



CITY COUNCIL WORKSHOP - CAPITAL PLANNING

CITY OF BAY CITY

Thursday, July 07, 2022 at 4:00 PM
COUNCIL CHAMBERS | 1901 5th Street

COUNCIL MEMBERS

Mayor: Robert K Nelson

Mayor Pro Tem: Jim Folse

Council Members: Floyce Brown, Bradley Westmoreland, Becca Sitz, Blayne Finlay

Vision Statement

Through a united and collaborative effort, we seek to grow the City of Bay City with a diverse culture that is proud to call Bay City home. We envision a thriving family-centered community where citizens are involved in the future development of our city. We desire our citizens to work, play, worship and shop in the community in which we live. Visitors are welcomed and encouraged to enjoy the friendly environment and amenities the citizens and business owners have created together.

AGENDA

THE FOLLOWING ITEM WILL BE ADDRESSED AT THIS OR ANY OTHER MEETING OF THE CITY COUNCIL UPON THE REQUEST OF THE MAYOR, ANY MEMBER(S) OF COUNCIL AND/OR THE CITY ATTORNEY:

ANNOUNCEMENT BY THE MAYOR THAT COUNCIL WILL RETIRE INTO CLOSED SESSION FOR CONSULTATION WITH CITY ATTORNEY ON MATTERS IN WHICH THE DUTY OF THE ATTORNEY TO THE CITY COUNCIL UNDER THE TEXAS DISCIPLINARY RULES OF PROFESSIONAL CONDUCT OF THE STATE BAR OF TEXAS CLEARLY CONFLICTS WITH THE OPEN MEETINGS ACT (TITLE 5, CHAPTER 551, SECTION 551.071(2) OF THE TEXAS GOVERNMENT CODE).

CALL TO ORDER

CERTIFICATION OF QUORUM

PUBLIC COMMENTS

REGULAR ITEMS FOR DISCUSSION, CONSIDERATION AND / OR APPROVAL

1. Discuss TCEQ response to city's proposed arsenic remedies. Barry Calhoun, Public Works Director
2. Discuss, consider, and/or approve the installation of a temporary filter to lower arsenic levels at the Avenue I water plant. Barry Calhoun, Public Works Director
3. Budget ~ Discuss, Consider, and/or take action on the Ten (10) Year Capital Planning ranking process. Scotty Jones, Finance Director

ADJOURNMENT**CERTIFICATION OF POSTING**

This is to certify that the above notice of a City Council Workshop Meeting was posted on the front window of the City Hall of the City of Bay City, Texas on **Friday, July 1, 2022 before 5:00 p.m.** Any questions concerning the above items, please contact the Mayor and City Manager's office at (979) 245-2137.

Services and Equipment Use Agreement

The undersigned parties, AdEdge Water Technologies, LLC ("AdEdge"), whose home office is located at 2055 Boggs Rd., Duluth, GA 30096, and _____ ("Customer"), whose home office is located _____ hereby agree to be bound by the terms set forth herein and as set forth on any invoice(s) issued in conjunction with this Services and Equipment Use Agreement ("Agreement").

1. SERVICES AND EQUIPMENT.

(a) The services provided by AdEdge hereunder ("Services") shall consist of:

- a. Mobilization:
 - i. Delivery of Equipment to Site
 - ii. Start-up, Equipment commissioning, and operator training, consisting of one (1) AdEdge field service engineer at the Site for five (5) consecutive eight (8) hour days to review the installation of Equipment prior to start-up, performing start-up, supervise media loading, and train the Customer's operating personnel, all in accordance with AdEdge's written procedures.
- b. Demobilization
 - i. One (1) AdEdge field service engineer at the Site for two (2) consecutive eight (8) hour days for supervision of media extraction, equipment breakdown, and shipment preparation.
 - ii. Freight for Equipment back to AdEdge facility.
- c. Warranty Repair: Repair or replace non-functional Equipment in accordance with Section 10 below.
- d. Any additional on-Site Services requested by the Customer will be invoiced according to rates outlined in **Exhibit B**.

(b) The equipment used by the Customer hereunder ("Equipment") shall consist of:

- a. APU33-9672CS-2-MVT
 - i. Skid Mounted System w/ (2) 96" diameter vessels and manual valve tree.
 - ii. Other details as defined in **Exhibit A**.
 - iii. Additional details to be provided once Agreement is executed.

(c) Operating parameter and media life estimates are shown in **Exhibit C**.

(d) The Equipment will be located at the following location (the "Site") during the Term and will not be moved or re-located from the Site without AdEdge's prior written approval:

SITE NAME

SITE STREET ADDRESS

SITE TOWN, STATE, ZIP CODE

2. **SHIPMENT, UNLOADING, and INSTALLATION.** Shipment of the Equipment is included. Loading and unloading of Equipment at the Site is the responsibility of the Customer. Installation and dis-assembly labor is the responsibility of the Customer. Media loading is the responsibility of the Customer, under AdEdge supervision. AdEdge will provide guidance on installation and final inspection prior to start up.

3. **TERM.** The initial term ("Initial Term") of this Agreement is 6 months and shall commence on the Commencement Date set forth below. The Initial Term shall automatically be extended on a month-to-month basis (each, an "Extended Term", and together with the Initial Term, the "Term"), unless either party notifies the other not later than thirty (30) days prior to the end of the Initial Term (or thirty (30) days prior to the end of any Extended Term), of its election not to extend such Initial Term or Extended Term. AdEdge may terminate this Agreement at any time for convenience upon 10 days' prior written notice to Customer. The Commencement Date shall be the date of delivery of the Equipment to Customer's site.

4. **MONTHLY EQUIPMENT AND SERVICES FEE.**

a. The fees for the Services and use of the Equipment shall be as follows:

- | | |
|---|--|
| i. Mobilization Fee | \$38,600 |
| ii. Initial Media/Underbedding Volume | \$102,500 |
| iii. Monthly Rental | \$11,800 |
| iv. Demobilization Fee | Included |
| v. Media Removal and Disposal | <i>Not included – Quoted per Event</i> |
| 1. <i>Media must be removed prior to demobilization</i> | |

b. The following terms shall apply:

- i. All prices are USD.
- ii. Taxes are excluded.
- iii. The Mobilization Fee will be invoiced upon execution of this Agreement. Payment must be received before Equipment and Services will be mobilized.
- iv. Invoice for the Initial Media/Underbedding Volume will be sent upon shipment. Payment is due net 30 days.
- v. The Monthly Rental Fee will be invoiced on the first working day of each month, starting in the month after the Commencement Date. Payment is due net 30 days.
- vi. AdEdge acceptance of this Agreement is contingent upon the following:
 1. Review and approval by AdEdge of completed Customer Credit Application.
 2. Customer must issue a formal PO in addition to signing this Agreement.
 3. If Customer is tax exempt, a Tax Exemption Certificate must be provided.

5. **USE OF EQUIPMENT.** Customer agrees that:

(a) Customer has been trained on the operation and safe use of the Equipment supplied under this Agreement by AdEdge personnel and will sign the "certificate of training" document upon completion of training. Customer will use the Equipment in a careful and proper manner only at the Site and for routine operations approved by AdEdge in writing.

(b) Customer has read any documents attached to this Agreement and has agreed to comply with their terms.

(c) Customer will not re-rent, transfer, or sublease the Equipment, assign this Agreement or any interests in the Equipment or under this Agreement, permit any lien or encumbrance upon the Equipment, or remove the Equipment to any location other than the Site.

(d) Customer may not modify the Equipment in any way or for any reason without prior written approval from AdEdge. AdEdge has the right to invoice Customer for any and all Equipment modifications or Equipment damage(s) resulting from misuse or unapproved modifications, including costs incurred to return Equipment to original condition prior to modification.

6. **RESPONSIBILITY FOR USE.** Customer is responsible for the use of the Equipment and assumes all risks inherent in the operation and use of the Equipment. Customer agrees to indemnify, release, defend and hold AdEdge, its affiliates, and its and their respective employees, directors, agents, and successors and assigns, harmless from any and all claims, obligations, losses, damages, injuries, demands, penalties,

actions, costs and expenses of any kind and nature ("Claims") resulting from the use, operation, condition, selection, transportation, or return of the Equipment, regardless of whether such Claims arise in contract, warranty, negligence, tort, strict liability, or otherwise (including whether the damage was caused by the defective condition of the Equipment) and regardless of fault or cause.

7. **RISK OF LOSS.** All risks of damage to or loss or destruction of the Equipment shall be borne by Customer, and no such damage, loss or destruction shall abate or reduce Customer's obligations, including the payment of fees and charges under this Agreement.

8. **EQUIPMENT REPAIR.** Customer shall keep the Equipment in good maintenance, repair, and operating condition during the Term at its own cost and expense, allowing only for reasonable and ordinary wear and tear. If the Equipment malfunctions during the Term, Customer should notify AdEdge immediately. The exclusive remedy and maximum responsibility, if any, that AdEdge will assume in connection with such malfunction will be to repair or replace, at its option, defect(s) in material and/or workmanship covered by and in accordance with the Equipment manufacturer's warranty, subject to all applicable exclusions and limitations applicable to such warranty; provided that such Equipment has been unaltered, properly maintained, and operated under normal operating conditions and in accordance with AdEdge's instructions. If Equipment malfunction is a result of Customer negligence and/or misuse or otherwise not covered by the Equipment manufacturer's warranty, as determined by AdEdge inspection, then Customer will be invoiced for all repairs or replacements that AdEdge may designate necessary to correct the Equipment malfunction.

9. **RETURN OF THE EQUIPMENT:** Customer, at its sole expense, shall be responsible for the proper loading for transportation and delivery to return the Equipment to AdEdge. Expenses for shipping, freight, and unloading at AdEdge Facility is included in the Demobilization Fee. If Customer fails to make the Equipment ready for return when due, AdEdge may arrange to remove the Equipment at any time, notify the authorities, and take other action. Customer agrees to pay reasonable attorneys' and collection fees, court costs and any other expenses incurred collecting any fees or charges under this Agreement, removing the Equipment, or for otherwise enforcing the terms of this Agreement.

Delivery and pickup dates are approximate. AdEdge shall not be liable for any delays for reasons beyond its control, including acts of God, actions or restrictions of the United States Government or other governments having jurisdiction, delays in transportation, earthquakes, floods, named storms, hurricanes, tornados, cyclones, typhoons or other natural disasters, or inability to obtain necessary labor or materials.

Customer will receive a receipt to verify return of the Equipment. Only after AdEdge has conducted a formal inspection thereof to ensure proper working order will the Customer be relieved of liability for repairs. It is understood this inspection may not be immediately possible at the time the Equipment is returned.

10. **SECURITY DEPOSIT.** If Customer has left a security deposit with AdEdge either in cash or otherwise, Customer agrees that AdEdge may at any time apply the security deposit against any and all amounts owed to AdEdge under this Agreement. After the proper payment for and return of the Equipment in proper working order, the security deposit (less any reductions) will be returned.

11. **WARRANTY DISCLAIMER.** ADEGE MAKES NO WARRANTY NOR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING THE EQUIPMENT OR SERVICES UNDER THIS AGREEMENT, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUALITY, NON-INFRINGEMENT, DESIGN, CONDITION, CAPACITY, SUITABILITY, OR PERFORMANCE OF THE EQUIPMENT, OR OF ITS MATERIAL OR WORKMANSHIP, OR THE SERVICES. Customer agrees that Equipment has been selected based upon Customer's own judgment and knowledge and Customer is aware of the malfunctions which are inherent in the operation of such Equipment. Customer is also aware that because of the electrical nature of the Equipment, its use involves a risk of fire. Without limiting the foregoing, Customer therefore agrees that with respect to any failure, malfunction or defect in the Equipment, AdEdge shall not be responsible for: (a) any personal injury or property damage; (b) any loss or alteration of the data contained on storage disks or the internal memory of the Equipment; or (c) the compatibility, unsuitability or incapacity of the Equipment or the operating software to perform with any applications software used.

12. **STATUS OF EQUIPMENT. TAXES.** The Equipment provided hereunder is, and will, at all times remain, personal property of AdEdge notwithstanding that it or any part of it may now be, or hereafter become, in any manner attached to, or embedded in, or permanently resting on, real property or improvements of Customer or any third party. Customer is responsible for any and all taxes arising with respect to the Equipment or Services. These taxes include sales, use, excise, and similar taxes.

13. **LIMITATION OF LIABILITY.** AdEdge, its affiliates and its and their respective subcontractors and vendors of any tier, and the directors, officers and employees of each (for this paragraph, collectively "AdEdge"), shall not be liable for consequential, special, indirect or incidental damages or for any loss of use, profits, revenue, opportunity, product or production, capital or financing, or bonding capacity, and AdEdge's cumulative liability for all other claims, loss and damages shall be limited in the aggregate to the compensation paid to AdEdge under this Agreement for the Equipment or Services giving rise to the liability. This paragraph applies notwithstanding anything to the contrary in this Agreement or otherwise and regardless of whether such liability arises in contract, warranty, negligence, tort, strict liability, or otherwise.

14. **DEFAULT.** In the event any invoice remains unpaid upon receipt or the Customer is otherwise in default or breach of this Agreement and fails to correct such breach within three (3) days of notice thereof, AdEdge may retake possession of the Equipment with or without process of law and without demand or further notice. AdEdge may also process all applicable charges and outstanding obligations against any other collateral in accordance with Section 9, and in accordance with applicable laws. In the event a petition under the federal bankruptcy laws is filed by or against the Customer, or the Customer makes an assignment for the benefit of creditors, or a receiver for the Customer is appointed or applied for, or the Customer ceases to function as a going concern, AdEdge may declare the Customer to be in default and AdEdge may take possession of the Equipment and exercise any other remedies or rights that AdEdge may have at law or in equity.

15. **INSURANCE.** Customer agrees to provide and maintain during the Term, at its expense: (i) commercial general liability insurance with minimum limits of: \$2,000,000 per occurrences for bodily injury/property damage; \$5,000,000 aggregate; (ii) workers' compensation insurance of not less than statutory amounts, with a minimum coverage amount of \$500,000, covering all employees working on, in, near, or about the Equipment (and Customer shall require any other person or entity working on, in, near, or about the Equipment to carry such coverage); and (iii) "all risk" property damage insurance insuring the Equipment against loss, theft, damage or destruction, including fire and extended coverage perils, in an amount not less than \$1,000,000, and such property damage insurance shall also cover, and Customer will be responsible for, damage to or destruction of property owned by or in the custody or possession of Customer or any person operating the Equipment. Customer shall name AdEdge and its affiliates as additional insured (and, with respect to property insurance, name AdEdge and/or its designee(s) as loss payee) for all required coverage in this paragraph, except workers' compensation, and shall waive all rights of subrogation in favor of AdEdge and its affiliates. Insurance maintained pursuant to this paragraph shall be considered primary as respects the interest of each of the additional insureds and is not contributory with any insurance which an additional insured may carry. Customer shall furnish to AdEdge certificate(s) of insurance evidencing compliance with the foregoing requirements (in a form reasonably acceptable to AdEdge) throughout the Term.

16. **GENERAL.** The validity, performance and all matters relating to the interpretation and effect of this Agreement shall be governed by the laws of the State of Arkansas. Neither party will commence or prosecute any action, suit, proceeding, or claim arising out of or related to this lease other than in the state or federal courts located in Benton, County Arkansas. Each party hereby irrevocably consents to the exclusive jurisdiction and venue of such courts in connection with any such action, suit, proceeding or claim. This Agreement states the entire agreement of the parties, and supersedes all prior representations and agreements, oral or written, concerning the subject matter of this Agreement. No amendment, modification, rescission, waiver or other modification shall be binding on either party unless so designated and signed by that party's authorized representative. No failure or delay by either party in exercising any right, power, or privilege under this Agreement shall operate as a waiver or preclude the exercise of any other or further right, power, or privilege hereunder. The use of "including" and similar words and phrases shall be deemed to mean "including but not limited to," and are used in an illustrative sense and not a limiting sense. This Agreement shall be valid and binding according to its terms, on signing of same by both parties and delivery whether by original, email or

facsimile, and may be executed in one or more counterparts, each of which shall be deemed to be an original, but all of which shall constitute one and the same instrument. Except as otherwise expressly set forth in this Agreement, rights and remedies hereunder shall be cumulative with, and may be exercised without prejudice to, other rights and remedies under this Agreement, at law, or in equity. If any provision of this Agreement is deemed void, invalid or unenforceable by any court or tribunal of competent jurisdiction, that provision shall be stricken from this Agreement without effect on the remaining provisions of the Agreement. Notices to either party may be sent to the address stated in this Agreement.

The undersigned parties agree to all terms and condition set forth herein.

AdEdge Water Technologies, LLC

Signature: _____

Printed Name: _____

Printed Title: _____

Date: _____

Customer: Brunswick Topsham Water District

Signature: _____

Printed Name: _____

Printed Title: _____

Date: _____

Please provide information below for Invoicing:

Contact for Invoice: _____

Contact email: _____

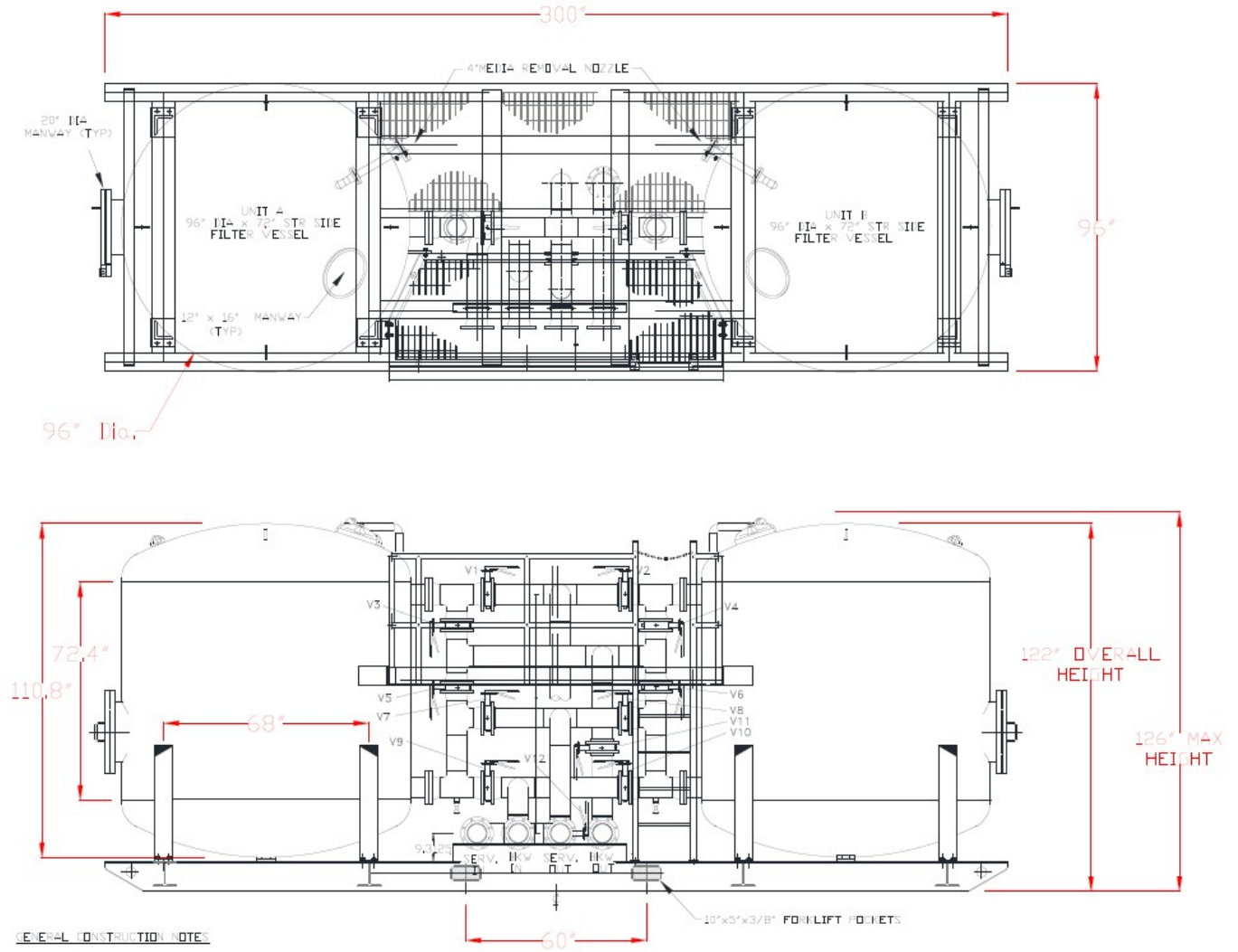
Contact Phone: _____

Exhibit A

Equipment

Weights and Measures

Max. Flowrates	Up to 600 gpm in series or 1200 gpm in parallel <i>(application dependent)</i>
Max. Pressure	100 psi
Max. Temperature	150°F
Max. Height	10'-6"
Width	8'-0" <i>(skid)</i>
Length	25'-0" <i>(skid)</i>
Diameter	96" <i>(each vessel)</i>
Shipping Weight <i>(empty)</i>	41,100 lbs. <i>(equipment – 21,100 lbs; activated carbon – 20,000 lbs)</i>



***NOTE:** Actual asset available at time of rental may be similar but have slightly larger or smaller footprint. Plan for +/- 2 ft variance for all dimensions. Tie points will be same or larger.

Exhibit B
AdEdge Hourly Rates

Service	Unit of Measure	Unit Rate
FIELD SERVICE TECHNICIAN / PILOT TECHNICIAN		
Field Service Technician (per 4 hr Day)	Per Person 1/2 Day	\$500
Field Service Technician (per 8 hr Day)	Per Person Day	\$1,000
Field Service Technician – Overtime	Per Person Hour	\$187.50
Travel Time	Per Person Hour	\$75
Travel Time – Overtime	Per Person Hour	\$112.50
Expenses (Flight, Car, Hotel, Food, etc.)	Cost plus 10%	
FIELD SERVICE – ENGINEERING SUPPORT		
Field Service - Engineering (per 4 hr Day)	Per Person 1/2 Day	\$600
Field Service - Engineering (per 8 hr Day)	Per Person Day	\$1,200
Field Service - Engineering – Overtime	Per Person Hour	\$225
Travel Time	Per Person Hour	\$100
Travel Time – Overtime	Per Person Hour	\$150
Expenses (Flight, Car, Hotel, Food, etc.)	Cost plus 10%	
ENGINEERING / REMOTE SERVICES		
Remote Pilot Technician / Support	Per Person Hour	\$100
Mech/Process Engineering	Per Person Hour	\$150
Electrical Engineering	Per Person Hour	\$150
Controls/Programming Engineering	Per Person Hour	\$150

Notes:

1. Final invoice amount will be actual time multiplied by the associated unit rate.
2. No taxes are included (if applicable).

Exhibit C Operating Parameters

Water Quality Design Basis

Parameters			Water Chemistry			Parameters		
pH	7.50					Ammonia		mg/L NH ₃ -N
Total Arsenic	0.0125	mg/L As				Nitrate		mg/L NO ₃ -N
Arsenic (III)		mg/L As (III)				Sodium	72	mg/L Na
Total Sulfides		mg/L Total Sulfides				Chloride	106	mg/L Cl
Alkalinity	251	mg/L (as CaCO ₃)				Sulfate	15	mg/L as SO ₄
Bicarbonate		mg/L (as CaCO ₃)				Fluoride	0.6	mg/L F
Hardness	120	mg/L (as CaCO ₃)				Total Dissolved Solids	440	mg/L TDS
Calcium	30	mg/L Ca				Total Suspended Solids		mg/L TSS
Magnesium	12	mg/L Mg				Gross Alpha		pCi/L
Phosphate	0.15	mg/L PO ₄				Combined Radium		pCi/L Ra 226/228
Silica	20.0	mg/L SiO ₂				Uranium		mg/L U 238
Vanadium	0.010	mg/L V				Turbidity		NTU
Iron	0.08	mg/L Fe				Temperature		°F
Manganese	0.02	mg/L Mn				Dissolved Oxygen		mg/L DO
TOC		mg/L TOC				Chromium VI		mg/L Cr(VI)

Media Life Estimate

Estimated Bed Volumes to Breakthrough:	88,644 BV
Estimated Volume to Breakthrough:	232,069,418 gal

Notes

- Assumes worst case scenario and no blending factor

Blending Table

Treatment Percentage / Flowrate (gpm) with Full Well Flow (1,320 gpm)						
As Out As In	2	3	4	5	6	7
8.5	8% / 102	9% / 120	11% / 147	14% / 189	20% / 264	33% / 440
9.5	20% / 264	23% / 305	27% / 360	33% / 440	43% / 566	60% / 792
10.5	29% / 388	33% / 440	38% / 508	45% / 600	56% / 733	
11.5	37% / 486	41% / 544	47% / 616	54% / 711		
12.5	43% / 566	47% / 625	53% / 699	60% / 792		
13.5	48% / 631	52% / 691	58% / 764			
14.5	52% / 686	57% / 746				
15.5	56% / 733	60% / 792				
16.5	59% / 774					

WELL FLOW MUST BE REDUCED
IN THIS OPERATING AREA

Note: Max allowable flow through the skid is 800 gpm.

Backwash Parameters

Backwash Configuration:	Raw Water Backwash
Backwash Frequency:	Every 30-45 days
Backwash Loading Rate:	9 gpm/sqft
Backwash Flow Rate:	455 gpm
Backwash Volume / Vessel:	6,825 gal
Backwash Volume / Event:	13,650 gal

Appendix A

SCOPE OF SERVICES

CITY OF BAY CITY, TEXAS Arsenic Removal Study

I. Background

Garver visited the Bay City 6th Street & Avenue I WTP in response to an arsenic maximum contaminant level (MCL) violation for this facility. Compliance with the Arsenic Rule requires maintenance of arsenic levels below the maximum contaminant level (MCL) at all entry points to the distribution system on a running annual average basis. Arsenic levels can be controlled by blending source waters prior to the entry point, implementing arsenic removal processes at individual wells, or in a centralized treatment facility.

The well at 6th Street & Avenue I is currently not in production due to the arsenic MCL exceedance. During a previous arsenic exceedance, the City implemented a blending plan to blend water from the water plants prior to entry point to the distribution system. Generally, blending is a preferred alternative to arsenic removal treatment. However, blending was not found to be effective during this latest violation due to the generally elevated arsenic concentrations occurring at other facilities (while still below the MCL), resulting in higher arsenic concentrations overall in the distribution system water.

There are a total of six production wells for the City. Two of the wells are located on one site and the other wells are located individually and distributed across the system. Currently, the only treatment performed at the existing water plants is free chlorine application and polyphosphate dosing as an iron sequestering agent. Pursuant to the site visit, the City provided recent arsenic water quality results from the other water plants, these facilities included: 6th Street & Katy Avenue, Mockingbird, Grace, and 4th Street & Avenue B.

Garver proposes to develop a Summary of Findings Memorandum with recommendations, criteria, and costs for a proposed permanent arsenic removal treatment system.

II. Scope of Work

The following scope of work describes the services to be provided.

Task I – Project Administration

1. Garver will participate in one kick-off meeting to discuss project objectives, requisite action items, and schedule.
2. Garver will prepare and facilitate one progress meeting with the City to maintain coordination with all stakeholders as well as update schedule and action items.
3. Professional Service Provider will prepare monthly progress/status report sufficient to support monthly billings.

Task II - Water Quality Modeling (Blending Optimization)

1. Challenges to implementing blending or centralized treatment include the potential impacts on the chemical stability of the water as well as the need to convey sufficient volumes of water with low arsenic levels to existing well sites or new treatment facilities for blending. Water quality modeling can help with this assessment, noting that traditional distribution system water quality software models are generally limited to tracking the dynamics of a single constituent as the selected component is transported throughout the distribution system network.

Garver will perform a el using a spreadsheet-based blending model to determine if blending water from one or more of the lower arsenic level wells with the water from the two higher arsenic level

wells (6th Street & Avenue I and 6th Street & Katy Avenue) could reliably produce finished water with arsenic levels below the MCL. If the overall system has enough low arsenic sources available, and these sources can consistently be operated in conjunction with the high arsenic sources, then the water system may be able to produce finished water below the MCL by blending these sources. In order for blending applications to be appropriate, the wells with low arsenic levels must be reliable on a continuous basis.

Garver will develop three optimized blends, assuming blending of water from multiple wells occurs without additional arsenic removal treatment at a centralized blending facility or at the individual well sites with highest arsenic levels. Garver will also determine the percentages of water that would need to be treated using an arsenic removal process at the two individual higher-arsenic well sites before blending with untreated water to produce finished water with arsenic levels below the MCL, resulting in two additional optimized blends. For each of the five blends, Garver will use a spreadsheet-based model to predict finished water pH, alkalinity, calcium, magnesium, chloride, and sulfate concentrations to identify any concerns related to the chemical stability of the blends.

Garver will also use the City's existing network hydraulic model to identify the required conveyance improvements for blending at the centralized blending facility and the two individual well sites. Garver will document the results of the blending assessment in a Summary of Findings Memorandum.

Task III –Arsenic Treatment Alternatives Evaluation

1. Garver will analyze up to three permanent arsenic treatment system alternatives. The treatment alternatives will be evaluated for location at individual water treatment plant sites, as appropriate, and also as a centralized treatment facility. For a centralized treatment system, Garver will identify and review available sites with City staff with anticipation that chlorinated water will be available to be pumped from applicable water treatment plant sites to the centralized facility location. Permanent arsenic treatment alternatives are expected to comprise:
 - a. Iron Adsorption Media Vessel
 - b. Ion Exchange
 - c. Reverse Osmosis
2. A cost comparison will be performed for each treatment alternative and for comparison of individual treatment sites and a centralized facility to support a recommendation.
3. Iron Adsorption Media Vessel: Perform 3rd Party Raw Water Testing
 - a. Garver will engage a third party (previously worked with) to perform Rapid Small Scale Column Tests (RSSCT) on Bay City's raw water to help ascertain optimal iron adsorption vessel media usage. The RSSCT will be performed with two different adsorbent media types to assess arsenic breakthrough profiles (e.g. media life assessment) and the effects of pre-treatment. Test will be performed using Bayoxide E33 and Granular Ferric Hydroxide (GFH). Tests typically require collection of two 55-gallon drums of raw water to be shipped to testing facility.
4. Garver will provide an ion exchange vendor with requisite water quality parameters so the vendor can perform intrinsic water quality modeling to help with optimal media selection for the given well site(s).

Task IV – Additional Water Quality Sampling

1. To help further assess the various treatment alternatives' feasibility, and optimize the water quality modeling analysis, Garver recommends that the City perform additional raw water

Appendix A

ITEM #2.

sampling for each water plant. The parameters recommended for testing include:

- a. Phosphates
- b. Silica
- c. Vanadium
- d. Arsenic speciation

Task V – Summary of Findings Memorandum

1. Garver shall prepare and submit a Draft Summary of Findings Memorandum with recommendations for a permanent arsenic treatment system and location.
2. Garver will prepare an AACE Class 5 cost estimate for the final recommended alternative.
3. Review Draft Memorandum with the City in a workshop.
4. Address resolved comments and issue a Final Memorandum in electronic format (PDF).

Summary of Project Deliverables

1. Draft Summary of Findings Memorandum in electronic format (PDF).
2. Final Summary of Findings Memorandum in electronic format (PDF).

III. Schedule

Garver shall begin work under this Agreement within ten (10) days of a Notice to Proceed and shall complete the work in accordance with the schedule below:

Task Description	Calendar Days
Kick-Off Meeting	7 days from Notice to Proceed
Subtask: Perform Additional Water Quality Sampling	7 days from Kick-Off Meeting
Subtask: Initiate 3rd Party Raw Water Testing (RSSCT)	7 days from Kick-Off Meeting
Subtask: Commence Blending Optimization Model	3 days from Additional Water Quality Sampling Results
Subtask: Ion Exchange Water Quality Modeling (by Vendor)	7 days from Additional Water Quality Sampling Results
Deliver DRAFT Summary of Findings Memorandum	60 days from all completed subtasks
DRAFT Summary of Findings Memorandum Deliverable Review Workshop	10 days from delivery of DRAFT Summary of Findings Memorandum
Deliver FINAL Summary of Findings Memorandum	10 days from receipt of DRAFT Summary of Findings Memorandum Workshop Comments from City

Appendix B

City of Bay City, Texas Arsenic Removal Study

SUMMARY

Task	Cost
TASK I - Project Administration	\$ 7,792.00
TASK II - Water Quality Modeling (Blending Optimization)	\$ 29,064.00
TASK III - Arsenic Treatment Alternatives Evaluation	\$ 46,068.00
TASK IV - Additional Water Quality Sampling	\$ 8,062.00
TASK V - Summary of Findings Memorandum	\$ 46,800.00
Total Cost	\$ 137,786.00



PURCHASE REQUISITION

CITY OF BAY CITY

DEPARTMENT: **Public Works - WWTP**USE (JUSTIFICATION): **Purchase Order?** ☒ Yes ☐ No

Engineering - 6th Street & Ave I Water Well: Arsenic Removal Study. The City has received two violations from TCEQ for exceeding required arsenic levels which requires the City to notify the public. We have enlisted the assistance of Garver to perform a study to determine the cause of the high arsenic levels and determine a permanent solution to remedy the problem to become within TCEQ compliance again.

PR NO.: **20220527-02**PR DATE: **5/27/2022**DATE REQ'D: **5/27/2022**
SHIP TO:
City of Bay City, MSB
1217 Avenue J
Bay City, TX 77414
SHIP VIA: **Vendor**

P.O. NO

VENDOR

VENDOR #

VEND. PHONE #

QUOTED BY

DATE

PURCHASE CONTRACT #

TERMS

F.O.B.

SHIP DATE

QUOTE #

Garver**Dan Olson****Net 30****Jobsite****ASAP**

ITEM #2.

ITEM NO.	PRODUCT NO.	DESCRIPTION OF ITEMS	FUND / DEPT / ACCT	UNIT	QTY.	UNIT COST	AMOUNT	UNIT COST	AMOUNT	UNIT COST	AMOUNT
1		Task I - Project Administration	61-620-4419	EA	1	\$7,792.000	\$ 7,792.00				
2		Task II - Water Quality Modeling (Blending Optimization)	61-620-4419	EA	1	\$29,064.000	\$ 29,064.00				
3		Task III - Arsenic Treatment Alternatives Evaluation	61-620-4419	EA	1	\$46,068.000	\$ 46,068.00				
4		Task IV - Additional Water Quality Sampling	61-620-4419	EA	1	\$8,062.000	\$ 8,062.00				
5		Task V - Summary of Findings Memorandum	61-620-4419	EA	1	\$46,800.000	\$ 46,800.00				
6											
7											
8											
9											
10											
11											
12											
DEPARTMENT SUPERVISOR:		DIVISION SUPERVISOR/FOREMAN:	REQUESTED BY:		PAGE TOTAL		\$ 137,786.00				
Louis Rodriguez		Louis Rodriguez	Louis Rodriguez								
DEPARTMENT HEAD:		MAIL INVOICE TO:	DATE ORDERED:		PR TOTAL		\$ 137,786.00				
Barry Calhoun		City of Bay City, Finance Department									
FINANCE DIRECTOR:		1901 5th Street	PAGE <u>1</u> of <u>1</u>								
Scotty Jones		Bay City, TX 77414									



PURCHASE REQUISITION

CITY OF BAY CITY

DEPARTMENT: **Public Works - WWTP**USE (JUSTIFICATION): **Purchase Order?** ☒ Yes ☐ No

Arsenic Mobile Removal Unit Rental for the 6th St & Ave I Water Plant. The City has received two violations from TCEQ for exceeding required arsenic levels which requires the City to notify the public. This system will be used temporarily to treat the water to bring arsenic levels within compliance as required by TCEQ.

PR NO.: **20220527-01**PR DATE: **5/27/2022**DATE REQ'D: **5/27/2022**

SHIP TO:
City of Bay City, MSB
1217 Avenue J
Bay City, TX 77414

SHIP VIA: **Vendor**

P.O. NO

VENDOR

VENDOR #

VEND. PHONE #

QUOTED BY

DATE

PURCHASE CONTRACT #

TERMS

F.O.B.

SHIP DATE

QUOTE #

AdEdge

Net 30

Jobsite

ASAP

ITEM #2.

ITEM NO.	PRODUCT NO.	DESCRIPTION OF ITEMS	FUND / DEPT / ACCT	UNIT	QTY.	UNIT COST	AMOUNT	UNIT COST	AMOUNT	UNIT COST	AMOUNT
1		Mobilization Fee	61-620-4520	EA	1	\$38,600.000	\$ 38,600.00				
2		Initial Media/Underbedding Volume	61-620-4520	EA	1	\$102,500.000	\$102,500.00				
3		Monthly Rental	61-620-4520	MO	12	\$11,800.000	\$141,600.00				
4		Demobilization Fee	61-620-4520	EA	0	\$ -					
5		Media Removal & Disposal - Quoted per Event	61-620-4520	EA	2	\$46,800.000	\$ 93,600.00				
6											
7											
8											
9											
10											
11											
12											
DEPARTMENT SUPERVISOR:		DIVISION SUPERVISOR/FOREMAN:	REQUESTED BY:		PAGE TOTAL		\$ 376,300.00				
Louis Rodriguez		Louis Rodriguez	Louis Rodriguez								
DEPARTMENT HEAD:		MAIL INVOICE TO:	DATE ORDERED:		PR TOTAL		\$ 376,300.00				
Barry Calhoun		City of Bay City, Finance Department									
FINANCE DIRECTOR:		1901 5th Street	PAGE 1 of 1								
Scotty Jones		Bay City, TX 77414									