2022	0.34	0.076	0.2
	July-2022	0.57	0.046	0.12
	August-2022	0.71	0.061	0.16
	September-2022	0.57	0.053	0.14
	October-2022	1.3	0.11	0.3
	November-2022	0.73	0.076	0.2

--- = not applicable/available

BVU = Bristol Virginia Utility

J = Qualifier used if reported concentration is less than the LOQ but greater than the LOD. The concentration is considered to be estimated and not validated.

LOD = Limit of Detection

LOQ = Limit of Quantitation

mg/L = milligrams per liter

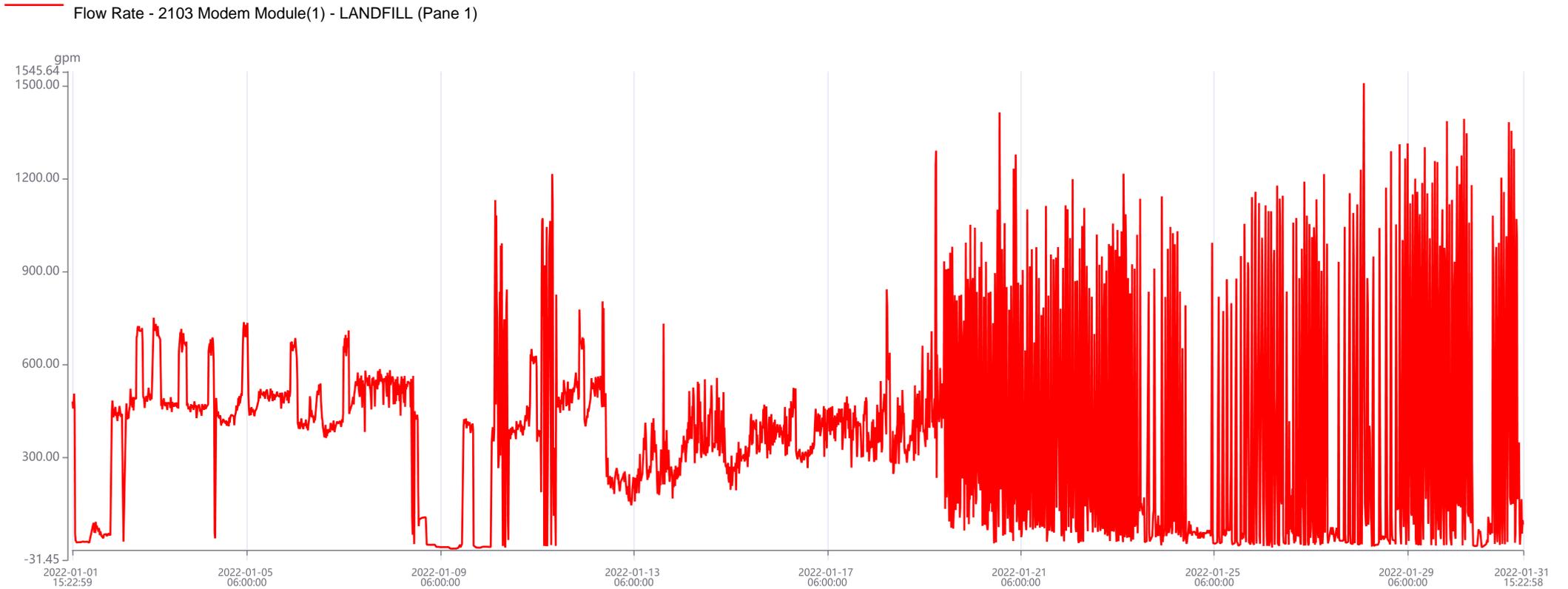
ND = Not Detected

ug/L = micrograms per liter

ATTACHMENT 4
BVU Flow Meter Output Graphs
(Jan – Dec 2022)

LANDFILL (2022-08-11 16:12:58)

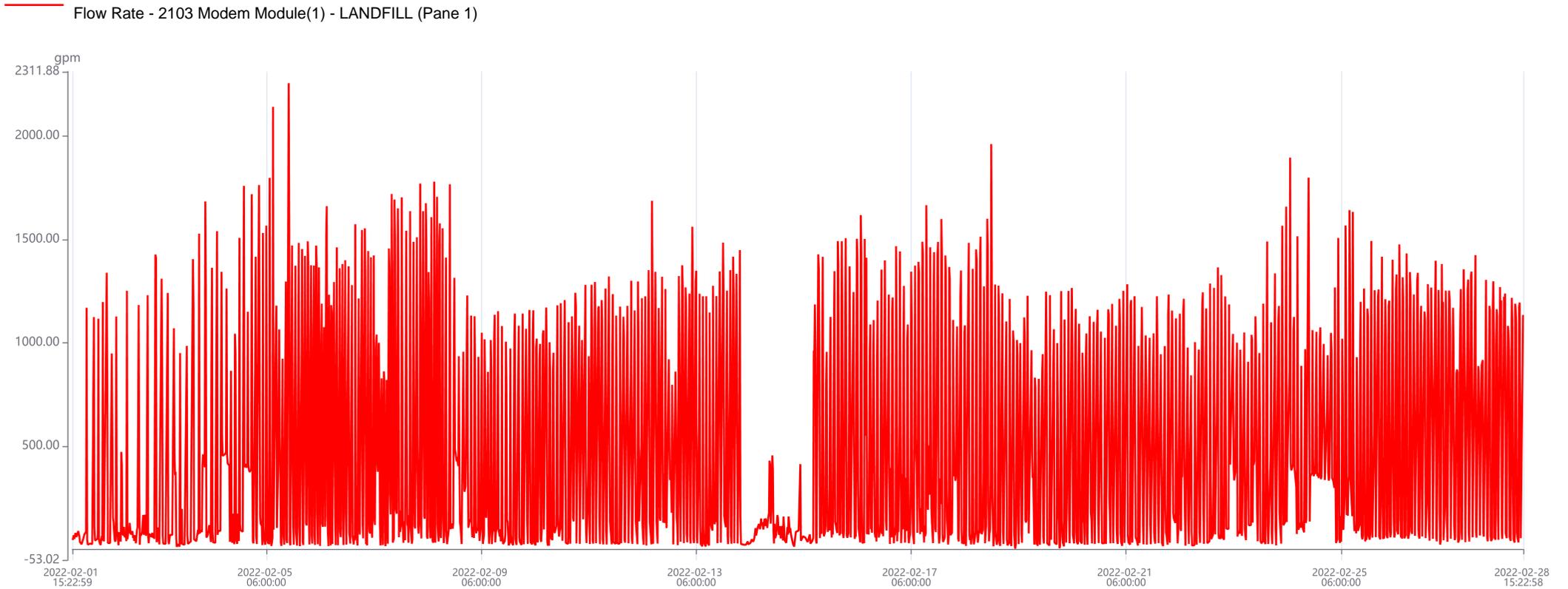
Flowlink Cipher



Total flow = 15,006,842.85 gallons
Average flow = 347.55 gpm
Peak = 1,545.64 gpm

LANDFILL (2022-08-11 16:12:58)

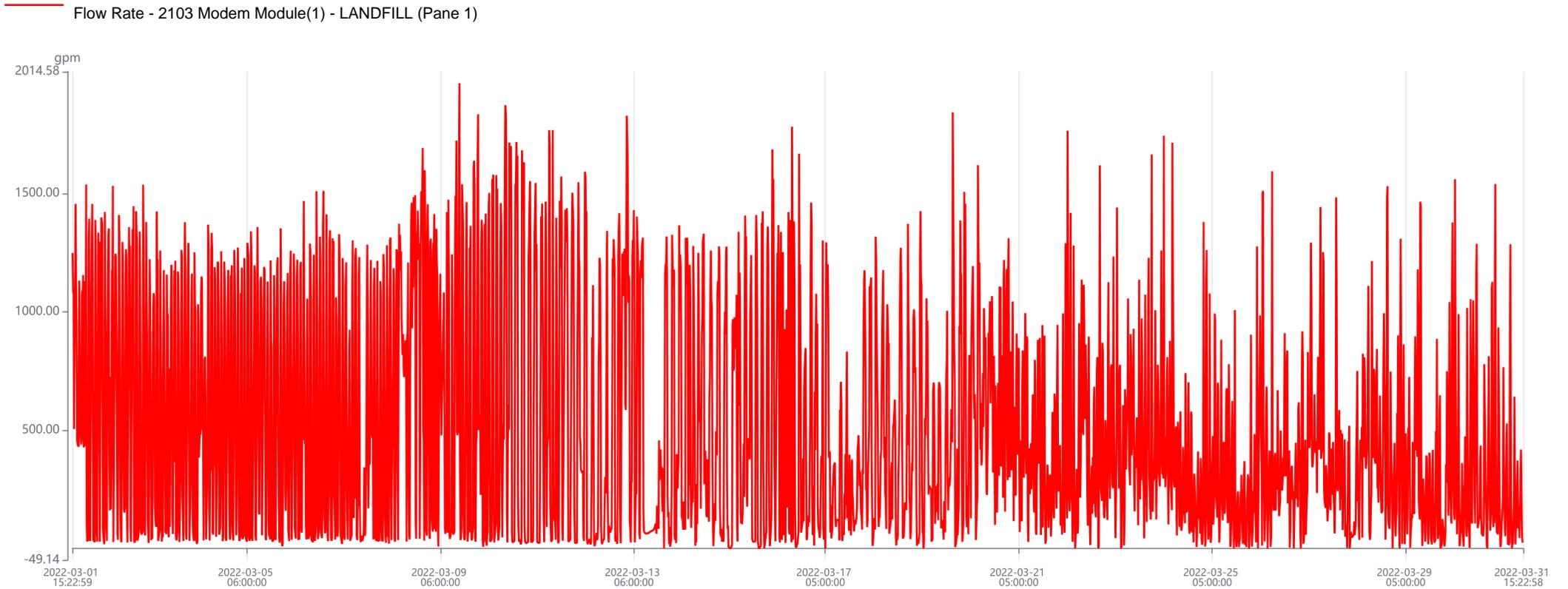
Flowlink Cipher



Total flow = 14,302,504.68 gallons
Average flow = 367.88 gpm
Peak = 2,311.88 gpm

LANDFILL (2022-08-11 16:12:58)

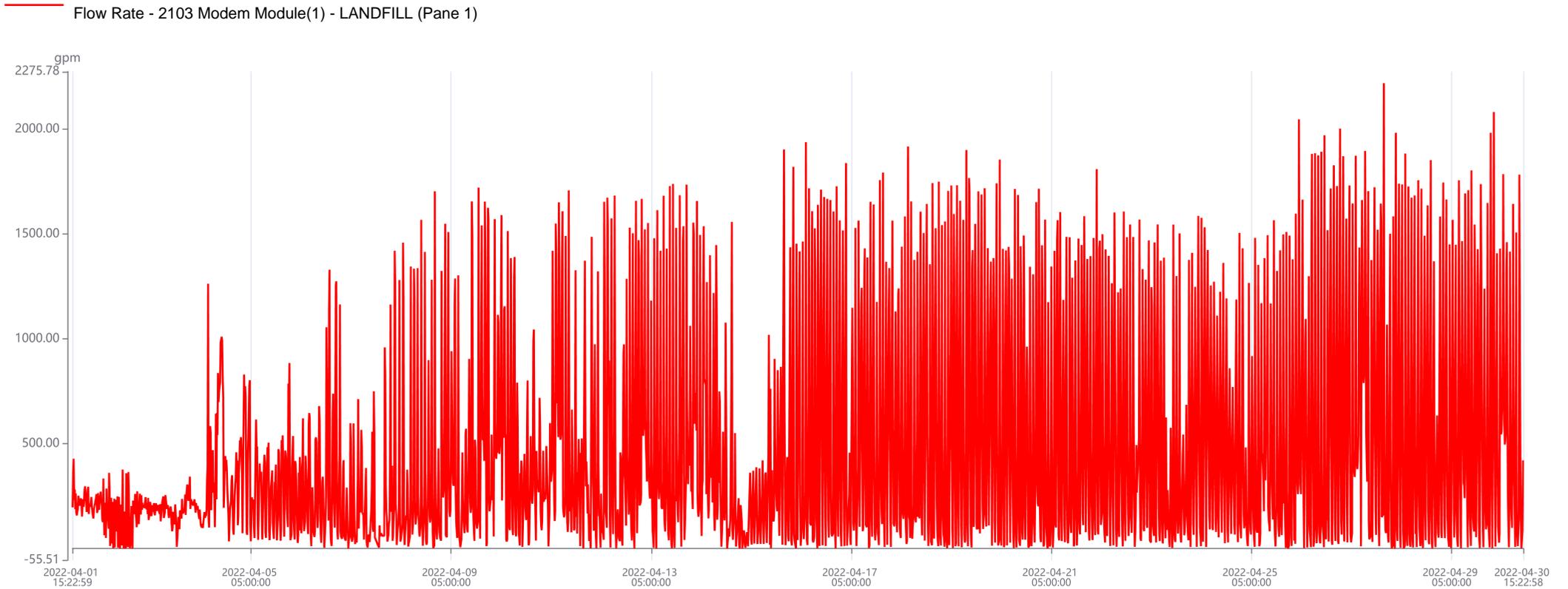
Flowlink Cipher



Total flow = 20,945,591.71 gallons
Average flow = 485.29 gpm
Peak = 2,014.58 gpm

LANDFILL (2022-08-11 16:12:58)

Flowlink Cipher



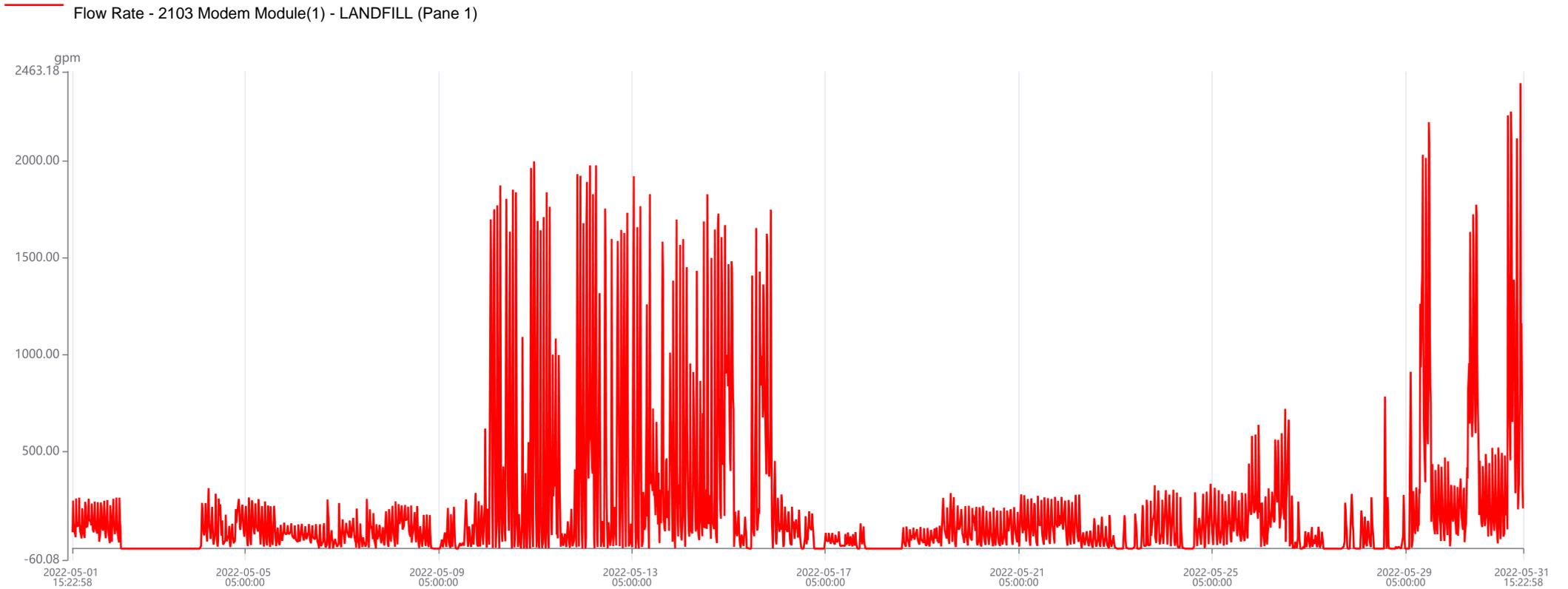
Total flow = 16,336,486.83 gallons

Average flow = 391.27 gpm

Peak = 2,275.78 gpm

LANDFILL (2022-08-11 16:12:58)

Flowlink Cipher



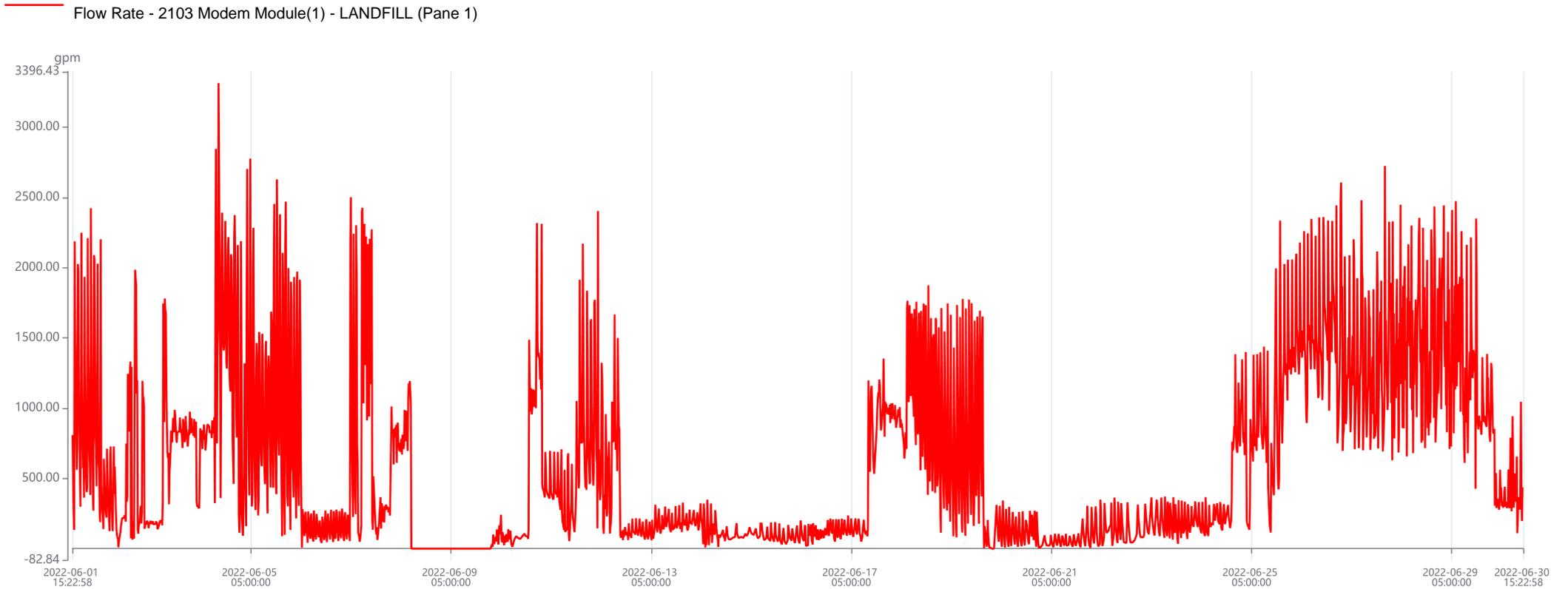
Total flow = 7,409,336.55 gallons

Average flow = 171.54 gpm

Peak = 2,463.18 gpm

LANDFILL (2022-08-11 16:12:58)

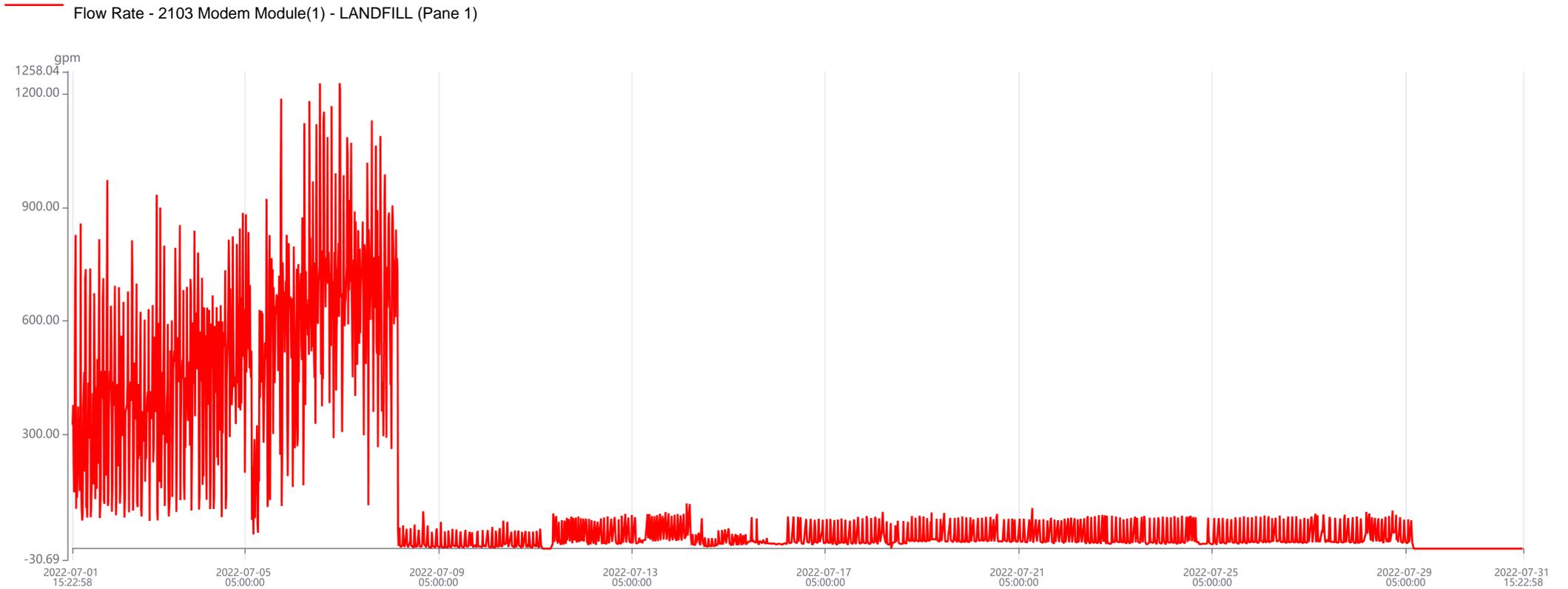
Flowlink Cipher



Total flow = 24,153,834.47 gallons
Average flow = 578.69 gpm
Peak = 3,396.43 gpm

LANDFILL (2022-08-11 16:12:58)

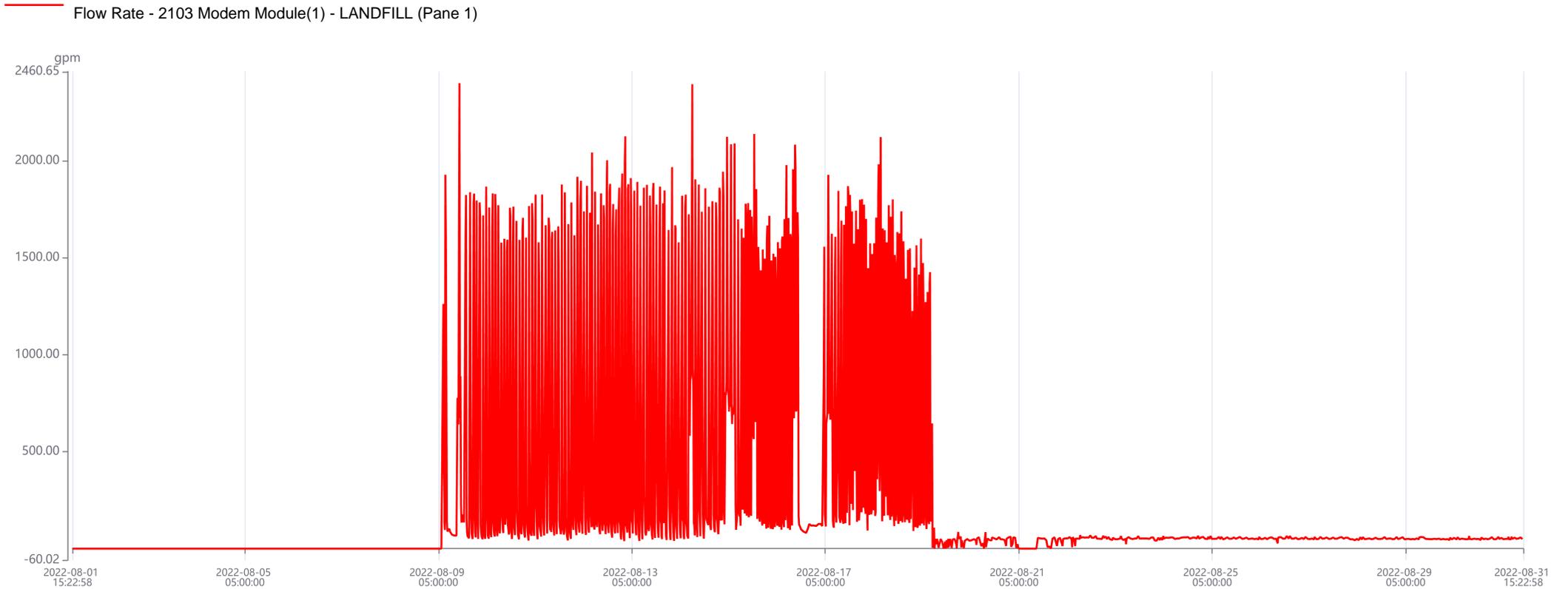
Flowlink Cipher



Total flow = 5,716,596.01 gallons
Average flow = 132.44 gpm
Peak = 1,258.04 gpm

LANDFILL (2022-08-11 16:12:58)

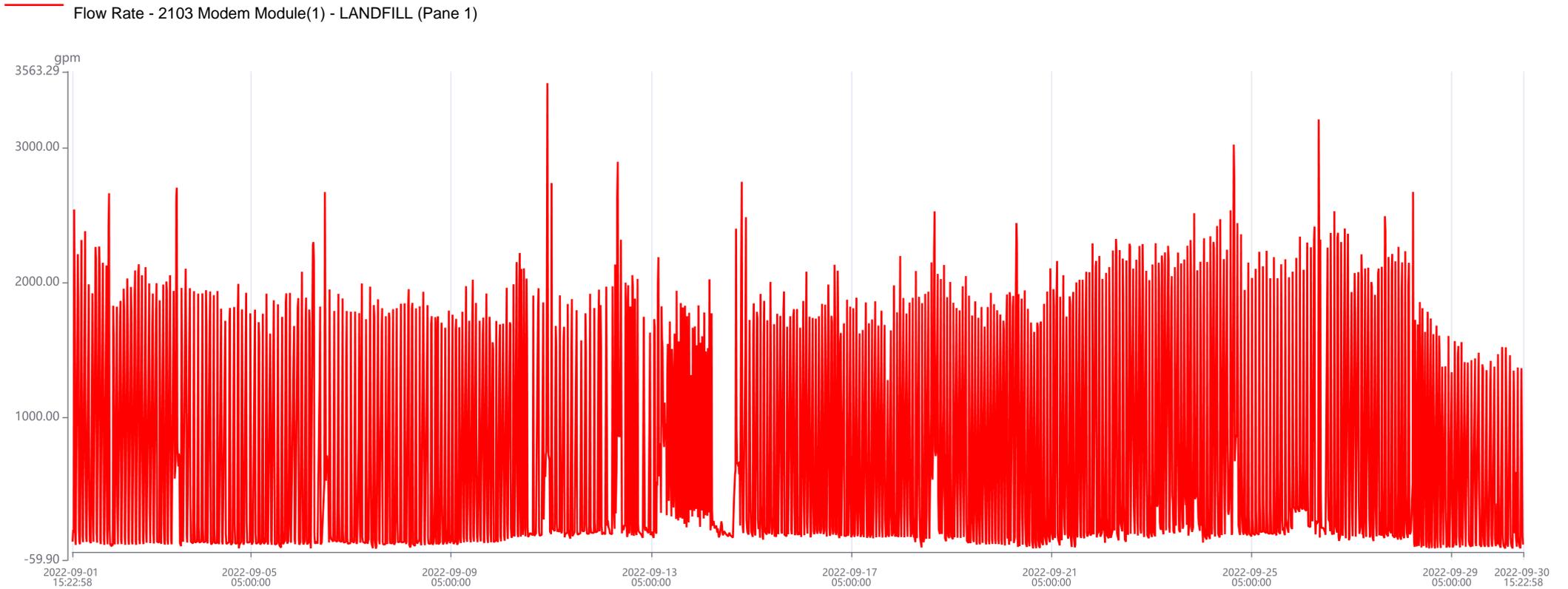
Flowlink Cipher



Total flow = 9,384,994.78 gallons
Average flow = 216.25 gpm
Peak = 2,460.65 gpm

LANDFILL (2022-08-11 16:12:58)

Flowlink Cipher



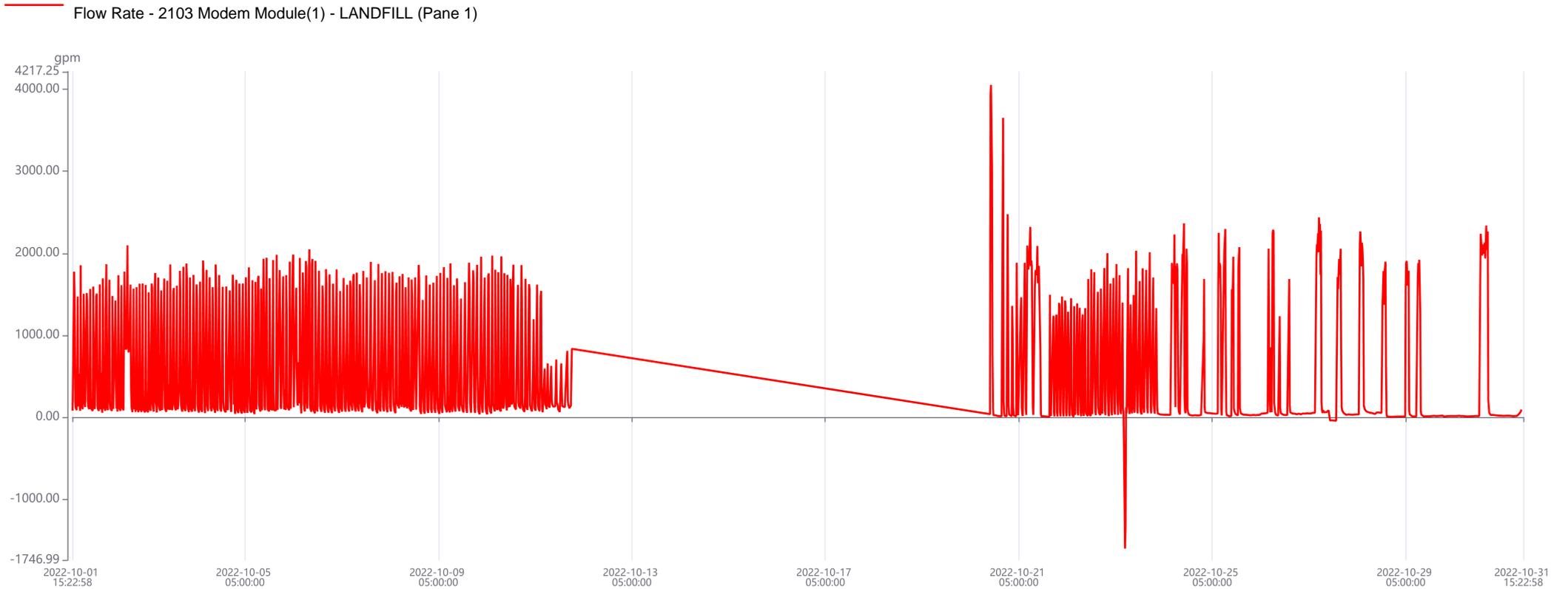
Total flow = 22,571,502.00 gallons

Average flow = 540.13 gpm

Peak = 3,563.29 gpm

LANDFILL (2022-08-11 16:12:58)

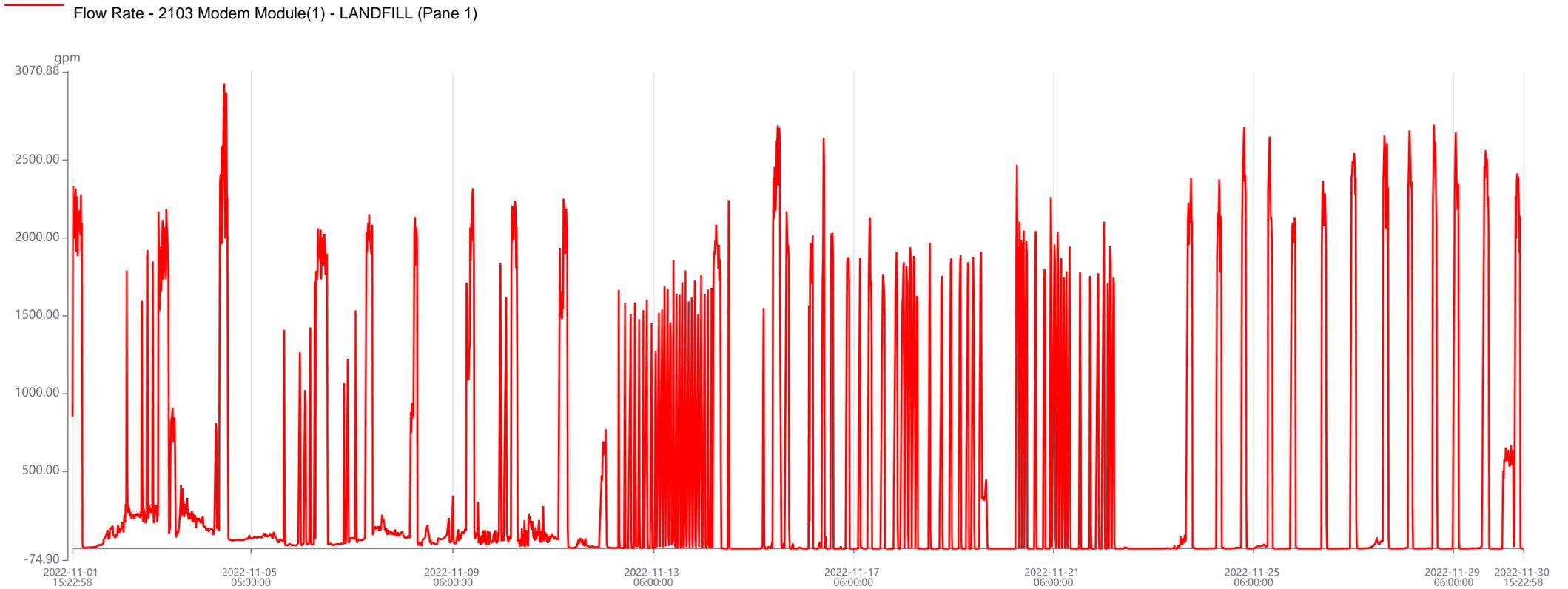
Flowlink Cipher



Total flow = 12,759,383.27 gallons
Average flow = 399.75 gpm
Peak = 4,217.25 gpm

LANDFILL (2022-08-11 16:12:58)

Flowlink Cipher



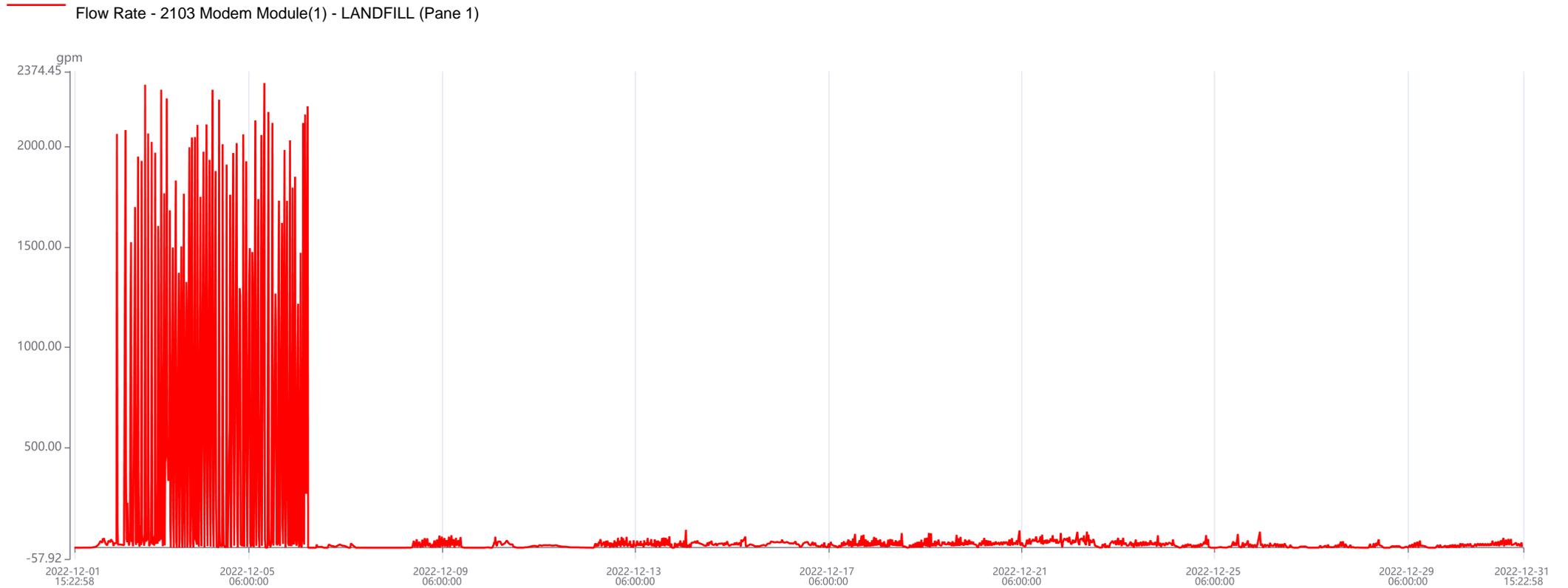
Total flow = 15,334,070.13 gallons

Average flow = 367.48 gpm

Peak = 3,070.88 gpm

LANDFILL (2022-08-11 16:12:58)

Flowlink Cipher



Total flow = 2,680,300.20 gallons
Average flow = 62.12 gpm
Peak = 2,374.45 gpm

SECTION 01 14 00

PROJECT COORDINATION

PART 1 – GENERAL

1.1 SUMMARY

- A. The CONTRACTOR shall prepare schedules, work staging and sequencing plan, as well as participate in project meetings necessary to coordinate the Work with construction and operations activities at the site conducted by others. This Section specifies administrative and procedural requirements for project meetings including the Pre-Construction Conference and routine Progress Meetings.
- B. The CONTRACTOR shall coordinate the Work being performed under this contract to recognize and accommodate relevant activities associated with the remedial activities of the landfill, routine operation of the landfill liquids extraction system, continuous and uninterrupted delivery of landfill liquids to the BVUA sanitary system, except during scheduled construction/modification to the existing piping - to the extent practicable, and other associated activities.

1.2 DESCRIPTION

- A. The OWNER will schedule and administer a preconstruction conference, construction progress meetings, and specially called meetings throughout the progress of work. The ENGINEER or OWNER will be responsible for preparing the agenda, make arrangements, preparing the meeting summaries and presiding at these meetings.
- B. Representatives of CONTRACTOR, Subcontractor(s), and Suppliers attending these meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. The CONTRACTOR shall attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.

1.3 SCHEDULES

- A. The CONTRACTOR shall submit construction progress schedules to the OWNER and ENGINEER in accordance with Section 01 33 00 as necessary to coordinate site activities.
- B. The CONTRACTOR shall submit the proposed date, time, and anticipated duration of any planned shutdowns or interruptions of the existing landfill liquids extraction system to the OWNER, and ENGINEER at least 48 hours in advance of the proposed event.

1.4 SUBMITTALS

- A. When specified in individual specification sections, submit drawings, product data, samples, and other documentation in accordance with Section 01 33 00. Revise and resubmit as required by the ENGINEER.
- B. Submit applications for payment on approved OWNER forms to ENGINEER for review, and for transmittal to OWNER.
- C. Submit requests for interpretation of Contract Documents, and obtain instructions through the OWNER.
- D. Process requests for substitutions, and change orders, through the OWNER.

1.5 PRECONSTRUCTION CONFERENCE

- A. After award of the contract, but prior to the Notice-to-Proceed, a joint meeting shall be held with representatives of the OWNER, ENGINEER, CONTRACTOR and Project Superintendent and other invited parties which may be affected by the project.
- B. This meeting is intended to introduce the various key personnel from each organization and to discuss the Contract Documents, the start of construction, order of work, labor and legal requirements, approved insurance requirements, names of the major subcontractors, method of payment, shop drawing submittal schedule, protection of existing facilities and other pertinent items associated with the Project. The CONTRACTOR shall bring copies of a construction schedule, work sequencing and staging plan, odor mitigation procedures, schedule of values, and shop drawing submittals to this meeting, as specified in Section 01 33 00.

1.6 PROGRESS MEETINGS

Progress meetings will be organized and conducted by the OWNER to discuss the progress of the Work on a routine basis. The CONTRACTOR and Project Superintendent shall attend these meetings.

1.7 CONTRACT CHANGES

Changes can be made to the contract in any of the following ways:

- A. The parties may agree in writing to modify the scope of the contract. An increase in the price of the contract resulting from such modification shall be agreed to by the parties pending City Council approval as a part of their written agreement to modify the scope of the contract.
- B. The City of Bristol Virginia may order changes within the general scope of the contract at any time by written notice to the contractor. Changes within the scope of the contract include, but are not limited to, things such as services to be performed, the

method of packing or shipment, and the place of delivery or installation. The contractor shall comply with the notice upon receipt. The contractor shall be compensated for any additional costs incurred as the result of such order and shall give the City of Bristol Virginia a credit for any savings. Said compensation shall be determined by one of the following methods:

1. By mutual agreement between the parties in writing; or
2. By agreeing upon a unit price or using a unit price set forth in the contract, if the work to be done can be expressed in units, and the contractor accounts for the number of units of work performed, subject to the City of Bristol Virginia's right to audit the contractor's records and/or to determine the correct number of units independently; or
3. By ordering the contractor to proceed with the work and keep a record of all costs incurred and savings realized. A markup for overhead and profit may be allowed if provided by the contract. The same markup shall be used for determining a decrease in price as the result of savings realized. The contractor shall present the City of Bristol Virginia with all vouchers and records of expenses incurred and savings realized. The City of Bristol Virginia shall have the right to audit the records of the contractor as it deems necessary to determine costs or savings. Any claim for an adjustment in price under this provision must be asserted by written notice to the City of Bristol Virginia within thirty (30) days from the date of receipt of the written order from the City of Bristol Virginia. If the parties fail to agree on an amount of adjustment, the question of an increase or decrease in the contract price or time for performance shall be resolved in accordance with the procedures for resolving disputes provided by the Disputes Clause of this contract. Neither the existence of a claim nor a dispute resolution process, litigation or any other provision of this contract shall excuse the contractor from promptly complying with the changes ordered by the City of Bristol Virginia or with the performance of the contract generally.

1.8 DEFAULT

In case of failure to deliver goods or services in accordance with the contract terms and conditions, the City of Bristol Virginia, after due oral or written notice, may procure them from other sources and hold the contractor responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies which the City of Bristol Virginia may have. In addition, the City of Bristol Virginia reserves the right to cancel any orders placed that are not delivered by the date specified in the Invitation for Bid.

END OF SECTION 01 14 00

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The CONTRACTOR shall receive and accept the compensation provided in the Contract as full payment for furnishing all labor, equipment, and materials and for performing all construction/operations necessary to complete the Work as described in the Contract, and in full payment for all losses or damages incurred during the Work, for any discrepancies between actual and estimated quantities, or from any unanticipated difficulties which may arise during the Work until final acceptance by the OWNER.
- B. The prices included in the Bid Proposal Form shall include all costs for labor, equipment, materials, taxes, freight, permits, handling and tests required to perform the Work as shown on the Contract Documents.
- C. The CONTRACTOR shall field verify all quantities and dimensions shown on the Plans or contained in the Contract Specifications including the Bid Proposal Form.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 MEASUREMENT AND PAYMENT – GENERAL

- A. Item No. 1: Mobilization/Demobilization
 - 1. Measurement. The Work required for this item will not be measured for payment.
 - 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work as per Section 01 11 00. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A

partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.

- B. Item No. 2: Tee connection from 8" steel piping at wet well
1. Measurement. Tee connection will be installed by the CONTRACTOR and verified in the field by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of excavated unsuitable materials, backfilling, fittings, gear wheel, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- C. Item Nos. 3 through 11: Aboveground landfill liquids piping, and fittings
1. Measurement. Piping will be measured on a linear foot basis as measured in the field by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price per linear foot installed, Payment will include all piping, backfilling, health and safety requirements, fittings and connections, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- D. Item No. 12: Isolation valve
1. Measurement. Isolation valve will be installed by the CONTRACTOR and verified in the field by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of excavated unsuitable materials, backfilling, fittings, gear wheel, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- E. Item No. 13 through 14: Flow Meter and Flow/Level Controls
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work as per Section 01 11 00.

This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.

- F. Item Nos. 15 through 19: Treatment System (Air stripper, pumps, on-site start-up and decontamination)
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work as per Section 01 11 00. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.
- G. Item No. 20: Health & Safety Planning and Accommodation
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for Health and Safety Planning and Accommodations shall be made at the Lump Sum Price, which price and payment shall be full compensation for furnishing all labor, equipment, and incidentals required to provide a Health and Safety Plan; safe work procedures; personal protective equipment; laboratory testing; field testing equipment; safety meetings; safety

training; and all other construction items complete and in-place. The cost of maintaining these controls for the duration of the project should be included in the Lump Sum Price.

- H. Optional Bid Item No. 21: Filtration System prior to air stripper
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work specified in the CONTRACTOR bid for this item, necessary for effective performance of the air stripper and pump system. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.
- I. Optional Bid Item No. 22: Vapor-phase GAC treatment system - vessels configured in series
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work specified in the CONTRACTOR bid for this item, necessary for effective performance of the air stripper and pump system. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as

requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.

- J. Optional Bid Item No. 23: Liquid-phase GAC treatment system - vessels configured in series
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work specified in the CONTRACTOR bid for this item, necessary for effective performance of the air stripper and pump system. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.

- K. Optional Bid Item No. 24: Foam Suppression System including chemical, feed, and tankage
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work specified in the CONTRACTOR bid for this item, necessary for effective performance of the air stripper and pump system. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.
- L. Optional Bid Item No. 25: Total containment system for frac tanks including containment liner, sump, pipe/hose to wet well and pump/controls
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work specified in the CONTRACTOR bid for this item, necessary for effective performance of the air stripper and pump system. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed.

However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.

END OF SECTION 01 22 00

SECTION 01 33 00

SUBMITTALS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Responsibilities: The ENGINEER and OWNER are responsible for working with the CONTRACTOR to respond to emails, review documents, and provide revisions / feedback in a reasonable timeframe in order for the CONTRACTOR to have the greatest success in meeting the schedule.
- B. Scope of Work: The CONTRACTOR shall develop and distribute project submittals in accordance with procedures specified herein. The required submittals include, but are not limited to the following:
 - 1. Construction progress schedules
 - 2. Work Staging and Sequence Plan
 - 3. Proposed products list
 - 4. Product data
 - 5. Shop drawings
 - 6. Design data
 - 7. Test reports
 - 8. Certificates
 - 9. Manufacturer's instructions, Maintenance Manuals, and Warranty
 - 10. Health and Safety Plan
 - 11. Record Drawings
 - 12. Project Photographs
- C. Related Work Described Elsewhere
 - 1. All Sections.

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with ENGINEER accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, CONTRACTOR, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and

coordination of information is in accordance with the requirements of the Work and Contract Documents.

- E. Schedule submittals to expedite the Project, and deliver to ENGINEER at their business address. Coordinate submission of related items.
- F. For each submittal, allow 3 days for review excluding delivery time to and from the CONTRACTOR.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. When revised for resubmission, identify all changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- J. Submittals not requested will not be recognized or processed.

1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 5 days after date of OWNER-CONTRACTOR Agreement.
- B. Revise and resubmit as required by the OWNER or ENGINEER.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a chart with separate line for each major portion of Work, identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.
- F. Indicate estimated percentage of completion for each item of Work at each submission.

1.4 WORK STAGING AND SEQUENCING PLAN

- A. Submit proposed Work staging and sequencing plan within 3 days after issuance of Notice-to-Proceed.
- B. Revise and resubmit plan if field conditions change or as required by OWNER to accommodate landfill or landfill gas-to-energy Facility operations.

1.5 PROPOSED PRODUCTS LIST

- A. Within 5 days after date of OWNER-CONTRACTOR Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Unless otherwise provided in this solicitation, the name of a certain brand, make or manufacturer does not restrict proposers to the specific brand, make or manufacturer named, but conveys the general style, type, character, and quality of the article desired. Any article which the public body, in its sole discretion, determines to be the equivalent of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The bidder/proposer is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City to determine if the product offered meets the requirements of the solicitation. This is required even if offering the exact brand, make or manufacturer specified. Normally in competitive sealed bids only the information furnished with the bids will be considered in the evaluation. Failure to furnish adequate data for evaluation purposes may result in declaring a bid/proposal nonresponsive. Unless the bidder/proposer clearly indicates in its bid/proposal that the product offered is an equivalent product, such bid/proposal will be considered to offer the brand name product referenced in the solicitation.

1.6 PRODUCT DATA

- A. Product Data for Review:
 - 1. Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 70 00.
- B. Product Data for Information:

Submitted for the ENGINEER'S knowledge as contract administrator or for the OWNER.

- C. Product Data for Project Closeout:
Submitted for the OWNER'S benefit during and after project completion.
- D. Submit the number of copies required by the CONTRACTOR, plus two copies which will be retained by the ENGINEER.
- E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- F. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- G. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01 70 00.

1.7 SHOP DRAWINGS

- A. Shop Drawings for Review:
 - 1. Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 70 00.
- B. Shop Drawings for Information to be submitted for the ENGINEER'S knowledge as contract administrator or for the OWNER.
- C. Shop Drawings for Project Closeout to be submitted for the OWNER'S benefit during and after project completion.
- D. Submit the Shop Drawings to ENGINEER in suitable electronic file format, such as Adobe (pdf), or similar.

1.8 DESIGN DATA

- A. Submit for the ENGINEER'S knowledge as contract administrator or for the OWNER.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.09 TEST REPORTS

- A. Submit for the ENGINEER'S knowledge as contract administrator or for the OWNER.
- B. Submit test reports for information for the limited purpose of assessing conformance with the design concept expressed in the contract documents.

1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the CONTRACTOR to ENGINEER, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to ENGINEER.

1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.
- B. Indicate special procedures, parts list, spare parts to be kept on hand, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.12 HEALTH AND SAFETY PLAN

- A. The CONTRACTOR shall develop a Health and Safety Plan, which specifically addresses the Work to be performed, in accordance with OSHA requirements and other health and safety reference materials published by solid waste management industry organizations such as NWRA. The Health and Safety Plan shall include provisions which anticipate possible exposure to waste materials, landfill gas, condensate, leachate, and other related conditions during installation of collection piping, pumps, tie-in connections, and other aspects of the Work as outlined in Section 01 35 29.
- B. The CONTRACTOR shall submit a complete Health and Safety Plan to the OWNER and ENGINEER prior to commencing the Work for informational purposes. **The CONTRACTOR will not be allowed to commence the Work until a Health and Safety Plan has been submitted and reviewed.** The CONTRACTOR and Subcontractor shall be solely responsible for the health and safety of their employees.

END OF SECTION 01 33 00

SECTION 01 35 29

HEALTH AND SAFETY PLAN

PART 1 – GENERAL

1.1 SITE-SPECIFIC HEALTH AND SAFETY PLAN

- A. The CONTRACTOR shall prepare a written site-specific Health and Safety Plan (Plan) for use by the CONTRACTOR and Subcontractor site workers. This plan must be prepared to meet the 29 CFR 1910.120 OSHA regulations and shall include as a minimum, the following:
1. **Organizational Structure:** to include general supervision, Health and Safety officer, lines of authority, and responsibility and communication. The Health and Safety Officer shall be a worker who will be present at all times during site construction, in addition to his/her other site duties.
 2. **Comprehensive Work Plan:** to include the work tasks and objectives, resources needed, and training requirements for workers (health and safety, machine operations license, etc.). This shall also include a section on safety procedures to be followed for excavation and well drilling in landfill waste and work in areas where exposure to landfill gas, condensate, and/or leachate is likely.
 3. **Health and Safety:** to include identification of possible site hazards (e.g., solid waste, landfill gas, and leachate), training levels for each category of site workers, personal protective equipment and medical surveillance needed, site control measures, and confined space entry procedures.
 4. **Emergency Response Plans:** to include all emergency telephone numbers, a highlighted map showing the quickest route to the nearest emergency care facility and written directions to such facility.
 5. **Air Monitoring Procedures:** to include frequency and type of air monitoring of exposed refuse, landfill surfaces, boreholes and excavations, and site worker areas, calibration of air monitoring equipment, and action levels of air contaminants for site worker protection. All equipment calibration and field gas measurements shall be recorded with the date and time of sample, and the sampler's name. Sampling shall be done by a CONTRACTOR's worker trained in the use of the gas sampling equipment. These trained workers shall be designated in the CONTRACTOR's Plan.
 6. **Respiratory Protection Program:** to include written documentation of the CONTRACTOR's respiratory program, including respirator fit testing demonstration for site workers.

7. Well Drilling Installation and Excavation Safety Procedures: to include prevention of fall hazards and controlled access zones, positive ventilation equipment to reduce demonstrations of emissions from boreholes and trenches, and prevention of exposure to artesian leachate conditions.
 8. A signature page for all site workers covered by the Plan (CONTRACTOR and Subcontractor site workers).
- B. Acceptance of the CONTRACTOR's Plan by the OWNER is necessary prior to the start of site operations. The Plan should incorporate and be consistent with the OWNER's and the LANDFILL OPERATOR's health and safety policies and procedures.
- C. The CONTRACTOR shall consider the various materials disposed of (municipal solid waste, construction and demolition debris) that may be encountered, as well as the various constituents that may be present in the landfill gas and leachate, during excavation in preparing the Health and Safety Plan.

1.2 SITE OPERATIONS

- A. The Plan will be kept on site in an easily accessible spot during all site operating hours. All site workers will be notified of the location of the Plan.
- B. A Safety Meeting will be held by CONTRACTOR and attended by all CONTRACTOR site workers prior to starting construction. At this safety meeting, the Plan will be reviewed with the site workers, and all site workers will sign the Plan indicating that they have been apprised of the Plan's contents. New site workers must review the Plan with the CONTRACTOR's Health and Safety Officer prior to beginning work on site, and must sign that they have been apprised of the Plan's contents.
- C. Site operations will take place in conditions of adequate light only.
- D. Areas of open refuse (i.e., excavations, trenches and boreholes) will be periodically monitored for combustible gases, methane, carbon monoxide, benzene, hydrogen sulfide and oxygen through the use of field gas meters. Respiratory protection for acid gases and organic vapors will be used by the worker while monitoring gas levels, if deemed necessary by the CONTRACTOR. Appropriate respiratory protection will be taken by site workers, as necessary to conform to OSHA, NIOSH, and/or ACGIH exposure limits.
- E. No workers will be allowed in any trench or excavation while excavation of the area is in progress. Entry into the excavation shall be made only after the CONTRACTOR's site worker has monitored the air in the excavation, and determined the appropriate level of personal protection required for entry into the excavation. Site workers in excavations must be supervised at all times.
- F. Site workers will limit their dermal exposure to landfill gas, leachate, condensate, and excavated refuse. Minimal skin protection includes puncture resistant shoes meeting

ANSI standards, long pants, long-sleeved shirts, safety glasses, safety vests, hard hats, and rubber gloves to be used when handling refuse.

- G. Start-up and shutdown of engines will not be done in areas of excavated refuse or where elevated landfill gas emissions have been documented.

END OF SECTION 01 35 29

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SECTION 01 70 00

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall provide all labor, materials, equipment and incidentals necessary to closeout the project as specified herein. Activities may include, but are not limited to final cleaning, preparation of record documents, operations and maintenance documents, delivery of spare parts, and transfer of warranties.
- B. Related Work Described Elsewhere
 - 1. All Sections.

1.2 CLOSEOUT PROCEDURES

- A. The CONTRACTOR shall submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for ENGINEER'S review.
- B. Provide submittals to OWNER that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. The City of Bristol Virginia reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean equipment and fixtures with cleaning materials appropriate to the surface and material being cleaned. Clean filters of operating equipment, clean debris from manholes, and other areas of the site. CONTRACTOR shall remove all dirt, stones and other debris from the roadways, parking lot and other paved surfaces.
- C. Remove from the site all waste and surplus materials, rubbish, and construction facilities installed by the CONTRACTOR.
- D. Verify that grading, seeding, mulching, landscaping replacement, landfill surface restoration, access road restoration, and repair of all disturbed areas have been

accomplished to the satisfaction of OWNER and ENGINEER. Verify that temporary erosion and sediment control structures and features installed by the CONTRACTOR have been removed and that permanent structures and features have been repaired as necessary and left in place.

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents and record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by OWNER.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications. Legibly mark and record for each Product section a description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Submit documents to ENGINEER with claim for final Application for Payment.

1.5 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall provide with each piece of equipment an operations and maintenance manual with diagrams, parts list, and a copy of all warranties when applicable.
- B. Submit data in suitable electronic file format, such as Adobe (pdf), or similar.
- C. Contents. Prepare a Table of Contents for each volume, with each Product or system description identified, typed in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of ENGINEER, CONTRACTOR, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions, arranged and subdivided by subsystem. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Certificates.
 - c. Photocopies of warranties.
- D. Submit a draft copy of completed volumes 5 days prior to final inspection. This copy will be reviewed and returned, with ENGINEER comments. Revise content of all document sets as required prior to final submission.
- E. Submit documentation in suitable electronic file format, such as Adobe (pdf), or similar, within 10 days after final inspection.

1.6 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
- B. Deliver to OWNER'S office and place in location as directed; obtain receipt prior to final payment.

1.7 WARRANTIES AND BONDS

- A. The Contractor agrees that the supplies or services furnished under any award resulting from this solicitation shall be covered by the most favorable commercial warranties the contractor gives any customer for such supplies or services and that the rights and remedies of those available to the City of Bristol Virginia by any other clause of this solicitation. A copy of this warranty must be furnished with the Closeout Documentation. Provide two notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers. Clearly distinguish between manufacturer's and installer's warranties.

- C. Provide Table of Contents and assemble in suitable electronic file format, such as Adobe (pdf), or similar.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

END OF SECTION 01 70 00

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SECTION 33 51 10

PIPE, PIPE FITTINGS, AND VALVES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall supply all materials, equipment, and labor needed to install all pipe, pipe fittings, and valves as specified herein and as indicated on the Drawings. Comply with the latest version of any referenced standard. *Provide*, as used herein means furnish and install.
- B. Related Work Described Elsewhere
 - 1. Not applicable.

1.2 QUALITY ASSURANCE

- A. Provide only pipe and fittings conforming to the requirements of the referenced ASTM standards, ANSI standards, or PPI standards.
- B. Utilize only factory trained and certified welders, equipment, and installers.
- C. Follow all ASTM practices and standards in the manufacture and fabrication of piping and fittings.
- D. Follow manufacturer's written instructions for handling, storage, and installation.

1.3 QUALITY CONTROL

- A. Provide permanent markings on piping, clearly showing ASTM conformance, size and SDR, pressure rating, cell classification number, and the manufacturer's name.
- B. Provide certification of all welders and installers.
- C. Certify compliance with ASTM practices and standards during manufacture and fabrication.
- D. Remove from site any pipe and fittings damaged during shipment, construction, or rejected during testing and/or inspection. Replace with acceptable products without additional expense to the OWNER.

1.4 SUBMITTALS

- A. The CONTRACTOR shall prepare and submit to the ENGINEER, for review and approval, certificates of compliance on materials furnished and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, inspection, maintenance, and repair of each type of pipe, pipe fitting, and valve furnished.
- B. Submit all certifications listed in the QC section above and as required elsewhere in this Section.
- C. Prepare and submit Shop Drawings to the ENGINEER for review and approval. Shop Drawings shall show all dimensions, slopes, and invert elevations at connections. All tie-ins to the existing system shall be field-verified and shown on the Shop Drawings.

PART 2 – PRODUCTS

2.1 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

- A. All PVC pipe and pipe fittings shall be Schedule 80 PVC conforming to ASTM D 1784, ASTM D 1785 (for pipe), and ASTM D 2467 (for fittings). Acceptable manufacturers include Nibco Chemtrol (219-295-3000), CertainTeed (610-341-7768), ASAHI/America (800-343-3618), or approved equal.
- B. PVC pipe and pipe fittings shall be manufactured from a compound which meets the requirements of Type 1, Grade 1, Polyvinyl Chloride PVC 1120, Class 12454-B, as outlined in ASTM D 1784. A Type 1, Grade 1 compound is characterized as having the highest requirements for mechanical properties and chemical resistance.
 - 1. Compound from which pipe is produced shall have a design stress rating of 2000 psi at 73 degrees F, listed by the Plastic Piping Institute.
 - 2. Materials from which pipe and pipe fittings are manufactured shall have been tested and approved by NSF International.
 - 3. Pipe shall be homogenous throughout and shall be free from cracks, holes, foreign inclusions, and other defects.

2.2 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE

- A. The Schedule 80 CPVC pipe shall be manufactured from a compound which meets the requirements of Type IV, Grade 1, Chlorinated Polyvinyl Chloride CPVC, cell classification 23447 per ASTM D 1784, have a compressive strength of 10,000 psi per ASTM D 695, and conform to the requirements of ASTM F441M-20.

2.3 PVC FLANGES

- A. Flanges shall be Schedule 80 PVC and shall be plate type, ANSI Class 150 pounds.

- B. The bolts, studs, nuts, and washers for the flanges shall be hot dipped galvanized steel. Below-grade flanges shall be wrapped in 5-mil polyethylene sheeting, just after installation and prior to backfilling, to help prevent corrosion.
- C. Flange gaskets shall be full-face Neoprene. Other elastomers, such as Nitrile or Buna-N may be submitted to the ENGINEER for consideration.

2.4 FLEXIBLE PVC PIPE

- A. Flexible PVC pipe shall be as manufactured by QED Environmental Systems, Dexter, MI, 734-995-2547, Solarguard™ Flex Hose, or approved equal.
- B. Fasteners for flexible PVC pipe shall be QED Environmental Systems Solarguard™ Flex Hose Banding Kits, or approved equal.

2.5 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

- A. General:
 - 1. All HDPE pipe and fittings greater than 4-inch-diameter as indicated on the Drawings shall be Iron Pipe Size (IPS) Standard Dimension Rating (SDR) 17 high density polyethylene pipe using a 4710 type resin, or approved equal. HDPE pipe and fittings that are 4-inch-diameter and less shall be IPS SDR 11 for liquid forcemain piping and IPS SDR 9 for pneumatic supply piping.
 - 2. Pipe shall be extruded from a Type III, Class C, Category 5, Grade P47 compound with a hydrostatic design stress of 1000 psi at 73.4 °F, as described in ASTM D 1248. It shall be classified as cell 445574C/E according to ASTM D 3350 and have the material designation of PE 4710. The pipe shall be manufactured to meet the requirements of ASTM F 714. Manufacturer's literature shall be adhered to when "manufacturer's recommendations" are specified. All pipe and pipe fittings shall be provided by manufacturer. Acceptable manufacturers include Plexco (630-350-3700), Driscopipe (800-527-0662), or approved equal.
 - 3. Provide only manufacturer built molded type fittings unless otherwise approved by the ENGINEER. Provide fittings in matching SDR unless unavailable from manufacturer. No field fabricated fittings will be allowed unless approved by the ENGINEER.

2.6 FLANGES FOR HDPE PIPE

- A. Provide molded HDPE flange adaptors with ANSI B16.5 drilling.
- B. Provide convoluted ductile iron back-up rings with a minimum thickness of 1-inch, as manufactured by Improved Piping Products (925-254-0962), Inc., of Orinda, California or approved equal. Back-up rings shall be finished with red oxide primer.

- C. Studs and bolts, nuts, and washers for flanges shall be as specified in Part 2.3 above.

2.7 VALVES

A. General:

1. All valves shall be complete with all necessary operators, actuators, hand-wheels, chain wheels, extension stems, floor stands, worm and gear operators, operating nuts, chains, wrenches, and other accessories or appurtenances which are required for the proper completion of the work. Valves 6-inch-diameter and larger shall be equipped with a geared operator. Operators, actuators, and other accessories shall be sized and furnished by the valve supplier and factory mounted.
2. Valves and operators shall be suitable for the exposure they are subjected to, e.g., above grade or buried, and for conveyance of landfill gas and leachate. Renewable parts including discs, packing, and seats shall be of types recommended by valve manufacturer for intended service, but not of a lower quality than specified herein. Valves shall have all safety features required by OSHA.
3. Unless otherwise shown, valves shall be the same size as the adjoining pipe.
4. Monitoring ports and hoses shall be provided at each abovegrade and buried LFG isolation valve. Ports threaded into header shall be Swagelock 1/4" SS-420-1-4 x1/4" MPT, or approved equal. Monitoring hose shall be stainless steel teflon-lined hose with Swagelock tube ends, model SS-4BHT-36, or approved equal, of adequate length to extend above grade (above-specified length is for 3-foot-long tubing section). Sampling end shall have a 1/4" female connector SS-420-7-4 with a quick-connect polypropylene monitoring port by Ryan Herco, Part No. 0812-002.

B. Butterfly Valves:

1. The LFG Header, condensate forcemain, pneumatic supply isolation valves shall be butterfly bubble tight, wafer design, with a PVC body, nitrile seat, and compatible with a flat face flange, as manufactured by Asahi/America or equal. Stem extensions shall be stainless steel in an epoxy coated steel outer housing with a gear box assembly and visual valve position indicator mounted on top and equipped with a removable manual operating wheel. Monitoring ports at the LFG butterfly valves shall be quick connects. If required, quick connects shall be attached to the pipeline via flexible metal hose connector, Swagelok Part No. SS-4HO-6-L4, or equal.

C. Labcock Valves:

Quick connects used for monitoring ports may be replaced by Labcock valves at all monitoring ports in the system, subject to approval by the ENGINEER. Labcock valves shall be 1/4-inch PVC with EPDM seats and seals. Valves shall have 1/4-inch MPT on one end and hose connection on the other end.

2.8 PIPELINE LOCATOR/WARNING TAPE

If applicable, tape shall be a metallic locator/warning tape imprinted with the words "Caution Gas Line Buried Below," as supplied by Terra Tape (800-231-2417).

PART 3 – EXECUTION

3.1 GENERAL

- A. Pipe shall be stored or stacked so as to prevent damage by marring, crushing, or piercing. Maximum stacking height shall be limited to 6 feet.
- B. Pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Derricks, ropes, or other suitable equipment shall be used for lowering the pipe into the extraction well borings. Pipe and pipe fittings shall not be dropped or dumped.
- C. Install pipe straight and true to lines, grades, and elevations indicated on the drawings, within acceptable tolerances.
- D. Maintain pipe interior free of mud, debris, tools, clothing, or other foreign objects. Provide secure closure of pipe ends during construction.
- E. Certify to the ENGINEER a clean pipe interior prior to closure.
- F. Makeup threaded connections with tape and/or paste that does not consist of per or polyfluoroalkyl substances (PFAS – e.g., Teflon tape cannot be used as it is made of PFAS).
- G. Assemble bolts with anti-galling compound. Wrap buried bolted connections in 5-mil polyethylene sheeting prior to backfilling.
- H. Install new gaskets when reassembling an existing flanged fitting.

3.2 PVC/CPVC PIPE STORAGE

For storage of PVC and CPVC pipe and fittings over 5 days, a location shall be chosen out of direct sunlight, or the piping and fittings shall be covered.

3.3 PVC/CPVC PIPE INSTALLATION

PVC/CPVC pipe installation shall conform to these specifications, the manufacturer's recommendations, and as outlined in ASTM D 2774.

3.4 JOINING OF PVC/CPVC PIPE

A. Joining of pipe shall be in accordance with ASTM D 2855.

B. Preparation:

All pipes shall be inspected for cuts, scratches, or other damage prior to installation. Pipe with imperfections shall not be used. All burrs, chips, etc. shall be removed from pipe interior and exterior. All pipe cuts shall be square, perpendicular to the center line of pipe. Pipe ends shall be beveled prior to applying primer and solvent cement so that the cement does not get wiped off during insertion into the fitting socket.

C. Solvent Welding:

A coating of primer as recommended by pipe supplier shall be applied to the entire interior surface of the fitting socket and to an equivalent area on the exterior of the pipe prior to applying solvent cement. The solvent cement shall comply with the requirements of ASTM D 2564 and shall be applied in strict accordance with manufacturer's specifications. Pipe shall not be primed or solvent welded during precipitation or when atmospheric temperature is below 40 degrees F or above 90 degrees F.

D. Curing:

After solvent welding, the pipe shall remain undisturbed until cement has thoroughly set. As a guideline for joint setting time, use 1 hour for ambient temperatures 60-90 degrees F, or 2 hours when ambient temperature is 40-60 degrees F.

E. Alignment:

Pipe and pipe fittings shall be selected so that there will be as small a linear deviation as possible at the joints, and so that inverts present a smooth surface. Pipe and fittings which do not fit together to form a tight fitting will be rejected.

3.5 FLEXIBLE PVC PIPE CONNECTIONS

Connections to pipe shall be made with clamps in accordance with manufacturer's step by step procedures and recommendations.

3.6 HDPE PIPE HANDLING

A. HDPE pipe shall not be bent more than the minimum radius recommended by the manufacturer for type, grade, and SDR. Care shall be taken to avoid imposing strains that will overstress or buckle the HDPE piping or impose excessive stress on the joints.

- B. Joining HDPE Pipe: Only two methods shall be utilized to joining HDPE pipe: heat fusion and mechanical joining.
1. Mechanical Joining shall be accomplished with HDPE flange adapters, neoprene, or other Engineer-approved gaskets, and ductile iron back-up flanges, and shall be used only where shown on the Drawings.
 2. Heat Fusion joints shall be made in accordance with manufacturer's step by step procedures and recommendations. Fusion equipment and a trained operator shall be provided by the CONTRACTOR. Pipe fusion equipment shall be of the size and nature to adequately weld all pipe sizes and fittings necessary to complete the project. Heat fusion shall be performed outside of the trench whenever practical. Before heat fusing pipe, each length shall be inspected for the presence of dirt, sand, mud, shavings, and other debris. Any foreign material shall be completely removed. At the end of each day, all open ends of fused pipe shall be capped or otherwise covered to prevent entry by animals or debris.
 3. The use of electrofusion branch saddles to connect pipes is prohibited. Different pipes shall be connected using either molded tee fittings, factory-fabricated branch saddle fittings, or field-fabricated branch saddles installed via traditional fusion techniques made in accordance with manufacturer's recommendations and step by step procedures. Branch saddle fusion equipment will be of the size to facilitate saddle fusion within the pipe trench.
 4. As per the manufacturer's instructions, no fusion shall be performed in precipitation unless a shelter is provided.

3.7 HDPE PIPE INSTALLATION

- A. Pipe installation shall comply with the requirements of ASTM D 2321, PPI TR-31/9-79, and the manufacturer's recommendations.
- B. Lengths of fused pipe to be handled as one segment shall not exceed 400 feet.
- C. The ENGINEER shall be notified prior to any pipe being installed in the trench in order to inspect the following items:
1. All butt and saddle fusions.
 2. Pipe integrity.
 3. Trench excavation for rocks and foreign material.
 4. Proper trench slope.
 5. Trench contour to ensure the pipe will have uniform and continuous support.
 6. Pipe locating tape.
- D. Any irregularities found by the ENGINEER during this inspection must be corrected before lowering the pipe into the trench. Pipe shall be allowed sufficient time to adjust to trench temperature prior to any testing, segment tie-ins, and/or backfilling.

- E. Tie-ins shall be made out of the trench whenever possible. When tie-ins are to be made only in the trench, a bell hole shall be excavated large enough to ensure an adequate and safe work area.
- F. Below grade piping shall be marked with metallic locator/warning tape to be buried in the trench approximately 1 foot above the pipe.

3.8 VALVES

- A. Valves shall be installed in accordance with the manufacturer's recommendations and the following:
 - 1. Butterfly valves shall be installed between two flanges. Care shall be taken to avoid stripping bolts when tightening.
 - 2. Flanges shall be joined with hot dipped galvanized steel studs and nuts. Stud and nut diameters shall be sized as recommended by the manufacturer for each size valve. Stud lengths shall accommodate the required distance between flanges including spacers, if necessary.
- B. The CONTRACTOR shall wrap and tape belowgrade valve, flanges, and bolts in 5-mil polyethylene sheeting prior to backfilling to help protect the valve assembly from corrosion.
- C. Flanged butterfly valves may require spacers between the flange adapters and the valve body in order to allow full travel of the internal disk. If spacers are necessary for any butterfly valve, the CONTRACTOR will install valve spacers subject to the approval by the ENGINEER.

3.9 SEGMENT TESTING

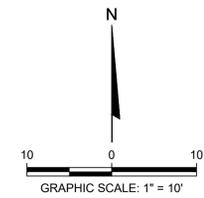
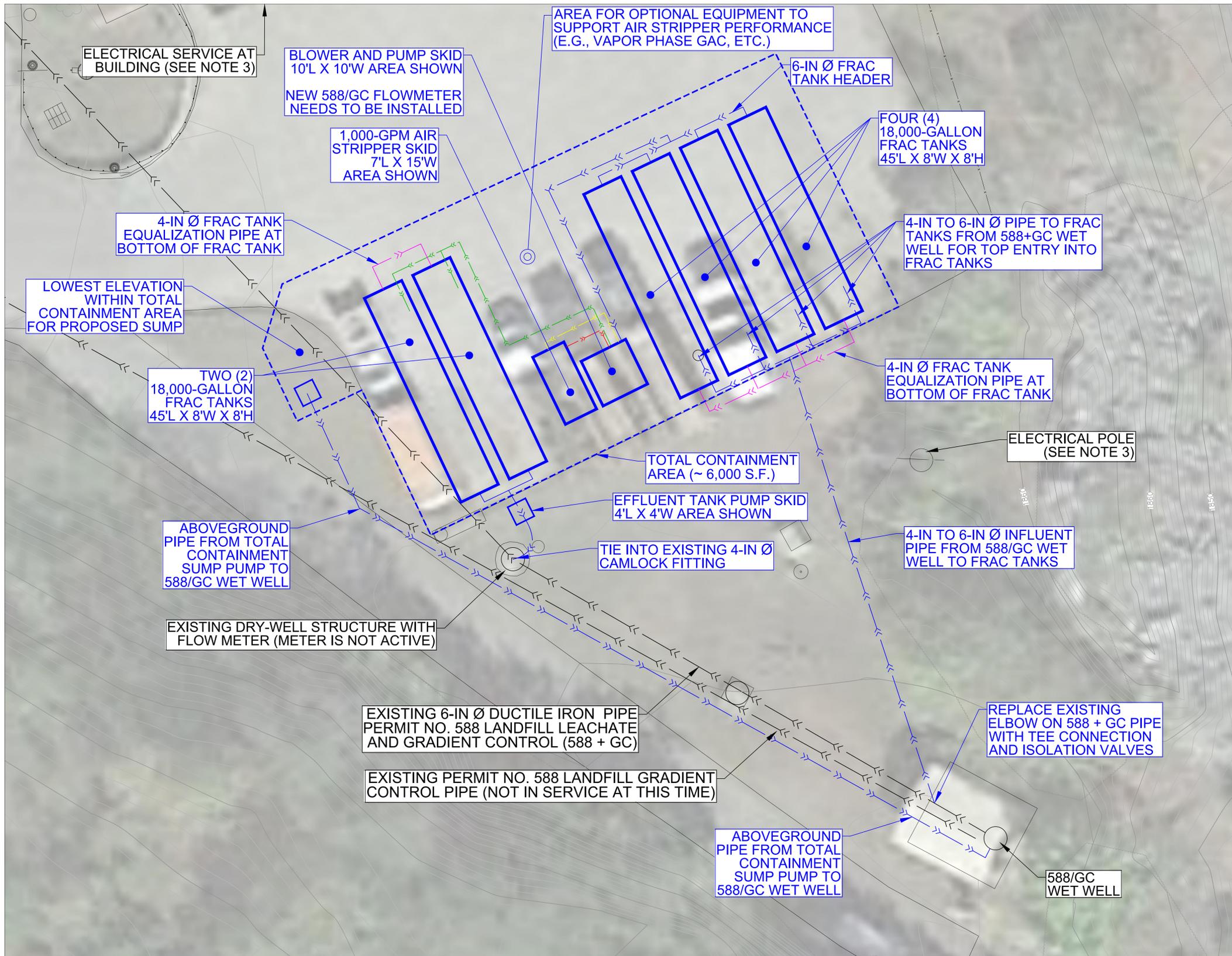
- A. The HDPE pipeline shall be subjected to an air test per ASTM F-1417 and as described herein to detect any leaks in the piping. Testing shall be performed abovegrade. The CONTRACTOR shall accept the responsibility for locating, uncovering (if previously backfilled), and repairing any leaks detected during testing.
- B. Like sizes of polyethylene piping shall be butt welded together into testing segment not to exceed 1000 feet. Segments shall be connected to a testing apparatus on one end and fitted with fusion-welded caps on all openings. The segment to be tested should be allowed time to achieve constant and/or ambient temperature before initiating the test.
- C. The test should be performed during a period when the pipe segment will be out of direct sunlight when possible; i.e., early morning, late evening, or cloudy days. This will minimize the pressure changes which will occur during temperature fluctuations.
- D. The test pressure shall be 5 psig for LFG collection piping and 10 psig for pneumatic supply and liquids forcemain piping.

- E. Pressure drop during the test shall not exceed one percent of the testing gauge pressure over a period of one hour. This pressure drop shall be corrected for temperature changes before determining pass or failure. (See Section 3.10 for test failures). The ENGINEER shall sign off on a test form to indicate test compliance.
- F. The ENGINEER shall be notified prior to commencement of the testing procedure and shall be present during the test.
- G. Equipment for this testing procedure will be furnished by the CONTRACTOR. This shall consist of a polyethylene flange adaptor with a PVC blind flange. Polyethylene reducers shall be utilized to adapt test flange to size of pipe being tested. Tapped and threaded into the blind flange shall be a temperature gauge 0 to 100 degrees C, a "Schraeder tire valve" to accommodate an air compressor hose, a ball valve to release pipe pressure at completion of test, and a pressure measuring device. The pressure measuring device shall be a digital manometer capable of measuring positive pressures of air and other non-corrosive gases over a range of 0 to 199.9 in-w.c. Model No. 475-3 as manufactured by Dwyer Instruments, Inc. (770-427-9406), or approved equal.

3.10 TEST FAILURE

- A. The following steps shall be performed when a pipe segment fails the one percent - 1 hour test described in this Section.
 - 1. The pipe and all fusions shall be inspected for cracks, pinholes, or perforations.
 - 2. All blocked risers and capped ends shall be inspected for leaks.
 - 3. Leaks shall be located and/or verified by applying a soapy water solution and observing soap bubble formation.
- B. All pipe and fused joint leaks shall be repaired by cutting out the leaking area and refusing the pipe.
- C. After all leaks are repaired, a retest shall be performed in accordance with this Section.

END OF SECTION 33 51 10



LEGEND

- EXISTING CONTOUR (SEE NOTE 1)
- APPROXIMATE LOCATION OF EXISTING LEACHATE CONVEYANCE PIPES
- APPROXIMATE LOCATION OF PROPOSED ABOVEGROUND LEACHATE CONVEYANCE PIPES
- APPROXIMATE LOCATION OF PROPOSED FRAC TANK EQUALIZATION PIPE AT BOTTOM OF TANK
- APPROXIMATE CONTAINMENT AREA WITH SUMP
- APPROXIMATE LOCATION OF PIPING INTO AIR STRIPPER
- APPROXIMATE LOCATION OF PIPING FROM AIR STRIPPER BACK TO PUMPS
- APPROXIMATE LOCATED OF PIPING FROM PUMPS TO EFFLUENT FRAC TANKS
- TEXT** INFORMATION OF PROPOSED STRUCTURES

NOTES

1. EXISTING CONTOURS DEVELOPED AND COMPILED BY NVS GEOSPATIAL IN 2022. CONTOURS SHOWN AT A 1-FT INTERVAL.
2. ALL LOCATIONS OF BURIED PIPING ARE APPROXIMATE BASED ON THE SITE DRAWINGS AVAILABLE TO SCS ENGINEERS, PROVIDED BY THE CITY OF BRISTOL. INFORMATION REGARDING DEPTHS OF THE PIPING IS LIMITED. PRIOR TO EXCAVATION IN THE VICINITY OF BURIED PIPING, CONTRACTOR SHALL USE NON-INVASIVE METHODS OF LOCATION AND EXPOSING THE PIPING, TO THE EXTENT POSSIBLE.
3. CITY OF BRISTOL TO PROVIDE ELECTRIC POWER CONNECTION TO THE TREATMENT SYSTEM AREA. CONTRACTOR TO CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL SERVICE.

REV.	DATE	DESCRIPTION

PROJECT NO.:	02218208.06
DESIGNED BY:	SJL/SLC
DRAWN BY:	BWM
CHECKED BY:	SLC
APPROVED BY:	SLC

SCS ENGINEERS
 40 SHUMAN, SUITE 216, NAPERVILLE, IL 60563
 PHONE: (331) 806-4295

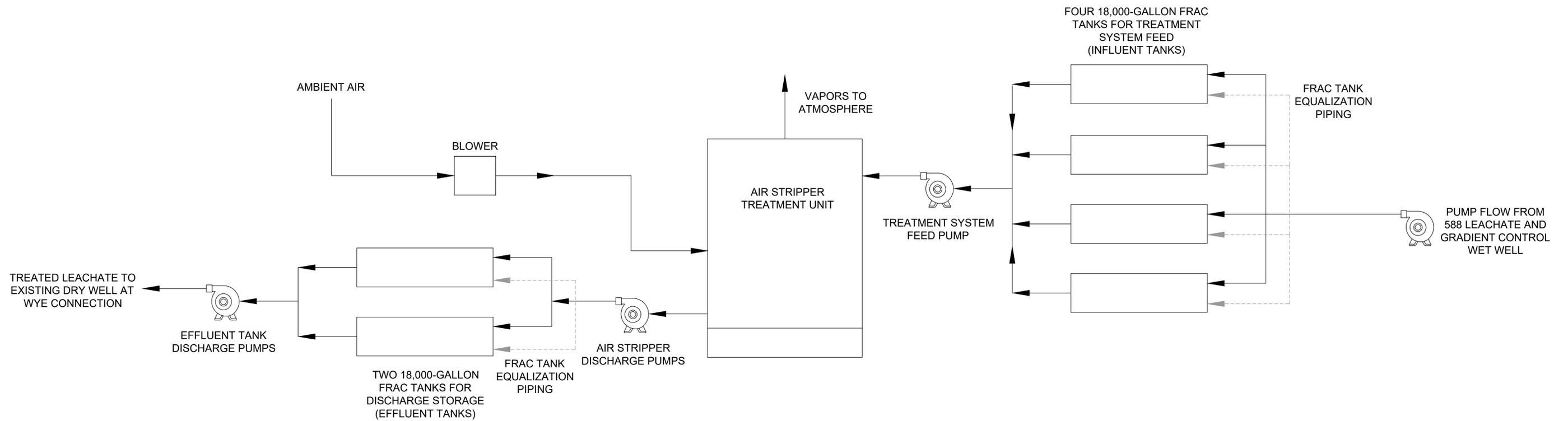
CLIENT

 CITY OF BRISTOL VIRGINIA

SITE
 CITY OF BRISTOL VIRGINIA SOLID WASTE
 2655 VALLEY DR.
 BRISTOL, VIRGINIA

**PROPOSED CONDITIONS
 TEMPORARY LAYOUT 1**

DATE: APRIL 12, 2023
01
 01 OF 01 SHEETS



NOTES

1. THIS PROCESS FLOW DIAGRAM WAS PREPARED TO REDUCE THE CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS (VOCs), SPECIFICALLY BENEZENE AND ETHYL BENZENE FROM THE BRISTOL 588 LANDFILL LEACHATE, AND 588 GRADIENT CONTROL.
2. IT IS ASSUMED THAT THE 498 LANDFILL LEACHATE DOES NOT REQUIRE TREATMENT FOR VOC REDUCTION, BASED ON LIMITED ANALYTICAL LANDFILL LIQUIDS TESTING.
3. THE USE OF 18,000-GALLON FRAC TANKS IS BASED SOLELY ON NOT BEING ABLE TO ERECT A LARGER TANK WITHIN THE TIME LIMIT ALLOWED FOR DEPLOYING A LEACHATE TREATMENT SYSTEM.
4. THE DESIGN OF THE HEADERS FOR FRAC TANK'S INLET AND DISCHARGE WILL DEPEND ON HOW EFFECTIVELY THE FOUR INFLUENT AND TWO EFFLUENT FRAC TANKS CAN ACT LIKE A SINGLE TANK.

OPTIONAL ITEMS NOT SHOWN IN PROCESS FLOW DIAGRAM

1. FILTRATION SYSTEM PRIOR TO AIR STRIPPER.
2. VAPOR-PHASE GRANULAR ACTIVATED CARBON (GAC) TREATMENT SYSTEM WITH VESSELS CONFIGURED IN SERIES.
3. LIQUID-PHASE GAC TREATMENT SYSTEM WITH VESSELS CONFIGURED IN SERIES.
4. FOAM SUPPRESSION SYSTEM INCLUDING CHEMICAL, FEED, AND TANKAGE.
5. TOTAL CONTAINMENT FOR FRAC TANKS INCLUDING CONTAINMENT LINER, SUMP, PIPE/HOSE TO WET WELL, AND PUMP CONTROLS.

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PROJECT NO.:	02218208.06
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PROCESS FLOW DIAGRAM

DATE: APRIL 17, 2023
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 01 OF 01 SHEETS