

## Texas Commission on Environmental Quality Waste Permits Division Correspondence Cover Sheet

Date: <u>6 August 2024</u> Facility Name: <u>Texas Star Property West</u> Permit or Registration No.: <u>62054</u> Nature of Correspondence:

- Initial/New
- Response/Revision to TCEQ Tracking No.: <u>29838265</u> (from subject line of TCEQ letter regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Applications	Reports and Notifications
New Notice of Intent	Alternative Daily Cover Report
Notice of Intent Revision	Closure Report
$\square$ New Permit (including Subchapter T)	Compost Report
New Registration (including Subchapter T)	Groundwater Alternate Source Demonstration
🗌 Major Amendment	Groundwater Corrective Action
Minor Amendment	Groundwater Monitoring Report
Limited Scope Major Amendment	Groundwater Background Evaluation
Notice Modification	Landfill Gas Corrective Action
Non-Notice Modification	Landfill Gas Monitoring
Transfer/Name Change Modification	Liner Evaluation Report
Temporary Authorization	Soil Boring Plan
Uvoluntary Revocation	Special Waste Request
Subchapter T Disturbance Non-Enclosed Structure	Other:
Other:	

#### Table 1 - Municipal Solid Waste Correspondence

#### Table 2 - Industrial & Hazardous Waste Correspondence

Applications	Reports and Responses
□ New	Annual/Biennial Site Activity Report
Renewal	CPT Plan/Result
Post-Closure Order	Closure Certification/Report
🗌 Major Amendment	Construction Certification/Report
🗌 Minor Amendment	CPT Plan/Result
CCR Registration	Extension Request
CCR Registration Major Amendment	Groundwater Monitoring Report
CCR Registration Minor Amendment	Interim Status Change
Class 3 Modification	Interim Status Closure Plan
Class 2 Modification	Soil Core Monitoring Report
Class 1 ED Modification	Treatability Study
Class 1 Modification	Trial Burn Plan/Result
Endorsement	Unsaturated Zone Monitoring Report
Temporary Authorization	Waste Minimization Report
Voluntary Revocation	Other:
335.6 Notification	
Other:	



**SQ Environmental, LLC** P.O. Box 1991 Austin, TX 78767-1991 (512) 900-7731 www.SQEnv.com

6 August 2024

Arin Anderson, Project Manager Municipal Solid Waste Permits – MC 124 Texas Commission on Environmental Quality P.O. Box 13087 Austin, Texas 78711-3087

Via E-Mail:

RE: Response to TCEQ NOD3 E-Mail Dated 2 July 2024; MSW Tracking No. 29838265 Application for Development Permit for Proposed Enclosed Structure Texas Star Property West, 11450 Trinity Blvd, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Ms. Anderson:

SQ Environmental, LLC (SQE) prepared this letter in response to the Texas Commission on Environmental Quality (TCEQ) third notice of deficiency (NOD3) e-mail dated 2 July 2024 regarding the *Application for Development Permit for Proposed Enclosed Structure* (Application) for the Texas Star Property West, located at 11450 Trinity Boulevard (Blvd) in Euless, Texas. The initial Application was submitted to TCEQ on 1 March 2024. TCEQ comments regarding the Application were received on 4 April 2024, 28 May 2024, and most recently 2 July 2024. Responses to TCEQ's NOD3 comments are provided below. Attached to this letter are Revision 3 versions of Application Form TCEQ-20785 and marked (redline) and unmarked ("clean") replacement pages of the Application.

For convenience, TCEQ NOD comments have been numbered and are shown below (*in italics*) followed by the responses.

<u>TCEQ Comment 1</u>: Revise Section 13 of TCEQ-20785 Form to indicate that alternative language notice is required.

<u>Response to Comment 1</u>: Section 13 of Form TCEQ-20785 has been revised to indicate that alternative language notice is required. Revision 3 replacement pages of Form TCEQ-20785 are provided with this letter.

<u>TCEQ Comment 2</u>: Remove language provided in Attachment 1-1 suggesting that waste may be redeposited back into the landfill. Excavated waste is required to be disposed of at an authorized facility.

<u>Response to Comment 2</u>: Language in Section 1 suggesting that waste may be redeposited back into the landfill has been removed. Any waste removed as part of the property development will be taken offsite for disposal. Revision 3 replacement pages for Section 1 of the Application are provided with this letter.

<u>TCEQ Comment 3</u>: Attachment 1-2. To satisfy 330.955(f), provide details on the precautions to prevent water coming into contact with waste and a plan for contaminated water disposal. Additionally, provide that any excavated waste not placed directly into a drum be stockpiled on plastic or a layer of clean soil until disposal.

<u>Response to Comment 3</u>: Details regarding precautions to prevent water coming into contact with waste, a plan for contaminated water disposal, and a plan for any excavated waste have been added to Section 1. Revision 3 replacement pages for Section 1 of the Application are provided with this letter.



<u>TCEQ Comment 4</u>: Attachment 1-1. Specify material used for backfilling in terms provided in 330.955(g), *i.e. high-plasticity or low plasticity clay, and provide that areas will be backfilled to exceed the existing grade and provide positive drainage.* 

<u>Response to Comment 4</u>: Details regarding material used for backfilling grading of the backfilled areas have been added to Section 1. Revision 3 replacement pages for Section 1 of the Application are provided with this letter.

#### TCEQ Comment 5: Attachment 1-1. Explain how waste will be covered overnight to address 330.955(h).

<u>Response to Comment 5</u>: Details regarding how waste will be covered overnight have been added to Section 1. Revision 3 replacement pages for Section 1 of the Application are provided with this letter.

<u>TCEQ Comment 6</u>: Regarding the swimming pool:

- a. Revise to provide at least a 60-mil HDPE geomembrane liner over at least 2 feet of compacted clay-rich soil with a permeability not greater than 1x10E-7 cm/sec.
- b. Provide a quality control plan detailing the design, materials, and procedures for construction and testing to meet liner system specifications. Use the Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (RG 534, September 2017) for reference.
- c. Provide construction details, plans, materials used, and cross sections of the pool and the underlying waste down to native soil.
- d. Provide a statement verifying that the pool placement is restricted to the specified area and will not be placed elsewhere, i.e. the courtyard of Building 1.

<u>Response to Comment 6</u>: Details regarding the construction plans of the swimming pool have been added to Section 1 and Attachment 9. Revision 3 replacement pages for Section 1 and additional pages for Attachment 9 of the Application are provided with this letter.

TCEQ Comment 7: Provide the maps required in 330.956(d).

<u>Response to Comment 7</u>: The map requirements in 330.956(d) are provided in the attached Revision 3 pages for Attachment 2 Figure 5 of the Application.

<u>TCEQ Comment 8</u>: Pursuant to 330.957(g), provide copies of the initial letters or emails that were sent to each of the entities listed in form TCEQ-20785, Item 18, titled "Other Governmental Entities."

<u>Response to Comment 8</u>: Copies of the letters and emails that were sent to each of the entities listed in form TCEQ-20785 Item 18 (Other Governmental Entities) are now provided in the attached Revision 3 pages for Attachment 6 of the Application.

<u>TCEQ Comment 9</u>: Provide foundation plans which meet the requirements set forth in 330.957(m)(A), (B), and (F). Provide details for methane sensors installed inside the buildings in accordance with 330.957(m)(1)(F), 330.957(t)(1)(A)(i), and 330.961(b)(1)(C).

- a. Provide foundations plans which are legible and provide the details which are called out on the foundation plans.
- b. Provide plans and cross sections for the elevator pits. Waste potentially exposed during the elevator pit installation will need to provide a final cover meeting 330.453(a) between the remaining waste and the pit.

<u>Response to Comment 9</u>: The foundation and elevator pit plans referenced above have been added to Attachment 9. Details regarding a final cover meeting 330.453(a) for potentially exposed waste during the elevator pit installation have been added to Section 1. Revision 3 replacement pages for Section 1 and additional pages for Attachment 9 of the Application are provided with this letter.



<u>TCEQ Comment 10</u>: Provide plans of the grading, drainage, and irrigation system(s) to satisfy 330.957(n)(1) and (2).

<u>Response to Comment 10</u>: Grading and drainage plans are now provided in the attached Revision 3 pages for Attachment 20 of the Application. A discussion of irrigation plans has been added to Section 20.

<u>TCEQ Comment 11</u>: Attachment 12. Provide a sampling and analysis plan for determining landfill gas components that addresses all of the items described in 330.957(t)(2)(F) and include sampling for the aggregate layer. Provide a current analysis of the landfill gas to satisfy 330.957(t)(2)(G). Include procedures in the section titled "Safety and Evacuation Plan" for, at a minimum, residents to evacuate the building when alarms are triggered and only re-enter when conditions are safe to satisfy 330.957(u).

<u>Response to Comment 11</u>: The Sampling and Analysis Plan in Attachment 12 has been revised, in addition to revisions of the Safety and Evacuation Plan. Revision 3 replacement pages for Attachment 12 of the Application are provided with this letter. In accordance with §330.957(t)(2)(G), an analysis of landfill gas beneath the property has been completed. Those results are provided in Revision 3 replacement pages for Attachment 12.

TCEQ Comment 12: Address record keeping requirements in accordance with 330.958.

<u>Response to Comment 12</u>: A statement that addresses record keeping requirements referenced in §330.958 has been added to Attachment 12. Revision 3 replacement pages for Attachment 12 of the Application are provided with this letter.

<u>TCEQ Comment 13</u>: Address operational requirements found in 330.961(a) through (h).

<u>Response to Comment 13</u>: Operational requirements referenced in §330.961(a) through (h) that are applicable to this Application have been added to Attachment 12. Revision 3 replacement pages for Attachment 12 of the Application are provided with this letter.

<u>TCEQ Comment 14</u>: Attachment 12. In accordance with 330.957(s), provide a site operating plan that explains how you will implement and maintain the requirements of 330.961(a) through (h).

<u>Response to Comment 14</u>: The Site Operating Plan in Attachment 12 has been revised and now addresses the requirements of §330.957(s). Revision 3 replacement pages for Attachment 12 of the Application are provided with this letter.

#### CLOSING

Please let us know if you have any questions or would like to discuss this further. Sam may be reached by phone at 512-574-1199 or e-mail at **a second secon** 

9445 or e-mail at

Sincerely,

SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

Susan T. Litherland, P.E. Principal

## FORM TCEQ-20785 REPLACEMENT PAGES -**REVISION 3**



## Texas Commission on Environmental Quality Application for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill

## **Application Tracking Information**

 Applicant Name:
 Stonehawk Capital Partners, LLC

 Facility Name:
 Texas Star Property West

 Development Permit Number:
 62054

 Initial Submission Date:
 28 February 2024

 Revision Date:
 6 August 2024

Use this form to apply for a development permit for proposed enclosed structure over a closed municipal solid waste (MSW) landfill. Rules about use of land over a closed MSW landfill are in <u>Title 30</u>, <u>Texas Administrative Code</u><sup>1</sup>, Chapter 330, Subchapter T. Instructions for completing this form are provided in form <u>TCEQ 20785-instr</u><sup>2</sup>. Include a Core Data Form, available at <u>www.tceq.texas.gov/goto/coredata</u> with the application. If you have questions, contact the Municipal Solid Waste Permits Section by email to or by phone at 512-239-2335.

If you have an existing enclosed structure, use form <u>TCEQ-20786</u><sup>3</sup>, Registration for Existing Enclosed Structure Over Closed Municipal Solid Waste Landfill. If you are proposing a non-enclosed structure, use form <u>TCEQ-20787</u><sup>4</sup>, Authorization to Disturb Final Cover Over Closed Municipal Solid Waste Landfill for Non-Enclosed Structure.

## **Application Data**

### 1. Application Type

- New Development Permit 🛛 Revisions of Existing Permit
- □ Transfer of an Existing Permit

If existing Permit, indicate the Permit Number: \_\_\_\_

## 2. Submission Type

Initial Submission

Notice of Deficiency (NOD) Response

<sup>&</sup>lt;sup>1</sup> www.tceq.texas.gov/goto/view-30tac

<sup>&</sup>lt;sup>2</sup> www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20785-instr.pdf

<sup>&</sup>lt;sup>3</sup> www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20786.pdf

<sup>&</sup>lt;sup>4</sup> www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20787.pdf

#### 8. Notification of MSW Landfill Determination

If soil tests were used to determine the presence of a closed MSW landfill, provide evidence that the engineer who performed the soil tests has notified the following persons of that determination in accordance with 30 TAC §330.953(d).

Each owner and lessee

Executive Director

Local Government Officials

Regional Council of Governments

#### 9. Landfill Permit Status

What is the permit status of the landfill?

Active MSW Permit Landfill in Post-Closure Care

Revoked MSW Permit Non-Permitted Landfill

If the landfill is still in the post-closure care period subject to an active MSW Permit, this development permit application for proposed enclosed structures shall be accompanied by a Permit Modification application prepared in accordance with 30 TAC §305.70, and by a certification signed by an independent engineer in accordance with 30 TAC §330.957(b)(2).

If the landfill has completed the post-closure care period, but the MSW permit has not been revoked (site affected by an active MSW Permit), a Voluntary Revocation request of the MSW Permit shall be submitted in accordance with 30 TAC §330.465 prior to the submittal of this development permit application for proposed enclosed structures over a closed MSW landfill.

### **10. Application URL**

Enter the URL address of a publicly accessible internet web site where the application and all revisions to that application will be posted in the box below:

www.tceq.texas.gov/goto/wasteapps

11. Public Place	e for Copy of Application	
Name of the Public F	Place: Euless Public Library	
Physical Address: 201 N Ector Dr		
City: Euless	County: <u>Tarrant</u>	State: <u>TX</u> Zip Code: 76039
Phone Number: 817-685-1480		
Normal Operating Hours: 9am to 5pm or 6pm or 8pm		

12. Party Responsible for Publishing Notice
Indicate who will be responsible for publishing notice:
Applicant 🔲 Consultant
Contact Name: Sam Enis
Title: Principal Project Manager
Email Address:
13. Alternative Language Notice
Use the Alternative Language Checklist on Public Notice Verification Form TCEQ-20244- Waste-NAORPM available at <u>www.tceq.texas.gov/permitting/waste_permits/msw_permits/msw_notice.html</u> to determine if an alternative language notice is required.
Is an alternative language notice required for this application?
Yes No
Indicate the alternative language: Spanish
14. Confidential Documents
Does the application contain confidential documents?
Yes No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

#### **15.** Permits and Construction Approvals

Mark the following tables to indicate status of other permits or approvals.

#### **Permits and Construction Approvals**

Permit or Approval	Received	Pending	Not Applicable
Zoning Approval	Х		
Preliminary Subdivision Plan		Х	
Final Plat		Х	
Fire Inspector's Approval		Х	
Building Inspector's Approval on Plans		Х	
Water Service Tap		Х	
Wastewater Service Tap		Х	
On-site Wastewater Disposal System Approval			Х

#### **Other Environmental Permits**

Other Environmental Permits (list)	Received	Pending

16. General Project Infor	mation	
Facility Name: Texas Star Property West		
SubT Development Permit Number (if available): <u>62054</u>		
Regulated Entity Reference Number (if issued): <b>RN</b> <u>100729763</u>		
Street or Physical Address: 11450 Trinity Blvd		
City: Euless	County: Tarrant	State: <u>TX</u> Zip Code:
Phone Number: Vacant/Undeveloped		
<i>If Regulated Entity Reference Number has not been issued for the facility, complete a Core Data Form (TCEQ-10400) and submit it with this application.</i>		

County Engineer Information		
County Engineer's Name: Joseph Jackson		
County Engineer's P.E. Registration No.: TX No. 129546		
Office Address: 100 E Weatherford St, Ste 401		
City: Fort Worth County: Tarrant	State: TX	Zip Code: 76196
Phone Number: 817-884-1153		
Email Address:	_	
County Health Authority		
Agency Name: Tarrant County Public Health		
Contact Person's Name: Dr. Brian Byrd		
Office Address: 1101 S Main St, Ste 2300		
City: Fort Worth County: Tarrant	State: TX	Zip Code: 76104
Phone Number: 817-248-6299		
Email Address	_	
State Representative Information		
State Representative Information District Number: <u>94</u>		
-		
District Number: <u>94</u>		
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> <u>County: Tarrant</u>	State:TX	Zip Code: 76011
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u>	State: TX	Zip Code: 76011
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> <u>County: Tarrant</u>	State: <u>TX</u>	Zip Code: 76011
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> <u>County: Tarrant</u> Phone Number: <u>817-476-2660</u>	State: <u>TX</u>	Zip Code: 76011
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> <u>County: Tarrant</u> Phone Number: <u>817-476-2660</u> Email Address:	State: <u>TX</u>	Zip Code: 76011
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District Number: <u>94</u> State Representative's Name: Rep. Tony Tinderholt District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> County: <u>Tarrant</u> Phone Number: <u>817-476-2660</u> Email Address: <b>State Senator Information</b> District Number: <u>9</u> State Senator's Name: <u>Sen. Kelly Hancock</u> District Office Address: <u>306 W Seventh Street, Ste 508</u>	State: <u>TX</u>	Zip Code: <u>76011</u>
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> <u>County: Tarrant</u> Phone Number: <u>817-476-2660</u> Email Address: <u>State Senator Information</u> District Number: <u>9</u> State Senator's Name: <u>Sen. Kelly Hancock</u> District Office Address: <u>306 W Seventh Street, Ste 508</u> City: <u>Fort Worth</u> <u>County: Tarrant</u>	State:	Zip Code: 76011
District Number: <u>94</u> State Representative's Name: <u>Rep. Tony Tinderholt</u> District Office Address: <u>1000 Ballpark Way, Ste 310</u> City: <u>Arlington</u> County: <u>Tarrant</u> Phone Number: <u>817-476-2660</u> Email Address: <b>State Senator Information</b> District Number: <u>9</u> State Senator's Name: <u>Sen. Kelly Hancock</u> District Office Address: <u>306 W Seventh Street, Ste 508</u>	_	
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## **Professional Engineer's Certification of No Potential Threat** to Public Health or the Environment

The applicant's engineer for this project shall complete one of the following certifications:

"I, \_\_\_\_\_\_, Texas PE Number \_\_\_\_\_, certify that the proposed development is necessary to reduce a potential threat to public health or the environment. Further, I certify that the proposed development will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations."

Engineer's seal, with signature and date:

Engineering Firm Name: \_\_\_\_\_

Texas Board of Professional Engineers and Land Surveyors Firm Number:

Or:

" I, Susan T. Litherland, P.E. , Texas PE Number 57428 , certify that

the proposed development will not increase or create a potential threat to public health or the environment. Further, I certify that the proposed development will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations."

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Engineer's seal, with signature and date:

S.T. LITHERLAND	8/1/2024
CENSED	usinT. Likeh

Engineering Firm Name: SQ Environmental, LLC

Texas Board of Professional Engineers and Land Surveyors Firm Number: F-15202

## **Signature Page**

Both signatures on this page must be notarized.

#### **Applicant Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Brandon Hopkins	Title: Director of Construction, Stonehawk
Signature: Braddlan	Date: <u>8-2-2024</u>
Email Address	
SUBSCRIBED AND SWORN to before me by the s	aid Brandon Hopkins
On this 2nd day of August , 2024	
My commission expires on the $3^{\circ}$ day of Far	mry, and
Notary's Name: with the her	
Notary Public in and for	WILLIAM HUNTER SANDERS
County, Texas	Notary Public, State of Texas Comm. Expires 02-03-2026 Notary ID 133569645

#### **Property Owner Authorization**

To be completed by the property owner if the property owner is not the applicant.

I	, the owner of the property identified by
the address	
applicant to proceed with the project described in thi necessary authorizations in order to conduct this pro- owner, I am responsible for maintaining the integrity landfill.	ject. I understand that, as property
Property Owner Name:	
Signature:	Date:
Email Address:	
SUBSCRIBED AND SWORN to before me by the said $$	
On this day of,,	
My commission expires on the day of	/
Notary's Name:	
Notary Public in and for	
County, Texas	

## Signature Page

Both signatures on this page must be notarized.

#### **Applicant Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Title:
Signature:	Date:
Email Address:	
SUBSCRIBED AND SWORN to b	efore me by the said
On this day of	_/
My commission expires on the	day of;
Notary's Name:	
Notary Public in and for	
	County, Texas
Property Owner Authoriza	ition
I HMH Family Partnership LP / J the address 11450 Trinity Boulevard, Eu applicant to proceed with the pr necessary authorizations in order owner, I am responsible for ma landfill.	y owner if the property owner is not the applicant. <u>ulie Moore</u> , the owner of the property identified by <u>uless, TX 76040</u> , hereby authorize the roject described in this application, and to apply for any er to conduct this project. I understand that, as property intaining the integrity of the final cover over the closed MSW
Email Address:	efore me by the said Moore
On this 700 day of low of	
On this Znd day of August	3 th day of <u>March</u> , 2028
my commission expires on the	STN day of

TCEQ-20785 (Rev. 10-06-22) Application for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill

Notary's Name: Comryn Rosenau

Dentan County, Texas

Notary Public in and for

CAMRYN ROSENAU Notary Public, State of Texas

Comm. Expires 03-14-2028

Notary ID 134807235

### **C.** Copies of Legal Documents

Attachment	Attachment Number	
Property Legal Description	15	
Notice of Landfill Determination	16	
Notice to Real Property Records	16	
Notices to Buyers, Lessees, and Occupants	17	
Notices of Lease Restrictions (if applies)	Not applicable	

### Additional Attachments as Applicable

Attachment	Attachment Number
TCEQ Core Data Form(s)	18
Confidential Documents	
Soil Tests Boring Logs	10
Other maps, plans and engineering drawings	20
Methane Monitoring Equipment Specifications	
Methane Monitoring Report	
U Waste Disposal Manifests	
Fee Payment Receipt	19
Final Plat Record of Property	

## **Attachments for Revisions to Existing Development Permit**

### **Required Attachments**

#### A. Revised Pages

Attachment	Attachment Number
Marked (Redline/Strikeout) Pages	А
Unmarked Revised Pages	В

#### **B. Narrative**

Attachment	Attachment Number
Description of Proposed Revisions	Cover Letter
Foundation Plans (if revised)	9
Closure Plan (if revised)	
Site Operating Plan (if revised)	12
Structures Gas Monitoring Plan (if revised)	12
Safety and Evacuation Plan (if revised)	12

#### C. Maps and Plans

Attachment	Attachment Number
General Location Map	
Site Layout Plan	
Structure Layout Plan	
Methane Monitoring Equipment Location Plans	

### **Additional Attachments as Applicable**

Attachment Number
20

## **ATTACHMENT A**

## **MARKED (REDLINE) APPLICATION REPLACEMENT PAGES – REVISION 3**



## Texas Commission on Environmental Quality Application for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill

## **Application Tracking Information**

Applicant Name: <u>Stonehawk Capital Partners, LLC</u> Facility Name: <u>Texas Star Property West</u> Development Permit Number:62054 Initial Submission Date: <u>28 February 2024</u> Revision Date:6 August 2024

Use this form to apply for a development permit for proposed enclosed structure over a closed municipal solid waste (MSW) landfill. Rules about use of land over a closed MSW landfill are in <u>Title 30, Texas Administrative Code<sup>1</sup></u>, Chapter 330, Subchapter T. Instructions for completing this form are provided in form <u>TCEQ 20785-instr<sup>2</sup></u>. Include a Core Data Form, available at <u>www.tceq.texas.gov/goto/coredata</u> with the application. If you have questions, contact the Municipal Solid Waste Permits Section by email to phone at 512-239-2335.

If you have an existing enclosed structure, use form <u>TCEQ-20786</u><sup>3</sup>, Registration for Existing Enclosed Structure Over Closed Municipal Solid Waste Landfill. If you are proposing a non-enclosed structure, use form <u>TCEQ-20787</u><sup>4</sup>, Authorization to Disturb Final Cover Over Closed Municipal Solid Waste Landfill for Non-Enclosed Structure.

## **Application Data**

### 1. Application Type

- New Development Permit 🛛 Revisions of Existing Permit
- □ Transfer of an Existing Permit

If existing Permit, indicate the Permit Number: \_\_\_\_

### 2. Submission Type

Initial Submission

Notice of Deficiency (NOD) Response

<sup>&</sup>lt;sup>1</sup> www.tceq.texas.gov/goto/view-30tac

<sup>&</sup>lt;sup>2</sup> www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20785-instr.pdf

<sup>&</sup>lt;sup>3</sup> www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20786.pdf

<sup>&</sup>lt;sup>4</sup> www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20787.pdf

#### 8. Notification of MSW Landfill Determination

If soil tests were used to determine the presence of a closed MSW landfill, provide evidence that the engineer who performed the soil tests has notified the following persons of that determination in accordance with 30 TAC §330.953(d).

Each owner and lessee

Executive Director

Local Government Officials

Regional Council of Governments

#### 9. Landfill Permit Status

What is the permit status of the landfill?

Active MSW Permit Landfill in Post-Closure Care

Revoked MSW Permit Non-Permitted Landfill

If the landfill is still in the post-closure care period subject to an active MSW Permit, this development permit application for proposed enclosed structures shall be accompanied by a Permit Modification application prepared in accordance with 30 TAC §305.70, and by a certification signed by an independent engineer in accordance with 30 TAC §330.957(b)(2).

If the landfill has completed the post-closure care period, but the MSW permit has not been revoked (site affected by an active MSW Permit), a Voluntary Revocation request of the MSW Permit shall be submitted in accordance with 30 TAC §330.465 prior to the submittal of this development permit application for proposed enclosed structures over a closed MSW landfill.

### **10. Application URL**

Enter the URL address of a publicly accessible internet web site where the application and all revisions to that application will be posted in the box below:

www.tceq.texas.gov/goto/wasteapps

11. Public Plac	e for Copy of Application			
Name of the Public Place: Euless Public Library				
Physical Address: 201 N Ector Dr				
City: Euless	County: <u>Tarrant</u>	State: <u>TX</u> Zip Code: 76039		
Phone Number: 817-685-1480				
Normal Operating Hours: 9am to 5pm or 6pm or 8pm				

12. Party Responsible for Publishing Notice
Indicate who will be responsible for publishing notice:
Applicant     Consultant
Contact Name: Sam Enis
Title: Principal Project Manager
Email Address:
13. Alternative Language Notice
Use the Alternative Language Checklist on Public Notice Verification Form TCEQ-20244- Waste-NAORPM available at <u>www.tceq.texas.gov/permitting/waste_permits/msw_permits/msw_notice.html</u> to determine if an alternative language notice is required.
Is an alternative language notice required for this application?
Yes No
Indicate the alternative language: Spanish
14. Confidential Documents
Does the application contain confidential documents?
🗌 Yes 🔳 No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

#### **15.** Permits and Construction Approvals

Mark the following tables to indicate status of other permits or approvals.

#### **Permits and Construction Approvals**

Permit or Approval	Received	Pending	Not Applicable
Zoning Approval	Х		
Preliminary Subdivision Plan		Х	
Final Plat		Х	
Fire Inspector's Approval		Х	
Building Inspector's Approval on Plans		Х	
Water Service Tap		Х	
Wastewater Service Tap		Х	
On-site Wastewater Disposal System Approval			Х

#### **Other Environmental Permits**

Other Environmental Permits (list)	Received	Pending

16. General Project Information				
Facility Name: Texas Star Property West				
SubT Development Permit Number (if available): <u>62054</u>				
Regulated Entity Reference Number (if issued): <b>RN</b> <u>100729763</u>				
Street or Physical Address: 11450 Trinity Blvd				
City: Euless County: Tarra	ant State: <u>TX</u> Zip Code: <sup>76040</sup>			
Phone Number: Vacant/Undeveloped				
<i>If Regulated Entity Reference Number has not been issued for the facility, complete a Core Data Form (TCEQ-10400) and submit it with this application.</i>				

County Engineer Information			
County Engineer's Name: Josep	h Jackson		
County Engineer's P.E. Registratio			
Office Address: 100 E Weather			
	County: Tarrant	State: TX	Zip Code: 76196
Phone Number: 817-884-1153			
Email Address:			
County Health Authority			
Agency Name: Tarrant County	Public Health		
Contact Person's Name: Dr. Brian			
Office Address: 1101 S Main St,	Ste 2300		
City: Fort Worth	County: Tarrant	State: TX	Zip Code: 76104
Phone Number: 817-248-6299			
Email Address:			
State Representative Information	tion		
District Number: <u>94</u>			
State Representative's Name: Re	p. Tony Tinderholt		
District Office Address: 1000 Ball	lpark Way, Ste 310		
	<sub>County:</sub> Tarrant	State: TX	Zip Code: 76011
Phone Number: 817-476-2660			
Email Address:			
State Senator Information			
District Number: <u>9</u>			
State Senator's Name: Sen. Kelly	y Hancock		
District Office Address: 306 W Se	eventh Street, Ste 508		
City: Fort Worth	County: Tarrant	State: TX	Zip Code: 76102
Phone Number: 817-332-1131			
Email Address			

## **Professional Engineer's Certification of No Potential Threat** to Public Health or the Environment

The applicant's engineer for this project shall complete one of the following certifications:

"I, \_\_\_\_\_\_, Texas PE Number \_\_\_\_\_, certify that the proposed development is necessary to reduce a potential threat to public health or the environment. Further, I certify that the proposed development will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations."

Engineer's seal, with signature and date:

Engineering Firm Name: \_\_\_\_\_

Texas Board of Professional Engineers and Land Surveyors Firm Number:

Or:

" I, Susan T. Litherland, P.E. , Texas PE Number 57428 , certify that

the proposed development will not increase or create a potential threat to public health or the environment. Further, I certify that the proposed development will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations."

Engineer's seal, with signature and date:



Engineering Firm Name: SQ Environmental, LLC

Texas Board of Professional Engineers and Land Surveyors Firm Number: F-15202

### **Signature Page**

Both signatures on this page must be notarized.

#### **Applicant Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Brandon Hopkins	Title: Director of Construction, Stonehawk
Signature: Braddlan	Date: <u>8-2-2024</u>
Email Address	
SUBSCRIBED AND SWORN to before me by the s	aid <u>Brandon Hapkins</u>
On this 2nd day of August , 2024	
My commission expires on the $3^{\circ}$ day of Febr	nory, andle
Notary's Name: Willie Old Mal	
Notary Public in and for	WILLIAM HUNTER SANDERS
County, Texas	Notary Public, State of Texas Comm. Expires 02-03-2026 Notary ID 133569645

#### **Property Owner Authorization**

To be completed by the property owner if the property owner is not the applicant.

Ι,	, the owner of the property identified by
the address	,hereby authorize the
applicant to proceed with the project described in this necessary authorizations in order to conduct this proj owner, I am responsible for maintaining the integrity landfill.	ject. I understand that, as property
Property Owner Name:	
Signature:	Date:
Email Address:	
SUBSCRIBED AND SWORN to before me by the said $$	
On this day of,,	
My commission expires on the day of	
Notary's Name:	
Notary Public in and for	
County, Texas	

### Signature Page

Both signatures on this page must be notarized.

#### **Applicant Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Title: Title:
Signature: Date: Date:
Email Address:
SUBSCRIBED AND SWORN to before me by the said
On this day of,
My commission expires on the day of;
Notary's Name:
Notary Public in and for
County, Texas
Property Owner Authorization
To be completed by the property owner if the property owner is not the applicant.

I <u>HIM Family Partnership LP7 Julie Moore</u> , the owner of the property identified by	/
the address _11450 Trinity Boulevard, Euless, TX 76040, hereby authorize the	
applicant to proceed with the project described in this application, and to apply for any	
necessary authorizations in order to conduct this project. I understand that, as property owner, I am responsible for maintaining the integrity of the final cover over the closed MSW landfill.	
Breast Queen Marter HMH Family Partnership / Julie Moore	

Property Owner Name: HMH Family Partnership / Julie Moore
Signature: Date: Date:
Email Address:
SUBSCRIBED AND SWORN to before me by the said _Julie Moore
On this Znd day of August, ZO2 4
My commission expires on the 13 th day of _March_, 2028
Notary's Name: Campy Rosenau CAMRYN ROSENAU
Notary Public in and for Comm. Expires 03-14-2028
Denta County, Texas Notary ID 134807235

### **C.** Copies of Legal Documents

Attachment	Attachment Number
Property Legal Description	15
Notice of Landfill Determination	16
Notice to Real Property Records	16
Notices to Buyers, Lessees, and Occupants	17
Notices of Lease Restrictions (if applies)	Not applicable

### **Additional Attachments as Applicable**

Attachment	Attachment Number
TCEQ Core Data Form(s)	18
Confidential Documents	
Soil Tests Boring Logs	10
Other maps, plans and engineering drawings	20
Methane Monitoring Equipment Specifications	
Methane Monitoring Report	
🗌 Waste Disposal Manifests	
Fee Payment Receipt	19
Final Plat Record of Property	

## **Attachments for Revisions to Existing Development Permit**

### **Required Attachments**

#### A. Revised Pages

Attachment	Attachment Number
Marked (Redline/Strikeout) Pages	А
Unmarked Revised Pages	В

#### **B. Narrative**

Attachment	Attachment Number
Description of Proposed Revisions	Cover Letter
Foundation Plans (if revised)	9
Closure Plan (if revised)	
Site Operating Plan (if revised)	12
Structures Gas Monitoring Plan (if revised)	12
Safety and Evacuation Plan (if revised)	12

### C. Maps and Plans

Attachment	Attachment Number
General Location Map	
Site Layout Plan	
Structure Layout Plan	
Methane Monitoring Equipment Location Plans	

#### **Additional Attachments as Applicable**

Attachment	Attachment Number
Other Plans (Grading and Drainage Plans)	20

## **REVISION 3** -

## APPLICATION FOR DEVELOPMENT PERMIT FOR PROPOSED ENCLOSED STRUCTURE

## TEXAS STAR PROPERTY WEST 11450 TRINITY BOULEVARD EULESS, TARRANT COUNTY, TEXAS 76040

Prepared for:

Texas Commission on Environmental Quality MSW Authorization No. <u>62054[pending]</u>; Tracking No. <u>29838265</u>29636718 Voluntary Cleanup Program No. 3237 RN100729763 | CN604539007

Prepared on behalf of the Applicant:

#### **Stonehawk Capital Partners, LLC**

4550 Travis Street, Suite 565 Dallas, Texas 75205

Property Owner:

HMH Family Partnership LP 1104 Dayton Drive Lantana, Texas 76226

#### Initial Submission: 28 February 2024 Revision 3 Submission: 6 August 2024

NAA

Susan T. Litherland, P.E. Principal Texas P.E. No. 57428, F-15202 Signed electronically on 8/1//2024

Sam Enis, P.G. Principal Project Manager

#### PN: 1098.015.003



**SQ Environmental, LLC** PO Box 1991 Austin, Texas 78767-1991 (512) 900-7731 www.SQEnv.com



SQ ENVIRONMENTAL, LLC

REV3 20240806

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Susan T. Litherland, P.E. Principal Texas P.E. No. 57428, F-15202 Signed electronically on 8/1/2024



### **1 PROPOSED PROJECT DESCRIPTION**

The subject property is currently undeveloped, and the planned future use is for a multi-family residential development. The proposed development extends to a south-adjacent TAD parcel, and the east-adjacent property will support the development as a parking lot and green space. As planned, the development on the subject property is comprised of four multi-family apartment buildings (Buildings 1 through 4) with concrete slab-on-grade foundations. Building 1 will be a four-story apartment structure with a footprint that measures approximately 300 ft by 400 ft including an interior, open-air courtyard that measures approximately 150 ft by 275 ft; Building 2 will be a three-story apartment structure with a footprint that measures approximately 150 ft by 75 ft; and Buildings 3 and 4 will be two-story apartments structures with footprints that measure approximately 150 ft by 75 ft. The total square footage of the buildings is 203,526 square feet (ft<sup>2</sup>). Asphalt-covered parking lots and landscaped areas will surround the four buildings and cover the majority of the remaining surface area of the subject property. The total square footage for pavement is 216,640 ft<sup>2</sup>. Site Plans are included in **Attachment 14**.

The majority of the incidental debris identified in the subsurface of the subject property is located near the center and the east-central portions of the property. In general, all of the incidental debris is deeper than 5 ft bgs. There is no true "cap" at the surface on the property, although the upper 5 to 10 ft of soil generally does not contain debris and has a higher percentage of clay than the underlying materials.

The planned buildings on the subject property will have at or near grade foundations. No subsurface parking or other subsurface structures are planned. The only excavations that will be performed are for utilities (which will likely be limited to the upper 3 to 4 ft), an elevator pit (which will likely extend no more than about 6 to 8 ft bgs), and a swimming pool. The swimming pool will be located in the courtyard of Building 1. The maximum disturbance depth at the subject property will be no deeper than 10 ft, and likely no deeper than 7 ft. As described, based on the planned construction, the only area where incidental debris might be encountered is in the vicinity of the swimming pool, and possibly the elevator pit. In no case will the excavations exceed to the depths of the elevated methane concentrations (deeper than 10 ft bgs) or the saturated zone (24 to 30 ft bgs).

A VMS will be designed and installed beneath first-floor residential areas. The VMS will direct any vapors (methane or other) out from beneath the buildings, and the vapors monitored to verify that there is no vapor accumulation beneath the buildings. As discussed above, the planned concrete building slab foundations with an underlying VMS, along with the asphalt roadways and parking areas will result in a similar or better impervious "cap" over portions of the subject property where incidental debris is present in the subsurface.

No enclosed areas below ground surface to be occupied by people will be constructed on the subject property. It is not anticipated that waste will be encountered during construction. However, Mminor amounts of incidental debris may be uncovered during construction activities at the subject property. The debris and surrounding soil will be stockpiled on plastic sheeting or loaded directly into 55-gallon drums, trucks, trailers, or containers, and removed from the site for disposal at an appropriate, permitted MSW landfill, drummed in 55-gallon drums, evaluated, and disposed of at an appropriate, permitted MSW landfill, unless otherwise allowed by the TCEQ executive director to be re-deposited. No waste, if encountered, will be left exposed overnight. Locations where incidental debris is removed will be backfilled with 2-ft of clean, low-plasticity, compacted clay ander graded with the surrounding onsite soil to be slightly higher than the existing grade and provide positive drainage. No pilings, borings, or penetrations are planned during development of the subject property. The majority of the subject property will be covered with buildings and asphalt and designed so that surface water quickly exits the property.

## SQ ENVIRONMENTAL, LLC APPLICATION FOR DEVELOPMENT PERMIT – TX STAR PROPERTY WEST

#### REV3 20240806

## PROPOSED PROJECT DESCRIPTION

It is not anticipated that any stormwater will come into contact with incidental debris on the subject property during construction. However, groundwater on the subject property has been sampled during four events, and no impacts have been identified. There is no indication that groundwater beneath the subject property is impacted by the debris located above the saturated zone. The debris and groundwater beneath the subject property are not a source of contamination. None of the incidental debris is located at the ground surface, and precautions will be implemented during development of the subject property to prevent excavated material, if any, from coming into contact with stormwater. Any surface water that does come into contact with waste materials will be properly contained, characterized, and disposed of.

If excavation activities result in exposed waste, the exposed waste area will be temporarily covered with clean soil or other materials as soon as practical, but no later than the end of the day unless covering is impractical. If an area of exposed waste remains exposed for more than 24 hours, the contractor will provide adequate temporary cover consisting of a minimum of 6 inches of soil or an impermeable membrane material to prevent rainfall from contacting the waste. Temporary diversion berms will be installed around the exposed waste area to prevent stormwater from contacting the waste and will be used upslope of all excavations where waste will be exposed to minimize the amount of surface water coming into contact with waste materials. In addition, temporary containment berms will be constructed around areas of exposed waste to collect surface water. At no time will water that comes into contact with waste materials be allowed to discharge to surface waters. Regarding the management procedures described above, especially the covering of waste and precautions implemented in advance of inclement weather, the generation of water that has made contact with waste materials is expected to be minimal. However, if generated, the water will be collected and disposed of in accordance with standards set forth herein and in accordance with City and State requirements for disposal of such water. Any water generated during construction will be stored onsite, then transported via vacuum truck to an approved wastewater treatment or disposal facility permitted to accept the wastewater.

The stormwater management will include measures to control sediment discharge during construction including, but not be limited to, the use of earthen berms, hay bales, and silt fencing downgradient of slopes which may experience erosion (including material stockpiles). Erosion damage from rainfall events will be repaired by the contractor after such events. All erosion control measures will also be inspected and maintained throughout the redevelopment process. Berms, when used for control of potentially impacted water, will also be maintained as necessary to control erosion. The contractor will pay special attention to erosion on any soil cover over waste materials. Any cover damage to the existing landfill, or in areas where cover must be maintained over solid waste materials that are part of construction, will be repaired immediately and steps taken to prevent a recurrence of that type of damage.

The requirements of §330.453(a), concerning the final cover system, will be implemented for the elevator pit if waste is exposed during the excavation of the pit. A 2 ft layer of clayey soil, compacted in layers no more than 6 inches in thickness, will be placed in the bottom of the elevator pit excavation. This is shown in **Figure 3** in **Attachment 9**. The requirements of §330.961(g), concerning the double-containment of subgrade conduits intended for the transport or carrying of fluids over or within the subject property, and §330.331(b), regarding liner criteria for leachate for the swimming pool, will be implemented. Subgrade utility conduits will be installed with double-containment, which will be provided by the single wall utility, that is within a lined trench. On excavation, a high-density polyethylene (HDPE) 30-mil sealed barrier will be installed along the bottom, sides, and overlapping on top of the trench and sealed. This is shown in **Figure 2** in **Attachment 9**. The trench will then be filled with clean, compacted backfill on the bottom, clean backfill on all sides, and a on the sides and bottom of the trench. The swimming pool will be lined with a high-density polyethylene (HDPE) 360-mil sealed geomembrane liner over at least 2 ft of compacted, clay-rich soil with a permeability not greater than 1x10E-7 cm/sec. This is shown in **Figure 1** in **Attachment 9**. The

## SQ ENVIRONMENTAL, LLC APPLICATION FOR DEVELOPMENT PERMIT – TX STAR PROPERTY WEST

#### REV3 20240806

### PROPOSED PROJECT DESCRIPTION

pool location is restricted to the courtyard of Building 1 and will not be placed elsewhere. A quality control plan will be prepared detailing the design, materials, and procedures for construction and testing to meet liner system specifications based on Regulatory Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (RG-534, September 2017). Construction details, plans, materials to be used, and cross-sections of the elevator pit, utility trench, pool, and the underlying waste down to native soil are provided in **Attachment 9**.

## **6 NOTICE OF COORDINATION**

Coordination with the applicable local, state, and federal government officials and agencies is currently being conducted in preparation for site development. <u>Documentation of the Notice of Coordination letters sent to the</u> <u>Governmental Entities listed in Item 18 of Form TCEQ-20785 is provided in Attachment 6.</u> A notification regarding the landfill status of the property has been provided to the City of Fort Worth, Development Services among others. Copies of the Notices of Landfill Determination and delivery receipts are provided in **Section 16**.

# **ATTACHMENT 6**

## **NOTICES OF COORDINATION**

### **9 FOUNDATION PLANS**

A VMS designed in accordance with 30 TAC 330.957(m) will be installed during development and construction of the four buildings on the subject property. The VMS includes an impermeable barrier installed below the concrete slab of the structures, followed by a 12-inch-thick permeable aggregate bed and a geotextile filter fabric, with vent risers located adjacent to the buildings. This system will allow any vapors (methane or other) that migrate though the soil to the area beneath the structures to be vented outside of the structure. The second component is a monitoring system within the VMS piping network beneath the buildings and within the buildings that will include controller units and remote sensors that can detect methane and other explosive gases. This system will have audible and visual alarms. Sample ports for field monitoring will be installed for the aggregate layer. The foundation plan and VMS design plan are included as Attachment 9. Geotechnical soil investigation reports are provided as Attachments 10A and 10B. The Methane Monitoring Plan is discussed in Section 12.

## ATTACHMENT 9

## FOUNDATION PLAN & VMS DESIGN PLAN

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## 9 FOUNDATION PLANS

A VMS designed in accordance with 30 TAC 330.957(m) will be installed during development and construction of the four buildings on the subject property. The VMS includes an impermeable barrier installed below the concrete slab of the structures, followed by a 12-inch-thick permeable aggregate bed and a geotextile filter fabric, with vent risers located adjacent to the buildings. This system will allow any vapors (methane or other) that migrate though the soil to the area beneath the structures to be vented outside of the structure. The second component is a monitoring system within the VMS piping network beneath the buildings and within the buildings that will include controller units and remote sensors that can detect methane and other explosive gases. This system will have audible and visual alarms. Sample ports for field monitoring will be installed for the aggregate layer. The foundation plan and VMS design plan are included as **Attachment 9**. Geotechnical soil investigation reports are provided as **Attachments 10A** and **10B**. The Methane Monitoring Plan is discussed in **Section 12**. A Liner Quality Control Plan for the pool is provided below.

### LINER QUALITY CONTROL PLAN

This Liner Quality Control Plan (LQCP) was developed for the Texas Star Property to describe the inspection and construction control and testing requirements in support of the application. This Plan was prepared in general accordance with *Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill*, TCEQ Regulatory Guidance RG-534 dated September 2017 and is intended to fulfil requirements of 30 Texas Administrative Code 330.

### **A General Requirements**

This LQCP provides the basis for the type and rate of quality control performance testing. A copy will be maintained on site during construction or available for electronic download in the event an inspection is performed. For ease in this document preparation, any components that are not specifically addressed in this document will default to the requirements of *Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill*, TCEQ Regulatory Guidance RG-534.

### **B** Overview of Project

As discussed in this Application, the swimming pool will be located in the courtyard of Building 1. The maximum disturbance depth at the subject property will be no deeper than 10 ft, and likely no deeper than 7 ft. The excavation of the pool will be lined with a high-density polyethylene (HDPE) 60-mil sealed geomembrane liner over 2 ft of compacted, clay-rich soil with a permeability not greater than  $1 \times 10^{-7}$  cm/s. A protective cover of topsoil 12-inches thick will overlay the liner. A cross-section of the liner is provided on the figure included as **Attachment 9**.

### **C** Soil Material Requirements

### C.1 **Protective Topsoil Requirements**

Protective cover is required to be placed above the liner system as shown on the cross sections. Topsoil will be free of deleterious materials and not previously mixed with any onsite soils that were previously mixed with garbage, rubbish, or other solid waste materials. Permeability must be greater than  $1 \times 10^{-4}$ 

### REV4 20240822

cm/s. The thickness must be greater than or equal to 12 inches. Compaction is not necessary for installation and density controls are not needed; however, the contractor should place the protective topsoil as soon as possible after installation of the liner and compacted clay-rich soil.

Protective topsoil shall be placed over the HPDE liner during the coolest part of the 8-hour workday. Soil shall be deployed along the surface of the liner to control the amount of slack and minimize any damage to the liner. The liner shall be continuously monitored during installation and any damage to the liner immediately repaired. Only light equipment will be used during construction and a minimum of 12 inches of protective material must be placed on top of the liner before light construction equipment can access the area.

Protective topsoil will not have any rocks greater than 0.375 inches in diameter. The Contractor will keep the protective topsoil layer wet during dry periods to prevent cracking.

## C.2 Clay-Rich Soil Requirements

Clay-rich soil will meet the following requirements. One sample from each source must be collected before any material is brought onsite. Test methods will generally follow Standard ASTM Test Methods as outlined in Table B-1 of RG-534 and will include field density, gradation analysis, Atterberg limits, and permeability.

Soil Property	Value
Plasticity Index (PI)	≥ 15
Liquid Limit (LL)	≥ 30
Percent Passing No. 200 Mesh Sieve	≥ 30%
Percent Passing One-Inch Sieve	= 100%
Permeability	≤ 1 x 10 <sup>.7</sup> cm/sec

In-situ soils will not be used for clay-rich soil. The clay-rich soil will be sampled every 1,000 cubic yards for total petroleum hydrocarbons (TPH) by Texas Method 1005 and metals SW-846 Methods to ensure the materials are suitable for use.

Clay-rich soils will be placed in three 8-inch lifts (a total of 3 lifts). Compaction testing will be performed at a frequency of every 1 acre and one per lift (minimum of three locations). The clay-rich soil will be compacted to at least 95% of standard proctor.

## **C.3 HDPE Liner Requirements**

The HDPE Liner must have a minimum of 60 mil thickness. Recycled or reclaimed HDPE materials are not acceptable. HDPE material and required welding rods shall contain between 2 and 3% carbon black and may contain no more than 1% additives.

The liner will be inspected upon delivery for any damage and defects. The liner must be free from any pinholes, surface blemishes, scratches, or other defects that could affect the integrity of the liner. The liner will be stored at a clean and dry location onsite and protected from any objects that could damage the liner.

All manufacturer's recommendations for the installation of the liner will be followed. In addition, general installation requirements outlined in Table 3-1 of RG-534 must be followed.

• The liner will be placed above the compacted clay-rich soil that will be free of stones and rocks and other debris greater than 3/8-inch. The compacted clay-rich soil will be finished by rolling with flat

#### REV4 20240822

wheel roller until smooth uniform surface is achieved. The subgrade areas will be inspected for any desiccation, cracks, erosion, or ponding prior to installation and repaired before liner is placed. If necessary, regular watering and proof rolling will be performed.

- Prohibit construction equipment from traveling directly on the liner.
- Do not place during inclement weather.
- Limit vehicular traffic on the liner to low-ground pressure supporting equipment only. Any damaged areas must be repaired and inspected.
- Only unroll liner sheets that are to be placed and seamed in the same day. Position liner with overlap recommended by manufacturer but not less than 3 inches. Typical overlaps are 3 to 6 inches. There should be no loose flap on the top side of the liner. Overlap distance must be sufficient so that all seam tests can be performed as described below.
- Folds, wrinkles, and fish mouths are not acceptable. Cut, overlap, and weld the material where wrinkles or folds occur. A fish mouth is defined as an area in the seam where one liner panel is first folded over on itself, and a second liner panel is placed and welded over this fold. Where fish mouths occur, the liner must be cut, overlapped, and covered with a patch.
- Use only heat-only tack welds, when necessary. No double-sided tape or glue may be used.
- Fusion or extrusion welding may be used for field seaming and repairs.
- Seaming is permitted only when ambient air conditions are below 104°F.
- At the end of each workday, all unseamed edges will be anchored with sandbags or other approved devices. No penetrating anchors are accepted (stables, U-rods).

# C.4 HDPE Liner Testing Requirements

#### Verification of HDPE Liner Testing Requirements

Manufacturer information will be reviewed to ensure that QA/QC testing, conformance testing, and seam testing requirements of Table 3-2 of RF-534 are met.

#### Welds, Repair Welds, and Patches

Shear Strength – the seam, when stressed perpendicular to the direction of the weld should not under any condition fail before stretching and breaking of the liner panel adjacent to the weld. The numerical value of the shear strength of any sample should not be less than 90% of the sheet tensile strength according to manufacturer-provided information.

#### Trial Seam Testing

Each day, prior to commencing field seaming, each individual employee performing seaming will conduct a trial seam. Each trial seam will be 3 ft long by 1 ft wide. Trial seam criteria is outlined in Table 3-3 of RG 534.

#### Destructive Testing

Destructive test samples of field seams will be performed at a minimum of one stratified location for every 500 linear feet or major fraction thereof or at the direction of the Engineer. Destructive test requirements will conform with Table 3-4 of RG-534.

### Non-Destructive Testing

Non-destructive tests should be performed by the Contractor or engineer on all field seams, patches, and repair welds. Accepted non-destructive test methods include vacuum box testing for extrusion welds and air-pressure testing for dual-tract fusion welds. Specific procedures for these tests is included on Table 3-5 of RG-534.

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# **D Documentation**

Following installation, the following documentation will be compiled and kept onsite in the facility records. This will include the following elements:

- All field and laboratory test documentation.
- All test documentation.
- Liner certification information and results of manufacturer independent testing.
- Field documentation of field testing, repairs, etc.
- Photographs and field notes.
- A survey of the final liner area.

# MEMORANDUM



To:Stonehawk Capital Partners, LLCFrom:Susan Litherland, P.E., Sam Enis, P.G., and Adam Harper, P.G.Date:08 May6 August 2024 – Revision 1Subject:Texas Star Property West – Vapor Mitigation System Design Basis

This memo provides the design basis for the Vapor Mitigation System (VMS) for the Texas Star Property West on Trinity Boulevard in Euless, Texas. This document is part of the design package and this entire package should be provided to the General Contractor and appropriate subcontractors (including specialty VMS, structural, electrical, and plumbing). The package includes:

- Design Basis Memorandum
- VMS Design Notes
- VMS Details
- Sheet VA1.0: Overall VMS Layout Plan
- Sheet VS3.0: Overall Building A Layout
- Sheet VS3.0a, VS3.0b, VS3.0c, & VS3.0d: VMS Layout Beneath Building A
- Sheet VS4.0: VMS Layout Beneath Building B
- Sheet VS6.0: VMS Layout Beneath Building D
- Sheet VA4.5, VA4,6, & VA4.7: Vent Locations on Building A Exterior Elevations
- Sheet VA5.3: Vent Locations on Building B Exterior Elevations
- Sheet VA7.4: Vent Locations on Building D Exterior Elevations
- FanTech Spec Sheet for Vent Fans, if needed

#### BACKGROUND

Based on available information, the subject property appeared to be used for agricultural purposes from approximately 1942 to 1950. Gravel pit operations appear to have ceased around the mid-1980s. Hancock Contracting, an earth-moving or construction company, appears to have operated on the subject property from at least 1988 to the late 2000s. By the late 2000s, the subject property appeared to be primarily vacant. Debris (glass, plastic, bricks, concrete, and wood) were observed in shallow soil borings completed on the property at depths up to approximately 12 feet (ft) below ground surface (bgs). Based on the soil boring observations and site history, it does not appear that the property was ever operated as "landfill" (e.g., did not purposefully accept refuse and trash for landfilling), but rather these incidental materials were brought in with soil that was being used to fill the property.

Elevated methane levels have been found in a layer which is present at least 10 ft from the surface. There is a clay layer between the methane and the surface, which isolates the methane from the surface. Methane has not been found at significant concentrations in the surface clay layer based on testing at a depth of 5 ft. This layer is approximately 10 ft thick. As part of the property development, no penetrations through the

#### MEMORANDUM

Texas Star Property West VMS Design Basis Page 2



clay layer are planned. The source of the methane present below 10 ft appears to be a property off-site to the south of the subject property.

As a precautionary measure, a vapor mitigation system is being installed beneath the ground floor residential areas of the apartment complex to minimize the potential for any intrusion of residual vapors from the historical property usage, and or methane.

#### **DESIGN APPROACH**

The proposed design approach includes the installation of a passive VMS consisting of a vent layer (12inch-thick coarse sand aggregate bedding material, slotted vent pipes, geotextile filter fabric, and vaportight membrane) below the foundation of first-floor, residential living portions of the buildings. As planned, the system will have 17 passive vents in Building A, 4 passive vents in Building B, and 4 passive vents in Building D. Vents exiting on an exterior wall will be run through the wall, to an elevation of approximately 2 feet from the final grade. As planned, the VMS that has been designed is a passive system, with provisions for the addition of electric fans to three vents in Building A (V-1, V-7, and/or V-15), two vents in Building B (V-1 and/or V-4), and two vents in Building D (V-1 and/or V-4). The decision regarding whether to install the fans will be made based on testing following the installation. Based on the available information, it is anticipated that passive venting is all that will be needed to prevent accumulation of volatile organic compounds (VOCs) beneath the occupied portions of the building. As part of the design, electrical connections should be included in the vicinity of V-1, V-7, and/or V-15 in Building A, and V-1 and/or V-4 in Buildings B and D so that fans can be installed, if needed. The vents where an electrical connection will be needed are noted on sheets VS3.0a, VS3.0d, VS4.0, and VS6.0 with an "e". The vent pipes will be fitted with a 1/4" mesh screen and covered in a manner that will allow venting of any vapors but prevent entry animals and rainwater. It is recommended that testing be performed approximately six months after the installation to evaluate whether the fans are needed, and then annually for two additional years to verify that the system is performing as designed.

Methane sensors will also be installed within the buildings, and sample ports for field monitoring will be installed within the aggregate layer.

For any questions or clarifications regarding the VMS design, please contact us. Susan Litherland may be reached by phone at 512-656-9445 or e-mail at **Section 2010** Sam Enis may be reached by phone at 512-574-1199 or e-mail at **Section 2010** and Adam Harper may be reached by phone at 512-426-9449 or e-mail at **Section 2010** 

#### Texas Star Property West Euless, Texas VMS Design Notes – <u>8 May6 August</u> 2024 – <u>Revision 3</u>

#### General

- A passive Vapor Mitigation System (VMS) is to be installed under portions of the building where residences will live. The location of the areas where the VMS is to be installed is shown on Sheet VA1.0. The VMS layouts are illustrated on Sheets VS3.0a, VS3.0b, VS3.0c, VS3.0d, VS4.0, and VS6.0. The VMS will allow venting of soil vapors from beneath the building. Vent locations are shown on Sheets VS3.0a, VS3.0d, VS4.0 and VS6.0.
- 2. Alternative systems are acceptable with engineer's review and approval.
- 3. For areas underlain with the VMS, this system will also serve as the moisture barrier.
- 4. The VMS Contractor will be responsible for placing piping through exterior beams at each of the vent locations. These vent pipes will run up through the exterior wall, to a height of approximately two feet above the top of the slab. The exterior ends of these pipes should be covered in a manner that will prevent concrete from entering the pipes when the exterior beams are poured, and/or debris during construction activities. The concrete contractor will be responsible for protecting these vent pipes and ensuring that the exterior ends are open following completion of the construction of the exterior beams. This pipes must also remain open during the placement of any exterior surfaces, such as bricks.
- 5. The VMS is described below. See layout and detail sheets for additional information.
  - a. <u>A geotextile filter fabric will be placed on top of the structural fill.</u> An coarse sandaggregate venting layer, 2" to 4"-12 inches thick (based on the diameter of the pipes), will be placed on top of structural fill by the concrete contractor the geotextile filter fabric. Particle size distribution test results, documenting <10 wt % passing #30 mesh (0.02" or 0.6 millimeters) and no gravel >1/4", must be provided for engineer approval, prior to sand delivery to job site. The permeable aggregate bed will be comprised of graded No. 57 stone with no more than 5 wt % fines.</u>
  - b. Slotted PVC vent pipes (1.5" dia min 3" max, 0.020" slots), will be bedded in the sand aggregate layer by the VMS contractor. These pipes are shown as dashed and bolded lines on the VMS layout drawings. With prior engineer approval, piping with larger slots can be used with appropriate filter sock with Maximum Apparent Opening Size of no greater than 0.6 millimeters. Solid piping will be placed across interior and exterior beams in a manner that will prevent concrete from entering and/or plugging the vent pipes. Other permeable piping system with openings that will not allow the sand aggregate to pass are acceptable with engineer's approval. Where slotted pipes meet or cross, typical connectors should be used. Solid piping should be used for connections outside of the membrane (e.g. through the interior and exterior beams, and under any areas (such as hallways and stairways) where the VMS is not planned, but piping is needed to reach the vent locations).
  - c. Solid piping through interior and exterior beams should be installed perpendicular to beams.
  - d. The vent pipes will be run through the exterior walls, so at each vent location a "90°" will be used. The VMS contractor will be responsible for providing a 24" sub up for each of the vents, and these stub-ups should be clearly labeled as sub-slab vents, using a sticker such as the one below or other similar permanent marking.



e. A membrane liner on top of sandaggregate/piping, a minimum of 30 mil thick, with 6" sealed overlaps will be installed by the VMS contractor. This can be a single sheet of plastic, two

#### Texas Star Property West Euless, Texas VMS Design Notes – <u>8 May</u>6 August 2024 – Revision 3

sheets of plastic, or one sheet of plastic with a spray-on coating. All edges and penetrations are to be taped and/or sealed with mastic. Materials for taping and sealing must be compatible with the sub-slab environment. If the exterior beams are installed prior to the installation of the VMS, the membrane should be sealed to the concrete with a mastic or other material that is appropriate for this use. This will require a minimum overlap of 4". This is not needed if the membrane extends beneath the exterior beams.

- f. Smoke testing of the system must be performed by the VMS Contractor following installation and sealing of the membrane, and prior to the installation of the rebar and/or post-tension cables. The smoke test should be observed by the engineer. Any leaks must be repaired prior to the engineer's approval of the membrane installation. An additional inspection is required following the installation of the rebar and/or post-tension cables, and any holes or tears repaired prior to pouring of the concrete.
- g. The vent pipes should be fitted with a ¼" mesh cover to keep out animals, and vent covers to prevent rainwater from entering the system. Alternate approaches are allowed, with prior engineer approval.
- h. Fans may need to be installed at vents V-1, V-7, and/or V-15 in Building A, and vents V-1 and/or V-4 in Buildings B and D. This decision will be made following installation and testing of the system. This will require the appropriate electrical connections be installed at these locations by the electrical contractor in order to accommodate a fan (FanTech HP 190 or equivalent) if fans are needed.
- i. All materials used in the VMS construction must be compatible with chlorinated solvents, petroleum hydrocarbon, methane and vapors containing chlorinated solvents, petroleum hydrocarbons and methane.
- i.j. Sample ports for field monitoring of the aggregate layer will be installed using Schedule 40 2inch PVC casing and screen. These ports will be flush mount with the finished floor.
- 6. It is assumed that the <u>2" to 4"12-inch</u> <u>sandaggregate</u> layer can be considered part of the select fill beneath the foundation, but the geotechnical and/or structural engineer should be consulted to confirm that this is the case.
- 7. VMS Construction Quality Control:
  - a. Spec sheets for <u>all</u> materials to be used must be provided to the engineer for approval prior to delivery to the job site.
  - b. Particle size distribution, documenting <10 wt % passing #30 mesh (0.02" or 0.6 millimeters) and no gravel >1/4" must be provided for engineer approval, for every 250 CY of sandaggregate, prior to sandaggregate delivery to job site. Particle size distribution documentation should be provided for any alternate/additional sources of sandaggregate.
  - c. Smoke testing of the liner must be performed for every "pour." These tests are to be performed by the VMS contractor following installation and sealing of the membrane, and prior to installation of the rebar and/or post-tension cables. The smoke test should be scheduled with the engineer so that the test may be observed and documented.
  - d. Care must be taken during the placement of rebar to minimize the potential for damage or puncture of the liner. This should include the use of rebar supports that do not have sharp ends or edges. A final inspection must be made by the engineer following rebar placement and prior to pouring of the foundations to verify that there are no tears or holes. Any such tears or holes will be repaired and the repairs documented.
- 8. Others (concrete, plumbing and/or electrical contractors) will be responsible for:
  - a. Placing a <u>2" to 4"12-inch coarse sandaggregate</u> layer to allow bedding of the VMS piping. The thickness of the <u>sandaggregate</u> layer will be dependent on the diameter of the vent pipes being installed.
  - b. All vent pipes should be extended through the exterior wall to a height of approximately 24" above the top of slab, and then turned to penetrate the exterior wall.

#### Texas Star Property West Euless, Texas VMS Design Notes – <u>8 May</u>6 August 2024 – Revision 3

- c. Vent pipes will need to be protected during construction to prevent damage, filling with debris, entry of rain, and or covering during construction activities. This should be accomplished by covering the opening of the vents with plastic, securely taping the plastic to the pipe, and clearly marking the vent pipes.
- d. On completion, the vents should be fitted with a ¼" mesh to prevent entry by small animals, and fitted with a cover to allow free movement of air, but prevent rainwater from entering the VMS.
- e. Electrical connections should be installed at vent locations V-1, V-7, and/or V-15 in Building A, and vents V-1 and/or V-4 in Buildings B and D to accommodate a fan (FanTech HP 190 or equivalent), in the event that fans are added in the future.

#### CONTRACTOR NOTES:

#### **Concrete/Foundation**

- The VMS Contractor will install solid pipes through the exterior beams at the locations shown on Sheets VS3.0a, VS3.0b, VS3.0c, VS3.0d, VS4.0, and VS6.0. These pipes will allow the connection between the VMS beneath the building to the exterior vents. These must be protected during pouring of the exterior beams. The concrete contractor will be responsible for making sure that these pipes are open following installation of the exterior beams.
- 2. It is assumed that the <u>2" to 4" 12 inches</u> of <u>sandaggregate</u> on the foundation area will replace an equal thickness of select fill, but this must be verified by the geotechnical and/or structural engineer.
- **3.** A grain-size distribution report should be provided for the planned <u>sandaggregate</u> source for engineer approval <u>prior</u> to the purchase and delivery. The specification for the sand calls for less than 10% passing #30 sieve (0.6 millimeters), and 0% retained on the #3 (0.25") sieve.
- **4.** Care should be taken when placing the rebar to minimize the potential for holes or tears to the VMS liner. Rebar supports should <u>not</u> have sharp edges.

#### Plumbing or GC

- Vents will extend vertically through the exterior walls to a height of approximately 24" above the final exterior grade. The vents will exit the exterior wall horizontally. The vent openings should be fitted with ¼" mesh to prevent entry of animals, and fitted with a cover (such as a dryer vent cover) which will allow free flow of vapors, but prevent rainfall from entering the pipe.
- 2. For vents existing into the garage, the vent pipes can exit through the exterior building beam and through the wall of the garage. These vent pipes should also be fitted with 1/4" mesh and protected from rainfall.

#### **Electrical**

 Electrical connections should be installed by the electrical contractor at vent locations V-1, V-7, and/or V-15 in Building A, and vents V-1 and/or V-4 in Buildings B and D to accommodate fans (FanTech HP 190 or equivalent) at each of these vent locations, in the event that these are needed in the future.

Susan T. Litherland, P.E. Principal

Principal Texas P.E. No. 57428, F-15202 Signed electronically on 8/1/2024



# 12 STRUCTURES GAS MONITORING, SITE OPERATING, SAFETY & EVACUATION PLAN

A VMS (provided in Attachment 9) designed in accordance with 30 TAC 330.957(m) will be installed during development and construction of the four buildings on the subject property, which will direct any vapors (methane or other) out from beneath the buildings, and the vapors monitored to verify that there is no vapor accumulation beneath the buildings. Methane sensors will also be located within the buildings. The Methane Monitoring Plan provided in Attachment 12 includes the requirements of a Structures Gas Monitoring Plan (SGMP), Site Operating Plan, and Safety and Evacuation Plan related to the VMS and subject property.

# ATTACHMENT 12 METHANE MONITORING PLAN

#### **STRUCTURES GAS MONITORING PLAN**

This SGMP fulfills the requirements of 30 TAC §330.957(t). It will be part of the operating record for the development permit. A copy of this information will be maintained onsite throughout the life of the facility. The SGMP includes a VMS with an impermeable barrier installed below the structures with vent risers located adjacent to the buildings. This system will allow any vapors (methane or other) that migrate though the soil to the area beneath the structures to be vented outside of the structure, as shown in **Section 9**. The second component is a<u>A</u> monitoring system will be installed within the VMS piping network beneath the buildings that will include controller units and remote sensors that can detect methane and other explosive gases at concentrations below 1% by volume (BV) or 20% of the Lower Explosive Limit (LEL). This system will have audible and visual alarms that will trigger if methane concentrations exceed 1% beneath a building. The monitoring system is intended to confirm that the concentration of vapor (methane or other) beneath the facility structures does not exceed 20% of the LEL. Methane sensors will also be installed within the buildings, and sample ports for field monitoring will be installed for the aggregate layer.

#### Facility Characteristics and Potential Migration Pathways (§330.957(t)(2)(A))

The nature and age of the incidental debris that has been found in the area of the planned structures is discussed in detail in **Section 2**. Based on soil vapor sample results described in **Section 10**, elevated methane concentrations appear to be confined to the deeper gravel zone below 10 ft from the surface, and methane does not appear to be migrating vertically to shallow soils or the surface due to the higher clay content in the upper 10 ft of soil across the property. Although there is no true "cap" on the property, the upper 10 ft of clayey soil appears to minimize the vertical migration of methane gas. As part of the property development, any excavations will not exceed a depth of 10 ft bgs (and likely no deeper than 7 ft bgs), leaving at least 2 ft of the overlying clayey soil at the subject property undisturbed.

The planned multi-family residential development will consist of a four-story building, a three-story building, and two two-story buildings. The planned facility layout is included in **Section 14**. The buildings will be constructed on a reinforced concrete slab foundation. The VMS, which will consist of a geotextile filter fabric, an 12-inch-thick impermeable layer of aggregate with a network of vent pipes, and covered with a sealed plastic barrier, will be installed beneath each of the buildings and beneath any areas with an ignition source. The planned residential units will be leased and occupied by residents and the duration of occupation could be up to 24 hours. The foundation design and VMS will minimize the potential for any vapors in the underlaying soil to enter the buildings. Potential ignition sources include water heaters, heating, ventilation, and air conditioning (HVAC) units, and static or sparking associated with equipment. As has been discussed, monitoring of the vapors within the VMS piping network will be performed so that vapors beneath the buildings will be maintained at 20% or less of the LEL, to eliminate the potential for explosive conditions within or near the building. Methane sensors will also be installed within the buildings.

#### Building Design Characteristics Related to Gas Accumulation Prevention (§330.957(t)(2)(B))

As described in **Section 9**, the design of the residential structures includes several features that will minimize the potential for the accumulation of methane gas within the building. The addition of an engineered fill layer above the soil will provide additional separation and protection from potential methane gas migration. The vapor barrier and ventilation system design will be installed beneath the foundation of the ground floor residential areas and any areas where there could be an ignition source. The system will consist of a granular layer up to 2- to 412-inches in thickness, which will act as bedding for a network of slotted vent pipes. The vent pipes will be extended through any internal beams to allow venting of the area where vapors could accumulate. The pipes will be extended outside of the structure to allow venting. The granular layer and vent pipe system will be covered with a plastic layer, which will be sealed at overlaps, and all penetrations. A geotextile filter fabric will be installed beneath the granular layer and above the

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structural fill. As part of the installation oversight, smoke tests will be performed on the system to verify that it is property sealed, prior to pouring of the concrete foundations. Some or all of the vent pipes will be fitted with fans so that active venting can be performed if passive venting is not sufficient to prevent the buildup of vapors under the building. The additional engineered fill, vapor barrier, and ventilation system provide the primary systems to prevent vapor migration into the structure and minimize the potential for methane gas accumulation beneath the buildings. The sub-slab gas collection system will be under negative pressure from an electric exhaust fan if and when needed. Methane is lighter than air and will dissipate upward and away from vents on each building.

The vapor monitoring system within the VMS piping network will provide continuous monitoring for methane to provide early detection and warning in the event of methane gas accumulation beneath the buildings. In addition to the monitoring equipment in the VMS piping, periodic methane monitoring will be conducted continuously using methane sensors within the buildings to verify that methane is not entering the buildings in concentrations above residential risk-based levels. The frequency of methane monitoring within the buildings will occur quarterly for the first year, and then annually for the following three years. In addition, the landfill gas collection system will have ports for sampling the aggregate layer beneath the slab. methane monitoring within the buildings will be performed in the unlikely event that the VMS methane monitor indicates that methane levels beneath the building exceed 20% of the LEL. Proposed locations of the methane gas sensors are provided in the VMS design plan included in **Section 9**.

#### Gas Collection and Ventilation System Description (§330.957(t)(2)(C))

The VMS will consist of an impermeable methane barrier layer, <u>aggregate layer</u>, <u>and geotextile filter fabric</u>, as described in **Section 9**. The barrier and ventilation layer will be installed beneath the slabs of the ground floor of the residential areas and portions of the buildings where there could potentially be a source of ignition.

#### Gas Monitoring Equipment (§330.957(t)(2)(D))

The vapor monitoring system will include a total of five controllers and five sensors (a controller and sensor for each building with two in Building A) in the VMS piping system. Landfill gas will be monitored by three different sensors. Within the occupied spaces, a permanently mounted Family Safety Products, Inc. Safety Siren Pro Series methane detector (Model No. HS80504), or similar, will be used. On the sub-slab landfill gas collection system, a permanently mounted RKI Instruments M2A gas sensor, or similar, will monitor the exhaust gas stream. The exhaust fan will be a FanTech HP 190 or similar. Locations of sensors are provided in **Attachment 9**. For port landfill gas measurements, a Landtec GEM 5000 portable landfill gas detector, or similar, will be used. The VMS design plan included in **Section 9** provides a plan for the location of the vapor monitoring equipment. Specification sheets for the monitoring equipment will be provided following finalization of the VMS design. Calibration will be performed at least twice annually or every six months.

#### Implementation Schedule for Monitoring Equipment (§330.957(t)(2)(E))

Monitoring equipment will be installed and tested prior to completion of construction of the proposed residential structures. The monitoring equipment will be in continuous operation at least one week prior to buildings being occupied.

#### Sampling and Analysis Plan (§330.957(t)(2)(F))

Indoor air samples will be initially collected prior to residential occupancy. This will be a one-time sampling event to characterize the indoor air. Five samples will be collected, one from each building with two from Building A. These samples will be collected using evacuated "Summa" canisters fitted with regulators that

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will collect the sample over a 24-hour period. The selected analytical laboratory will provide canisters and chain of custody forms for the sampling activities.

The sampling method to collect the indoor air samples includes using an evacuated 1.4-liter Summa canister equipped with a flow controller calibrated to draw in 1.4-liters of ambient indoor air over an approximate 24-hour time period. The main valve on the Summa canister will be opened to initiate the sampling and then closed after approximately 24 hours has elapsed, while observing the gauge on the flow controller to ensure the Summa canister does not equilibrate to ambient conditions.

The ambient indoor air samples collected from the residential buildings will be analyzed for methane by EPA method TO-3. The samples will be shipped to an accredited laboratory offsite that will perform the approved testing.

Laboratory QA/QC procedures will be provided by the laboratory chosen to perform the analysis and will be included with the test results.

#### Analysis Of Indoor AirLandfill Gas Samples (§330.957(t)(2)(G))

The ambient indoor air samples collected from the residential buildings will be analyzed for methane by EPA method TO-3. The samples will be shipped to an accredited laboratory offsite that will perform the approved testing.

Laboratory QA/QC procedures will be provided by the laboratory chosen to perform the analysis and will be included with the test results.

Two landfill gas samples (SV-10R and SV-11R) were collected at 12 ft bgs from previous vapor sample locations SV-10 and SV-11 on 12 July 2024. The samples were analyzed for methane, carbon monoxide, hydrogen sulfide, mercaptans, and ammonia by ALS Environmental in Simi Valley, California. Volatile organic compounds (VOCs) were analyzed during previous sampling events. Water vapor was measured in the field. Laboratory results are provided at the end of this attachment. The analytical results of constituents reported above the laboratory method detection limit (MDL) are summarized below.

<u>Analyte</u>	<u>SV-10R</u>	<u>SV-11R</u>	<u>Air RBEL / VISL</u> (Res)
Hydrogen sulfide	<u>0.0088 mg/m<sup>3</sup></u>	<u>ND (&lt;0.0036 mg/m<sup>3</sup>)</u>	<u>0.0695 mg/m<sup>3</sup></u>
Carbonyl sulfide	<u>0.011 mg/m<sup>3</sup></u>	<u>0.011 mg/m<sup>3</sup></u>	<u>3.48 mg/m<sup>3</sup></u>
Carbon disulfide	<u>0.0062 mg/m<sup>3</sup></u>	<u>0.010 mg/m<sup>3</sup></u>	<u>0.73 mg/m<sup>3</sup></u>
Ammonia	<u>0.22 mg/m<sup>3</sup></u>	<u>0.11 mg/m<sup>3</sup></u>	<u>0.33 mg/m<sup>3</sup></u>
Water vapor	<u>21 ppm</u>	<u>21 ppm</u>	=
Carbon dioxide	<u>7.65%</u>	<u>0.796%</u>	=
<u>Oxygen</u>	<u>15.2%</u>	<u>21.5%</u>	=
Nitrogen	<u>77.1%</u>	<u>77.7%</u>	=
<u>Methane (4/26/2023)</u>	<u>11%</u>	<u>12%</u>	<u>10%</u>

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Based on these landfill gas samples, the landfill gases do not contain significant concentrations of mercaptans, hydrogen sulfide, carbon monoxide, ammonia, or VOCs. Carbon dioxide was detected in the landfill gas sample from SV-10R, and methane has been detected in other gas monitoring probes in the past. Carbon dioxide and methane will be monitored quarterly from the sample ports.

#### Sampling Plan and Procedures

During each landfill gas monitoring event, the integrity of each monitoring port or probe will be inspected and recorded on the Landfill Gas Monitoring System Data Sheets included in this attachment. If any monitoring port or probe is observed to be damaged, the port or probe will be repaired. If irreparable, the damaged port or probe will be decommissioned and replaced with a new monitoring port or probe.

The landfill gas collection system under each building will be continuously monitored for methane concentration by permanently installed sensors. In addition, field monitoring will be periodically performed for the ports on the landfill gas collection system under each building. This period field monitoring will include measurements of for methane, carbon dioxide, and oxygen as a check on the permanently installed sensors. The frequency of the field monitoring of the ports beneath the buildings will occur quarterly for the first year, and then annually for the following three years.

For the field monitoring, a CES-Landtec GEM 5000 Landfill Gas Monitor (GEM 5000), or similar, will be used to measure the methane and carbon dioxide concentrations at each port. This meter provides the readings of methane and carbon dioxide (and oxygen) as a percentage by volume in air.

The field monitoring of the landfill gas collection system will be conducted on a quarterly basis for the first year and then annually for the following three years. The field monitoring events will be conducted in accordance with the following procedure:

- 1. Perform equipment checks and calibration tests.
- 2. Inspect the sampling location. The inspection is to include the following:
  - a. Verify that the location is accessible as necessary for monitoring.
  - b. Verify that any surface protective devices are in place and are in good condition, and
  - c. Verify that the label is in place and clearly readable.
- 3. Open any protective cover.
- 4. Turn on the CES-Landtec GEM 5000, or similar, meter and allow for the meter to adjust to the ambient air.
- 5. Connect the GEM 5000, or similar, meter to the quick-connector or port.
- 6. Open the valve on the port.
- 7. Turn on the GEM 5000 pump, or similar, and allow for the meter to purge the port.
- 8. Allow the meter to purge the trapped air for at least 30 seconds to get an accurate reading.
- 9. Record the observed methane, carbon dioxide, and oxygen readings.
- 10. Record the ambient barometric pressure from the GEM 5000, or similar, meter.
- 11. Disconnect the GEM 5000, or similar, methane meter from the quick-connector or port.
- 12. Close the port and reinstall any protective cover.

The above procedure will be repeated to obtain readings at each port location. All readings and inspection results will be recorded on the Landfill Gas Monitoring System Data Sheets with any needed maintenance and/or repairs noted. All results will be placed in the operating record of the facility.

#### SITE OPERATING PLAN

### REV3 20240806

The proposed residential structures will consist of a four-story building, a three-story building, and two twostory buildings. The buildings will be a wood or metal framed structure and be constructed over reinforced concrete structural slabs. The VMS beneath each building will be equipped with methane sensors that will produce both an audible and visual alarm if concentrations of methane exceed 1% BV or 20% of the LEL. <u>Methane sensors will also be installed within the buildings.</u> Other than residential units, other spaces in the four buildings include offices, storage closets, maintenance rooms, and equipment rooms.

In accordance with §330.958, construction plans and specifications of the proposed residential structures will be prepared and maintained onsite during construction. After completion of construction, one set of asbuilt construction plans and specifications will be maintained at the permitted development. Plans maintained at the development be made available for inspection by executive director representatives.

This SGMP, Site Operating Plan, and Safety and Evacuation Plan will be implemented and maintained in accordance with the requirements of §330.961(a) through (h) by an environmental professional or person(s) trained by an environmental professional. These documents will be considered a part of the operating record of the development and a copy will be maintained onsite in an office at the development for the life of the structure to aid in the implementation and maintenance of the SGMP, Site Operating Plan, and Safety and Evacuation Plan. Any deviation from the development permit and incorporated plans or other related documents associated with the development permit will seek approval of the executive director. The development permit holder will notify the executive director, and any local pollution agency with jurisdiction that has requested to be notified, of any incident involving the facility relative to the development permit and provisions for the remediation of the incident.

The owner or lessee of the development will provide equipment for monitoring on-site structures. Monitoring of onsite structures will include permanently installed monitoring probes and continuous monitoring systems. Structures located on top of the waste area shall be monitored on a continuous basis, and monitoring equipment shall be designed to trigger an audible alarm if the volumetric concentration of methane in the sampled air is greater than 1% within the venting pipe or permeable layer, and/or inside the structure. Areas of the structure where gas may accumulate will be monitored. Gas monitoring and control systems will be modified as needed to reflect modifications to the structure.

All sampling results will be placed in the operating record of the facility and be made available for inspection by the executive director, and any local pollution agency with jurisdiction that has requested to be notified. If methane gas levels exceeding the limits are detected, the owner, operator, or lessee shall notify the executive director and take action.

The ponding of water over waste in the closed MSW landfill will be prevented. Ponded water that occurs on a closed MSW landfill unit will be eliminated as quickly as possible.

Surface drainage in and around the structure will be controlled to minimize surface water running onto, into, and off the closed MSW landfill.

All conduits intended for the transport or carrying of fluids over or within the closed MSW landfill will be double-containment. Or, a high-density polyethylene (HDPE) 30-mil sealed barrier will be installed along the bottom, sides, and extending approximately 1 ft on top of the trench and sealed. The trench will then be filled with clean, compacted backfill on the bottom, clean backfill on all sides, and a on the sides and bottom of the trench

The owner or lessee shall promptly record and retain in the operating record the following information:

- all results from gas monitoring and any remediation plans pertaining to explosive and other gases;
- all unit design documentation for the placement of gas monitoring systems and leachate or gas condensate removal or disposal related to the closed MSW landfill unit;

#### REV3 20240806

- copies of all correspondence and responses relating to the development permit;
- all documents relating to the operation and maintenance of the building, facility, or monitoring systems as they relate to the development permit; and
- any other document(s) as specified by the approved development permit or by the executive director.

The owner, operator, or lessee shall provide written notification to the executive director, and any local pollution agency with jurisdiction that has requested to be notified, for each occurrence that documents listed in subsection (h) of this section are placed into or added to the operating record. All information contained in the operating record shall be furnished upon request to the executive director and shall be made available at all reasonable times for inspection by the executive director or his representative.

The following equipment is expected to be used at the structures and a maintenance schedule for this equipment is provided below.

Description	Procedures and Function	Maintenance Schedule
Offices	Daily office use	As-needed office updates
Cleaning/maintenance	General	As-needed
equipment	housekeeping/maintenance	maintenance/cleaning
HVAC	Interior climate control	Semi-annually
Electric water heaters	Hot water control	Annually
Lighting	Interior lighting control	As-needed replacement
IT/Network equipment	Telephone, internet, cameras, etc.	As-needed repair/replacement

The equipment list will be reviewed and updated as needed. In addition, two of the structures will have enclosed garages for vehicles.

### SAFETY AND EVACUATION PLAN

The residential structures will consist of two to four story buildings with offices, residential spaces, community spaces, restrooms, and garages on two of the buildings. As previously discussed, the VMS beneath each building will be equipped with methane sensors that will produce both an audible and visual alarm if concentrations of methane beneath the building exceeds 1% BV or 20% of the LEL.

By maintaining the potential concentration of methane beneath the building at 1% or 20% of the LEL, methane cannot accumulate to these levels in the building. Typically, "attenuation" levels through a building slab are 0.03 meaning that even as a worst case, the methane concentrations in the building cannot exceed 33% of 20% of the LEL since the "trigger" will be the methane concentration beneath the building, and not in the building. Methane will also be installed within the buildings and will be equipped with methane monitors with audible alarms. In the event that the methane monitors within the VMS detect elevated levels of methane, the VMS vent fans will immediately be turned on (if they were not already running) and indoor air monitoring at the sample ports will be performed to verify that the concentrations within the buildings are below the threshold levels.

Building occupants will be notified that the building is located over methane gas, and that controls are in place to minimize the potential danger posed by the methane gas. <u>In the event that the methane monitors</u> inside the building detect elevated levels of methane, alarms will be triggered, and residents will evacuate the building and only re-enter when conditions are safe. Each living space will be equipped with a graphic

## REV3 20240806

evacuation plan map directing occupants where to go in the event of an alarm including a rally point and contact phone numbers.

REV3 20240806

#### LANDFILL GAS SAMPLE PORT MONITORING DATA SHEET

SAMPLE PORT LOCATION ID	SAMPLER NAME	<u>DATE</u>	TIME	METHANE (%)	CARBON DIOXIDE (%)	OXYGEN (%)	<u>OTHER</u>
NOTES (CO	NDITION/DAM	AGE):		·			
NOTES (CONDITION/DAMAGE):							
NOTES (CO	NDITION/DAM	AGE):					
NOTES (CO	NDITION/DAM	AGE):					·

# **20 OTHER PLANS**

Grading and drainage plans are provided as Attachment 20. There are no irrigation plans for the property.

APPLICATION FOR DEVELOPMENT PERMIT | TX STAR PROPERTY WEST

# ATTACHMENT B

# UNMARKED ("CLEAN") APPLICATION REPLACEMENT PAGES – REVISION 3

# **REVISION 3** -

# APPLICATION FOR DEVELOPMENT PERMIT FOR PROPOSED ENCLOSED STRUCTURE

# TEXAS STAR PROPERTY WEST 11450 TRINITY BOULEVARD EULESS, TARRANT COUNTY, TEXAS 76040

Prepared for:

Texas Commission on Environmental Quality MSW Authorization No. 62054; Tracking No. 29838265 Voluntary Cleanup Program No. 3237 RN100729763 | CN604539007

Prepared on behalf of the Applicant:

#### **Stonehawk Capital Partners, LLC**

4550 Travis Street, Suite 565 Dallas, Texas 75205

Property Owner:

HMH Family Partnership LP 1104 Dayton Drive Lantana, Texas 76226

## Initial Submission: 28 February 2024 Revision 3 Submission: 6 August 2024

Susan T. Litherland, P.E. Principal Texas P.E. No. 57428, F-15202 Signed electronically on 8/1//2024

Sam Enis, P.G. Principal Project Manager

#### PN: 1098.015.003



**SQ Environmental, LLC** PO Box 1991 Austin, Texas 78767-1991 (512) 900-7731 www.SQEnv.com



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MAA

Susan T. Litherland, P.E. Principal Texas P.E. No. 57428, F-15202 Signed electronically on 8/1/2024



# **1 PROPOSED PROJECT DESCRIPTION**

The subject property is currently undeveloped, and the planned future use is for a multi-family residential development. The proposed development extends to a south-adjacent TAD parcel, and the east-adjacent property will support the development as a parking lot and green space. As planned, the development on the subject property is comprised of four multi-family apartment buildings (Buildings 1 through 4) with concrete slab-on-grade foundations. Building 1 will be a four-story apartment structure with a footprint that measures approximately 300 ft by 400 ft including an interior, open-air courtyard that measures approximately 150 ft by 275 ft; Building 2 will be a three-story apartment structure with a footprint that measures approximately 150 ft by 75 ft; and Buildings 3 and 4 will be two-story apartments structures with footprints that measure approximately 150 ft by 75 ft. The total square footage of the buildings is 203,526 square feet (ft<sup>2</sup>). Asphalt-covered parking lots and landscaped areas will surround the four buildings and cover the majority of the remaining surface area of the subject property. The total square footage for pavement is 216,640 ft<sup>2</sup>. Site Plans are included in **Attachment 14**.

The majority of the incidental debris identified in the subsurface of the subject property is located near the center and the east-central portions of the property. In general, all of the incidental debris is deeper than 5 ft bgs. There is no true "cap" at the surface on the property, although the upper 5 to 10 ft of soil generally does not contain debris and has a higher percentage of clay than the underlying materials.

The planned buildings on the subject property will have at or near grade foundations. No subsurface parking or other subsurface structures are planned. The only excavations that will be performed are for utilities (which will likely be limited to the upper 3 to 4 ft), an elevator pit (which will likely extend no more than about 6 to 8 ft bgs), and a swimming pool. The swimming pool will be located in the courtyard of Building 1. The maximum disturbance depth at the subject property will be no deeper than 10 ft, and likely no deeper than 7 ft. As described, based on the planned construction, the only area where incidental debris might be encountered is in the vicinity of the swimming pool, and possibly the elevator pit. In no case will the excavations exceed to the depths of the elevated methane concentrations (deeper than 10 ft bgs) or the saturated zone (24 to 30 ft bgs).

A VMS will be designed and installed beneath first-floor residential areas. The VMS will direct any vapors (methane or other) out from beneath the buildings, and the vapors monitored to verify that there is no vapor accumulation beneath the buildings. As discussed above, the planned concrete building slab foundations with an underlying VMS, along with the asphalt roadways and parking areas will result in a similar or better impervious "cap" over portions of the subject property where incidental debris is present in the subsurface.

No enclosed areas below ground surface to be occupied by people will be constructed on the subject property. It is not anticipated that waste will be encountered during construction. However, minor amounts of incidental debris may be uncovered during construction activities at the subject property. The debris and surrounding soil will be stockpiled on plastic sheeting or loaded directly into 55-gallon drums, trucks, trailers, or containers, and removed from the site for disposal at an appropriate, permitted MSW landfill.. Locations where incidental debris is removed will be backfilled with 2-ft of clean, low-plasticity, compacted clay and graded with the surrounding onsite soil to be slightly higher than the existing grade and provide positive drainage. No pilings, borings, or penetrations are planned during development of the subject property. The majority of the subject property will be covered with buildings and asphalt and designed so that surface water quickly exits the property.

It is not anticipated that any stormwater will come into contact with incidental debris on the subject property during construction. However, groundwater on the subject property has been sampled during four events, and no impacts have been identified. There is no indication that groundwater beneath the subject property

### PROPOSED PROJECT DESCRIPTION

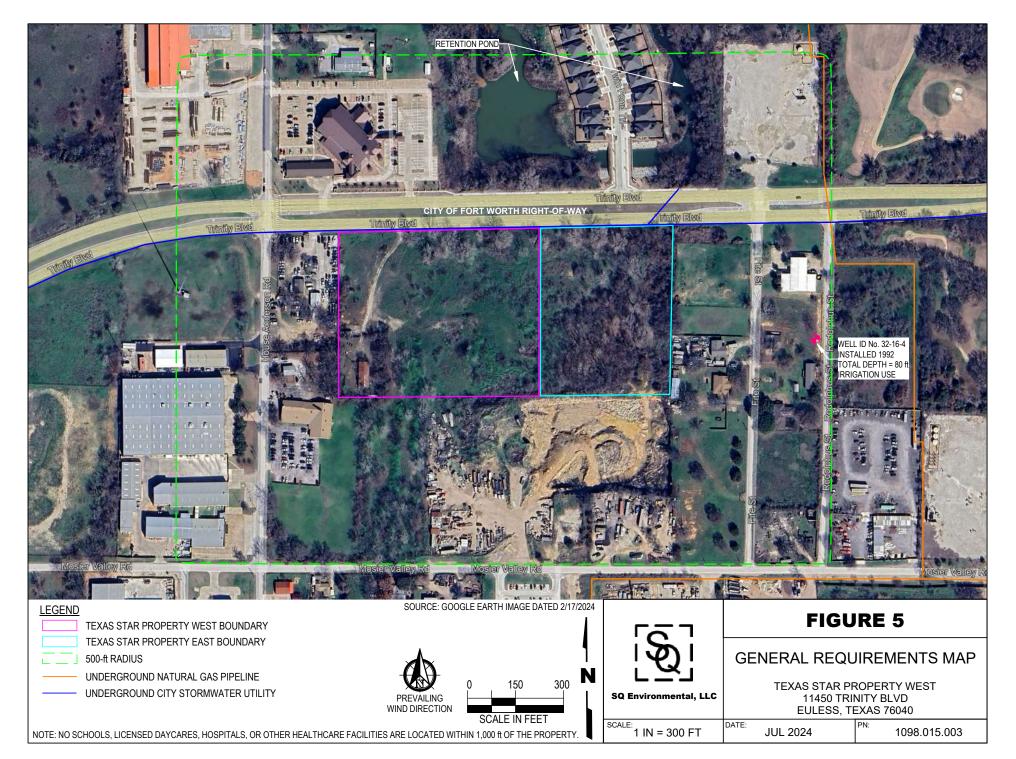
is impacted by the debris located above the saturated zone. The debris and groundwater beneath the subject property are not a source of contamination. None of the incidental debris is located at the ground surface, and precautions will be implemented during development of the subject property to prevent excavated material, if any, from coming into contact with stormwater. Any surface water that does come into contact with waste materials will be properly contained, characterized, and disposed of.

If excavation activities result in exposed waste, the exposed waste area will be temporarily covered with clean soil or other materials as soon as practical, but no later than the end of the day unless covering is impractical. If an area of exposed waste remains exposed for more than 24 hours, the contractor will provide adequate temporary cover consisting of a minimum of 6 inches of soil or an impermeable membrane material to prevent rainfall from contacting the waste. Temporary diversion berms will be installed around the exposed waste area to prevent stormwater from contacting the waste and will be used upslope of all excavations where waste will be exposed to minimize the amount of surface water coming into contact with waste materials. In addition, temporary containment berms will be constructed around areas of exposed waste to collect surface water. At no time will water that comes into contact with waste materials be allowed to discharge to surface waters. Regarding the management procedures described above, especially the covering of waste and precautions implemented in advance of inclement weather, the generation of water that has made contact with waste materials is expected to be minimal. However, if generated, the water will be collected and disposed of in accordance with standards set forth herein and in accordance with City and State requirements for disposal of such water. Any water generated during construction will be stored onsite, then transported via vacuum truck to an approved wastewater treatment or disposal facility permitted to accept the wastewater.

The stormwater management will include measures to control sediment discharge during construction including, but not be limited to, the use of earthen berms, hay bales, and silt fencing downgradient of slopes which may experience erosion (including material stockpiles). Erosion damage from rainfall events will be repaired by the contractor after such events. All erosion control measures will also be inspected and maintained throughout the redevelopment process. Berms, when used for control of potentially impacted water, will also be maintained as necessary to control erosion. The contractor will pay special attention to erosion on any soil cover over waste materials. Any cover damage to the existing landfill, or in areas where cover must be maintained over solid waste materials that are part of construction, will be repaired immediately and steps taken to prevent a recurrence of that type of damage.

The requirements of §330.453(a), concerning the final cover system, will be implemented for the elevator pit if waste is exposed during the excavation of the pit. A 2 ft layer of clayey soil, compacted in layers no more than 6 inches in thickness, will be placed in the bottom of the elevator pit excavation. This is shown in Figure 3 in Attachment 9. The requirements of §330.961(g), concerning the double-containment of subgrade conduits intended for the transport or carrying of fluids over or within the subject property, and §330.331(b), regarding liner criteria for leachate for the swimming pool, will be implemented. Subgrade utility conduits will be installed with double-containment, which will be provided by the single wall utility, that is within a lined trench. On excavation, a high-density polyethylene (HDPE) 30-mil sealed barrier will be installed along the bottom, sides, and overlapping on top of the trench and sealed. This is shown in **Figure** 2 in Attachment 9. The trench will then be filled with clean, compacted backfill on the bottom, clean backfill on all sides, and a on the sides and bottom of the trench. The swimming pool will be lined with a highdensity polyethylene (HDPE) 60-mil sealed geomembrane liner over at least 2 ft of compacted, clay-rich soil with a permeability not greater than 1x10E-7 cm/sec. This is shown in Figure 1 in Attachment 9. The pool location is restricted to the courtvard of Building 1 and will not be placed elsewhere. A guality control plan will be prepared detailing the design, materials, and procedures for construction and testing to meet liner system specifications based on Regulatory Guidance for Liner Construction and Testing for a

Municipal Solid Waste Landfill (RG-534, September 2017). Construction details, plans, materials to be used, and cross-sections of the elevator pit, utility trench, pool, and the underlying waste down to native soil are provided in **Attachment 9**.



# 6 NOTICE OF COORDINATION

Coordination with the applicable local, state, and federal government officials and agencies is currently being conducted in preparation for site development. Documentation of the Notice of Coordination letters sent to the Governmental Entities listed in Item 18 of Form TCEQ-20785 is provided in **Attachment 6**. A notification regarding the landfill status of the property has been provided to the City of Fort Worth, Development Services among others. Copies of the Notices of Landfill Determination and delivery receipts are provided in **Section 16**.

# ATTACHMENT 6 NOTICES OF COORDINATION



**SQ Environmental, LLC** P.O. Box 1991 Austin, TX 78767-1991 (512) 900-7731 www.SQEnv.com

19 July 2024

Attn: James Davis Bureau of Fire Prevention City Hall, Lower Level 200 Texas St Fort Worth, Texas 76102

Via E-Mail:

RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Mr. Davis:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199 or

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

cc: Brandon Hopkins, Stonehawk Capital Partners LLC Susan T. Litherland, P.E., SQ Environmental LLC

## **Clint Weaver**

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:47 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West Bureau of Fire Prevention 20240719.pdf

Mr. Davis,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC

(806) 773-9326



**SQ Environmental, LLC** P.O. Box 1991 Austin, TX 78767-1991 (512) 900-7731 www.SQEnv.com

19 July 2024

Attn: Lauren Prieur Floodplain Management & Regulations, Transportation & Public Works City Hall, 2<sup>nd</sup> Floor 200 Texas St Fort Worth, Texas 76102

Via E-Mail:

#### RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Ms. Prieur:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199 or

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

cc: Brandon Hopkins, Stonehawk Capital Partners LLC Susan T. Litherland, P.E., SQ Environmental LLC

## **Clint Weaver**

From:	Clint Weaver >
Sent:	Friday, July 19, 2024 12:49 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West Floodplain & Public Works 20240719.pdf

Ms. Prieur,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC

(806) 773-9326



**SQ Environmental, LLC** P.O. Box 1991 Austin, TX 78767-1991 (512) 900-7731 www.SQEnv.com

19 July 2024

Attn: Mattie Parker Mayor's Office City Hall 200 Texas St Fort Worth, Texas 76102

Via E-Mail:

RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Ms. Parker:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199 or

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

cc: Brandon Hopkins, Stonehawk Capital Partners LLC Susan T. Litherland, P.E., SQ Environmental LLC

## **Clint Weaver**

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:50 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West Mayor's Office 20240719.pdf

Ms. Parker,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC

(806) 773-9326



**SQ Environmental, LLC** P.O. Box 1991 Austin, TX 78767-1991 (512) 900-7731 www.SQEnv.com

19 July 2024

Attn: Cody Whittenburg Environmental Services Department 818 Missouri Ave Fort Worth, Texas 76104

Via E-Mail:

#### RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Mr. Whittenburg:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

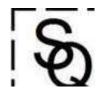
cc: Brandon Hopkins, Stonehawk Capital Partners LLC Susan T. Litherland, P.E., SQ Environmental LLC

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:51 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over
	Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West City Health 20240719.pdf

Mr. Whittenburg,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Christopher Harder Water Department 908 Monroe St Fort Worth, Texas 76102

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Mr. Harder:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199 or

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:53 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West Utilities 20240719.pdf

Mr. Harder,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Eric Fladager Planning Division City Hall, 3<sup>rd</sup> Floor 200 Texas St Fort Worth, Texas 76102

Via E-Mail:

#### RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Mr. Fladager:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199 or

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:54 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West Planning 20240719.pdf

Mr. Fladager,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLQ



19 July 2024

Attn: D.J. Harrell Development Services, Inspections City Hall, Lower Level 200 Texas St Fort Worth, Texas 76102

Via E-

#### RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Mr. Harrell:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

This letter serves as notification to you that project development will be coordinated through your agency or organization, if required. Please let me know if you have any questions or comments regarding this application or need any additional information. I may be reached at 512-574-1199 or

Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:55 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West Bldg Inspector 20240719.pdf

Mr. Harrell,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Judge Tim O'Hare Tarrant County Court 100 E Weatherford St, Ste 501 Fort Worth, Texas 76196

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Judge O'Hare:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

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Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver <
Sent:	Friday, July 19, 2024 12:56 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West County Judge 20240719.pdf

Judge O'Hare,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Joseph Jackson, P.E. Tarrant County Engineering Division 100 E Weatherford St, Ste 401 Fort Worth, Texas 76196

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Mr. Jackson:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

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Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:57 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West County Engineering 20240719.pdf

Mr. Jackson,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Dr. Brian Byrd Tarrant County Public Health 1101 S Main St, Ste 2300 Fort Worth, Texas 76104

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Dr. Byrd:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

A former Dumping Area, as the term is defined in the Rule, located at 11450 Trinity Boulevard in Euless, Texas, has been confirmed by soil borings and test pits conducted as part of real estate due diligence activities. The site is currently undergoing application and authorization under §330.960 Subchapter T (Use of Land Over Closed Municipal Solid Waste Landfills) for a proposed development that includes four residential buildings.

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Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 12:58 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West County Health 20240719.pdf

Dr. Boyd,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Rep. Tony Tinderholt State Representative, District 94 1000 Ballpark Way, Ste 310 Arlington, Texas 76011

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Rep. Tinderholt:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

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Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver <
Sent:	Friday, July 19, 2024 12:59 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West State Representative 20240719.pdf

Rep. Tinderholt,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Sen. Kelly Hancock State Senator, District 9 306 W Seventh Street, Ste 508 Fort Worth, Texas 76102

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Sen. Hancock:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

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Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 1:00 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West State Senator 20240719.pdf

Sen. Hancock,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC



19 July 2024

Attn: Susan Alvarez North Central Texas Council of Governments Centerpoint II, 616 Six Flags Dr Arlington, Texas 76011

Via E-Mail:

## RE: Notification of Coordination Texas Star Property West, 11450 Trinity Boulevard, Euless, Tarrant County, Texas 76040 MSW Authorization No. 62054; VCP No. 3237; RN100729763; CN604539007 SQE PN: 1098.015.003

Dear Ms. Alvarez:

SQ Environmental, LLC (SQE) prepared this letter on behalf of Stonehawk Capital Partners LLC (Stonehawk) and in accordance with Texas Commission on Environmental Quality (TCEQ) requirements as outlined in Title 30 of the Texas Administrative Code (TAC) Chapter 330 Rule 330.957(g).

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Sincerely, SQ Environmental, LLC

Sam Enis, P.G. Principal Project Manager

From:	Clint Weaver
Sent:	Friday, July 19, 2024 1:01 PM
То:	
Cc:	
Subject:	Notice of Coordination for Development Permit for Proposed Enclosed Structure Over
	Closed Municipal Solid Waste Landfill
Attachments:	Notice of Coordination TX Star West NCTCG 20240719.pdf

Ms. Alvarez,

In accordance with Texas Commission on Environmental Quality (TCEQ) and Texas Administrative Code (TAC) §330.957(g), and on behalf of Stonehawk Capital Partners LLC, SQ Environmental LLC has prepared the attached letter for Notice of Coordination with all local, state, and federal government officials and agencies on the use of land over a closed municipal solid waste landfill. If you have any questions, please do not hesitate to contact me.

Thank you,



Clint Weaver, P.G. SQ Environmental, LLC

REV3 20240806

# ATTACHMENT 9

# FOUNDATION PLAN & VMS DESIGN PLAN

## 9 FOUNDATION PLANS

A VMS designed in accordance with 30 TAC 330.957(m) will be installed during development and construction of the four buildings on the subject property. The VMS includes an impermeable barrier installed below the concrete slab of the structures, followed by a 12-inch-thick permeable aggregate bed and a geotextile filter fabric, with vent risers located adjacent to the buildings. This system will allow any vapors (methane or other) that migrate though the soil to the area beneath the structures to be vented outside of the structure. The second component is a monitoring system within the VMS piping network beneath the buildings and within the buildings that will include controller units and remote sensors that can detect methane and other explosive gases. This system will have audible and visual alarms. Sample ports for field monitoring will be installed for the aggregate layer. The foundation plan and VMS design plan are included as **Attachment 9**. Geotechnical soil investigation reports are provided as **Attachments 10A** and **10B**. The Methane Monitoring Plan is discussed in **Section 12**. A Liner Quality Control Plan for the pool is provided below.

## LINER QUALITY CONTROL PLAN

This Liner Quality Control Plan (LQCP) was developed for the Texas Star Property to describe the inspection and construction control and testing requirements in support of the application. This Plan was prepared in general accordance with *Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill*, TCEQ Regulatory Guidance RG-534 dated September 2017 and is intended to fulfil requirements of 30 Texas Administrative Code 330.

## **A General Requirements**

This LQCP provides the basis for the type and rate of quality control performance testing. A copy will be maintained on site during construction or available for electronic download in the event an inspection is performed. For ease in this document preparation, any components that are not specifically addressed in this document will default to the requirements of *Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill*, TCEQ Regulatory Guidance RG-534.

## **B** Overview of Project

As discussed in this Application, the swimming pool will be located in the courtyard of Building 1. The maximum disturbance depth at the subject property will be no deeper than 10 ft, and likely no deeper than 7 ft. The excavation of the pool will be lined with a high-density polyethylene (HDPE) 60-mil sealed geomembrane liner over 2 ft of compacted, clay-rich soil with a permeability not greater than 1 x  $10^{-7}$  cm/s. A protective cover of topsoil 12-inches thick will overlay the liner. A cross-section of the liner is provided on the figure included as **Attachment 9**.

## **C** Soil Material Requirements

## C.1 **Protective Topsoil Requirements**

Protective cover is required to be placed above the liner system as shown on the cross sections. Topsoil will be free of deleterious materials and not previously mixed with any onsite soils that were previously mixed with garbage, rubbish, or other solid waste materials. Permeability must be greater than  $1 \times 10^{-4}$ 

cm/s. The thickness must be greater than or equal to 12 inches. Compaction is not necessary for installation and density controls are not needed; however, the contractor should place the protective topsoil as soon as possible after installation of the liner and compacted clay-rich soil.

Protective topsoil shall be placed over the HPDE liner during the coolest part of the 8-hour workday. Soil shall be deployed along the surface of the liner to control the amount of slack and minimize any damage to the liner. The liner shall be continuously monitored during installation and any damage to the liner immediately repaired. Only light equipment will be used during construction and a minimum of 12 inches of protective material must be placed on top of the liner before light construction equipment can access the area.

Protective topsoil will not have any rocks greater than 0.375 inches in diameter. The Contractor will keep the protective topsoil layer wet during dry periods to prevent cracking.

## C.2 Clay-Rich Soil Requirements

Clay-rich soil will meet the following requirements. One sample from each source must be collected before any material is brought onsite. Test methods will generally follow Standard ASTM Test Methods as outlined in Table B-1 of RG-534 and will include field density, gradation analysis, Atterberg limits, and permeability.

Soil Property	Value
Plasticity Index (PI)	≥ 15
Liquid Limit (LL)	≥ 30
Percent Passing No. 200 Mesh Sieve	≥ 30%
Percent Passing One-Inch Sieve	= 100%
Permeability	≤ 1 x 10 <sup>.7</sup> cm/sec

In-situ soils will not be used for clay-rich soil. The clay-rich soil will be sampled every 1,000 cubic yards for total petroleum hydrocarbons (TPH) by Texas Method 1005 and metals SW-846 Methods to ensure the materials are suitable for use.

Clay-rich soils will be placed in three 8-inch lifts (a total of 3 lifts). Compaction testing will be performed at a frequency of every 1 acre and one per lift (minimum of three locations). The clay-rich soil will be compacted to at least 95% of standard proctor.

## C.3 HDPE Liner Requirements

The HDPE Liner must have a minimum of 60 mil thickness. Recycled or reclaimed HDPE materials are not acceptable. HDPE material and required welding rods shall contain between 2 and 3% carbon black and may contain no more than 1% additives.

The liner will be inspected upon delivery for any damage and defects. The liner must be free from any pinholes, surface blemishes, scratches, or other defects that could affect the integrity of the liner. The liner will be stored at a clean and dry location onsite and protected from any objects that could damage the liner.

All manufacturer's recommendations for the installation of the liner will be followed. In addition, general installation requirements outlined in Table 3-1 of RG-534 must be followed.

 The liner will be placed above the compacted clay-rich soil that will be free of stones and rocks and other debris greater than 3/8-inch. The compacted clay-rich soil will be finished by rolling with flat

wheel roller until smooth uniform surface is achieved. The subgrade areas will be inspected for any desiccation, cracks, erosion, or ponding prior to installation and repaired before liner is placed. If necessary, regular watering and proof rolling will be performed.

- Prohibit construction equipment from traveling directly on the liner.
- Do not place during inclement weather.
- Limit vehicular traffic on the liner to low-ground pressure supporting equipment only. Any damaged areas must be repaired and inspected.
- Only unroll liner sheets that are to be placed and seamed in the same day. Position liner with overlap recommended by manufacturer but not less than 3 inches. Typical overlaps are 3 to 6 inches. There should be no loose flap on the top side of the liner. Overlap distance must be sufficient so that all seam tests can be performed as described below.
- Folds, wrinkles, and fish mouths are not acceptable. Cut, overlap, and weld the material where wrinkles or folds occur. A fish mouth is defined as an area in the seam where one liner panel is first folded over on itself, and a second liner panel is placed and welded over this fold. Where fish mouths occur, the liner must be cut, overlapped, and covered with a patch.
- Use only heat-only tack welds, when necessary. No double-sided tape or glue may be used.
- Fusion or extrusion welding may be used for field seaming and repairs.
- Seaming is permitted only when ambient air conditions are below 104°F.
- At the end of each workday, all unseamed edges will be anchored with sandbags or other approved devices. No penetrating anchors are accepted (stables, U-rods).

## C.4 HDPE Liner Testing Requirements

#### Verification of HDPE Liner Testing Requirements

Manufacturer information will be reviewed to ensure that QA/QC testing, conformance testing, and seam testing requirements of Table 3-2 of RF-534 are met.

#### Welds, Repair Welds, and Patches

Shear Strength – the seam, when stressed perpendicular to the direction of the weld should not under any condition fail before stretching and breaking of the liner panel adjacent to the weld. The numerical value of the shear strength of any sample should not be less than 90% of the sheet tensile strength according to manufacturer-provided information.

#### Trial Seam Testing

Each day, prior to commencing field seaming, each individual employee performing seaming will conduct a trial seam. Each trial seam will be 3 ft long by 1 ft wide. Trial seam criteria is outlined in Table 3-3 of RG 534.

#### Destructive Testing

Destructive test samples of field seams will be performed at a minimum of one stratified location for every 500 linear feet or major fraction thereof or at the direction of the Engineer. Destructive test requirements will conform with Table 3-4 of RG-534.

#### Non-Destructive Testing

Non-destructive tests should be performed by the Contractor or engineer on all field seams, patches, and repair welds. Accepted non-destructive test methods include vacuum box testing for extrusion welds and air-pressure testing for dual-tract fusion welds. Specific procedures for these tests is included on Table 3-5 of RG-534.

## **D** Documentation

Following installation, the following documentation will be compiled and kept onsite in the facility records. This will include the following elements:

- All field and laboratory test documentation.
- All test documentation.
- Liner certification information and results of manufacturer independent testing.
- Field documentation of field testing, repairs, etc.
- Photographs and field notes.
- A survey of the final liner area.

# MEMORANDUM



To:Stonehawk Capital Partners, LLCFrom:Susan Litherland, P.E., Sam Enis, P.G., and Adam Harper, P.G.Date:6 August 2024 – Revision 1Subject:Texas Star Property West – Vapor Mitigation System Design Basis

This memo provides the design basis for the Vapor Mitigation System (VMS) for the Texas Star Property West on Trinity Boulevard in Euless, Texas. This document is part of the design package and this entire package should be provided to the General Contractor and appropriate subcontractors (including specialty VMS, structural, electrical, and plumbing). The package includes:

- Design Basis Memorandum
- VMS Design Notes
- VMS Details
- Sheet VA1.0: Overall VMS Layout Plan
- Sheet VS3.0: Overall Building A Layout
- Sheet VS3.0a, VS3.0b, VS3.0c, & VS3.0d: VMS Layout Beneath Building A
- Sheet VS4.0: VMS Layout Beneath Building B
- Sheet VS6.0: VMS Layout Beneath Building D
- Sheet VA4.5, VA4,6, & VA4.7: Vent Locations on Building A Exterior Elevations
- Sheet VA5.3: Vent Locations on Building B Exterior Elevations
- Sheet VA7.4: Vent Locations on Building D Exterior Elevations
- FanTech Spec Sheet for Vent Fans, if needed

## BACKGROUND

Based on available information, the subject property appeared to be used for agricultural purposes from approximately 1942 to 1950. Gravel pit operations appear to have ceased around the mid-1980s. Hancock Contracting, an earth-moving or construction company, appears to have operated on the subject property from at least 1988 to the late 2000s. By the late 2000s, the subject property appeared to be primarily vacant. Debris (glass, plastic, bricks, concrete, and wood) were observed in shallow soil borings completed on the property at depths up to approximately 12 feet (ft) below ground surface (bgs). Based on the soil boring observations and site history, it does not appear that the property was ever operated as "landfill" (e.g., did not purposefully accept refuse and trash for landfilling), but rather these incidental materials were brought in with soil that was being used to fill the property.

Elevated methane levels have been found in a layer which is present at least 10 ft from the surface. There is a clay layer between the methane and the surface, which isolates the methane from the surface. Methane has not been found at significant concentrations in the surface clay layer based on testing at a depth of 5 ft. This layer is approximately 10 ft thick. As part of the property development, no penetrations through the

#### MEMORANDUM

Texas Star Property West VMS Design Basis Page 2



clay layer are planned. The source of the methane present below 10 ft appears to be a property off-site to the south of the subject property.

As a precautionary measure, a vapor mitigation system is being installed beneath the ground floor residential areas of the apartment complex to minimize the potential for any intrusion of residual vapors from the historical property usage, and or methane.

#### **DESIGN APPROACH**

The proposed design approach includes the installation of a passive VMS consisting of a vent layer (12inch-thick coarse aggregate bedding material, slotted vent pipes, geotextile filter fabric, and vapor-tight membrane) below the foundation of first-floor, residential living portions of the buildings. As planned, the system will have 17 passive vents in Building A, 4 passive vents in Building B, and 4 passive vents in Building D. Vents exiting on an exterior wall will be run through the wall, to an elevation of approximately 2 feet from the final grade. As planned, the VMS that has been designed is a passive system, with provisions for the addition of electric fans to three vents in Building A (V-1, V-7, and/or V-15), two vents in Building B (V-1 and/or V-4), and two vents in Building D (V-1 and/or V-4). The decision regarding whether to install the fans will be made based on testing following the installation. Based on the available information, it is anticipated that passive venting is all that will be needed to prevent accumulation of volatile organic compounds (VOCs) beneath the occupied portions of the building. As part of the design, electrical connections should be included in the vicinity of V-1, V-7, and/or V-15 in Building A, and V-1 and/or V-4 in Buildings B and D so that fans can be installed, if needed. The vents where an electrical connection will be needed are noted on sheets VS3.0a, VS3.0d, VS4.0, and VS6.0 with an "e". The vent pipes will be fitted with a 1/4" mesh screen and covered in a manner that will allow venting of any vapors but prevent entry animals and rainwater. It is recommended that testing be performed approximately six months after the installation to evaluate whether the fans are needed, and then annually for two additional years to verify that the system is performing as designed.

Methane sensors will also be installed within the buildings, and sample ports for field monitoring will be installed within the aggregate layer.

For any questions or clarifications regarding the VMS design, please contact us. Susan Litherland may be reached by phone at 512-656-9445 or e-mail at the second s

## Texas Star Property West Euless, Texas VMS Design Notes – 6 August 2024 – Revision 1

#### General

- A passive Vapor Mitigation System (VMS) is to be installed under portions of the building where residences will live. The location of the areas where the VMS is to be installed is shown on Sheet VA1.0. The VMS layouts are illustrated on Sheets VS3.0a, VS3.0b, VS3.0c, VS3.0d, VS4.0, and VS6.0. The VMS will allow venting of soil vapors from beneath the building. Vent locations are shown on Sheets VS3.0a, VS3.0d, VS4.0 and VS6.0.
- 2. Alternative systems are acceptable with engineer's review and approval.
- 3. For areas underlain with the VMS, this system will also serve as the moisture barrier.
- 4. The VMS Contractor will be responsible for placing piping through exterior beams at each of the vent locations. These vent pipes will run up through the exterior wall, to a height of approximately two feet above the top of the slab. The exterior ends of these pipes should be covered in a manner that will prevent concrete from entering the pipes when the exterior beams are poured, and/or debris during construction activities. The concrete contractor will be responsible for protecting these vent pipes and ensuring that the exterior ends are open following completion of the construction of the exterior beams. This pipes must also remain open during the placement of any exterior surfaces, such as bricks.
- 5. The VMS is described below. See layout and detail sheets for additional information.
  - A geotextile filter fabric will be placed on top of the structural fill. An aggregate venting layer, 12 inches thick, will be placed on top of the geotextile filter fabric. The permeable aggregate bed will be comprised of graded No. 57 stone with no more than 5 wt % fines.
  - b. Slotted PVC vent pipes (1.5" dia min 3" max, 0.020" slots), will be bedded in the aggregate layer by the VMS contractor. These pipes are shown as dashed and bolded lines on the VMS layout drawings. With prior engineer approval, piping with larger slots can be used with appropriate filter sock with Maximum Apparent Opening Size of no greater than 0.6 millimeters. Solid piping will be placed across interior and exterior beams in a manner that will prevent concrete from entering and/or plugging the vent pipes. Other permeable piping system with openings that will not allow the aggregate to pass are acceptable with engineer's approval. Where slotted pipes meet or cross, typical connectors should be used. Solid piping should be used for connections outside of the membrane (e.g. through the interior and exterior beams, and under any areas (such as hallways and stairways) where the VMS is not planned, but piping is needed to reach the vent locations).
  - c. Solid piping through interior and exterior beams should be installed perpendicular to beams.
  - d. The vent pipes will be run through the exterior walls, so at each vent location a "90°" will be used. The VMS contractor will be responsible for providing a 24" sub up for each of the vents, and these stub-ups should be clearly labeled as sub-slab vents, using a sticker such as the one below or other similar permanent marking.



e. A membrane liner on top of aggregate/piping, a minimum of 30 mil thick, with 6" sealed overlaps will be installed by the VMS contractor. This can be a single sheet of plastic, two sheets of plastic, or one sheet of plastic with a spray-on coating. All edges and penetrations are to be taped and/or sealed with mastic. Materials for taping and sealing must be compatible with the sub-slab environment. If the exterior beams are installed prior to the installation of the VMS, the

## Texas Star Property West Euless, Texas VMS Design Notes – 6 August 2024 – Revision 1

membrane should be sealed to the concrete with a mastic or other material that is appropriate for this use. This will require a minimum overlap of 4". This is not needed if the membrane extends beneath the exterior beams.

- f. Smoke testing of the system must be performed by the VMS Contractor following installation and sealing of the membrane, and prior to the installation of the rebar and/or post-tension cables. The smoke test should be observed by the engineer. Any leaks must be repaired prior to the engineer's approval of the membrane installation. An additional inspection is required following the installation of the rebar and/or post-tension cables, and any holes or tears repaired prior to pouring of the concrete.
- g. The vent pipes should be fitted with a ¼" mesh cover to keep out animals, and vent covers to prevent rainwater from entering the system. Alternate approaches are allowed, with prior engineer approval.
- h. Fans may need to be installed at vents V-1, V-7, and/or V-15 in Building A, and vents V-1 and/or V-4 in Buildings B and D. This decision will be made following installation and testing of the system. This will require the appropriate electrical connections be installed at these locations by the electrical contractor in order to accommodate a fan (FanTech HP 190 or equivalent) if fans are needed.
- i. All materials used in the VMS construction must be compatible with chlorinated solvents, petroleum hydrocarbon, methane and vapors containing chlorinated solvents, petroleum hydrocarbons and methane.
- j. Sample ports for field monitoring of the aggregate layer will be installed using Schedule 40 2inch PVC casing and screen. These ports will be flush mount with the finished floor.
- 6. It is assumed that the 12-inch aggregate layer can be considered part of the select fill beneath the foundation, but the geotechnical and/or structural engineer should be consulted to confirm that this is the case.
- 7. VMS Construction Quality Control:
  - a. Spec sheets for <u>all</u> materials to be used must be provided to the engineer for approval prior to delivery to the job site.
  - b. Particle size distribution must be provided for engineer approval, for every 250 CY of aggregate, prior to aggregate delivery to job site. Particle size distribution documentation should be provided for any alternate/additional sources of aggregate.
  - c. Smoke testing of the liner must be performed for every "pour." These tests are to be performed by the VMS contractor following installation and sealing of the membrane, and prior to installation of the rebar and/or post-tension cables. The smoke test should be scheduled with the engineer so that the test may be observed and documented.
  - d. Care must be taken during the placement of rebar to minimize the potential for damage or puncture of the liner. This should include the use of rebar supports that do not have sharp ends or edges. A final inspection must be made by the engineer following rebar placement and prior to pouring of the foundations to verify that there are no tears or holes. Any such tears or holes will be repaired and the repairs documented.
- 8. Others (concrete, plumbing and/or electrical contractors) will be responsible for:
  - a. Placing a 12-inch aggregate layer to allow bedding of the VMS piping. The thickness of the aggregate layer will be dependent on the diameter of the vent pipes being installed.
  - b. All vent pipes should be extended through the exterior wall to a height of approximately 24" above the top of slab, and then turned to penetrate the exterior wall.
  - c. Vent pipes will need to be protected during construction to prevent damage, filling with debris, entry of rain, and or covering during construction activities. This should be accomplished by covering the opening of the vents with plastic, securely taping the plastic to the pipe, and clearly marking the vent pipes.

## Texas Star Property West Euless, Texas VMS Design Notes – 6 August 2024 – Revision 1

- d. On completion, the vents should be fitted with a ¼" mesh to prevent entry by small animals, and fitted with a cover to allow free movement of air, but prevent rainwater from entering the VMS.
- e. Electrical connections should be installed at vent locations V-1, V-7, and/or V-15 in Building A, and vents V-1 and/or V-4 in Buildings B and D to accommodate a fan (FanTech HP 190 or equivalent), in the event that fans are added in the future.

## **CONTRACTOR NOTES:**

#### Concrete/Foundation

- The VMS Contractor will install solid pipes through the exterior beams at the locations shown on Sheets VS3.0a, VS3.0b, VS3.0c, VS3.0d, VS4.0, and VS6.0. These pipes will allow the connection between the VMS beneath the building to the exterior vents. These must be protected during pouring of the exterior beams. The concrete contractor will be responsible for making sure that these pipes are open following installation of the exterior beams.
- 2. It is assumed that the 12 inches of aggregate on the foundation area will replace an equal thickness of select fill, but this must be verified by the geotechnical and/or structural engineer.
- **3.** A grain-size distribution report should be provided for the planned aggregate source for engineer approval <u>prior</u> to the purchase and delivery.
- **4.** Care should be taken when placing the rebar to minimize the potential for holes or tears to the VMS liner. Rebar supports should <u>not</u> have sharp edges.

#### Plumbing or GC

- Vents will extend vertically through the exterior walls to a height of approximately 24" above the final exterior grade. The vents will exit the exterior wall horizontally. The vent openings should be fitted with ¼" mesh to prevent entry of animals, and fitted with a cover (such as a dryer vent cover) which will allow free flow of vapors, but prevent rainfall from entering the pipe.
- 2. For vents existing into the garage, the vent pipes can exit through the exterior building beam and through the wall of the garage. These vent pipes should also be fitted with 1/4" mesh and protected from rainfall.

#### **Electrical**

 Electrical connections should be installed by the electrical contractor at vent locations V-1, V-7, and/or V-15 in Building A, and vents V-1 and/or V-4 in Buildings B and D to accommodate fans (FanTech HP 190 or equivalent) at each of these vent locations, in the event that these are needed in the future.

Susan T. Litherland, P.E.

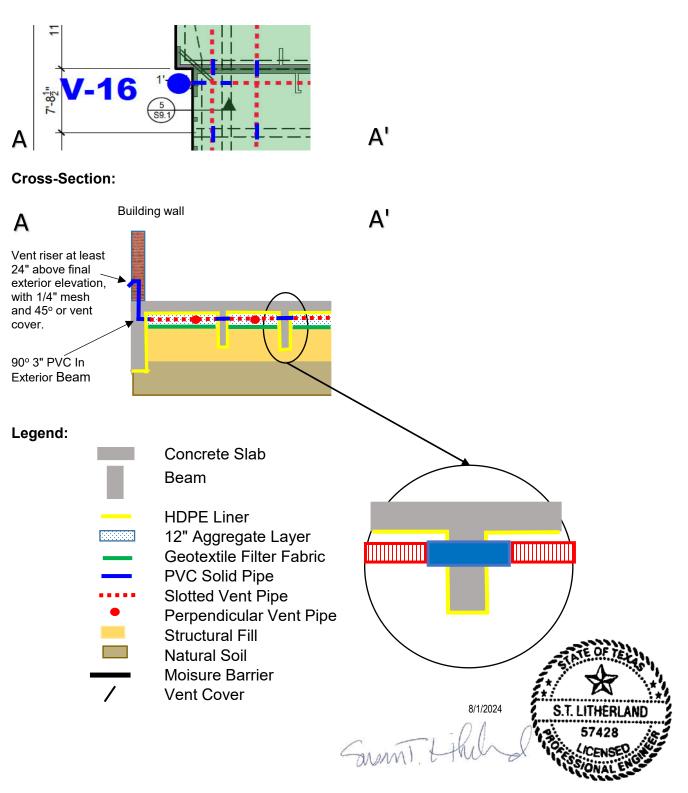
Texas P.E. No. 57428, F-15202 Signed electronically on 8/1/2024

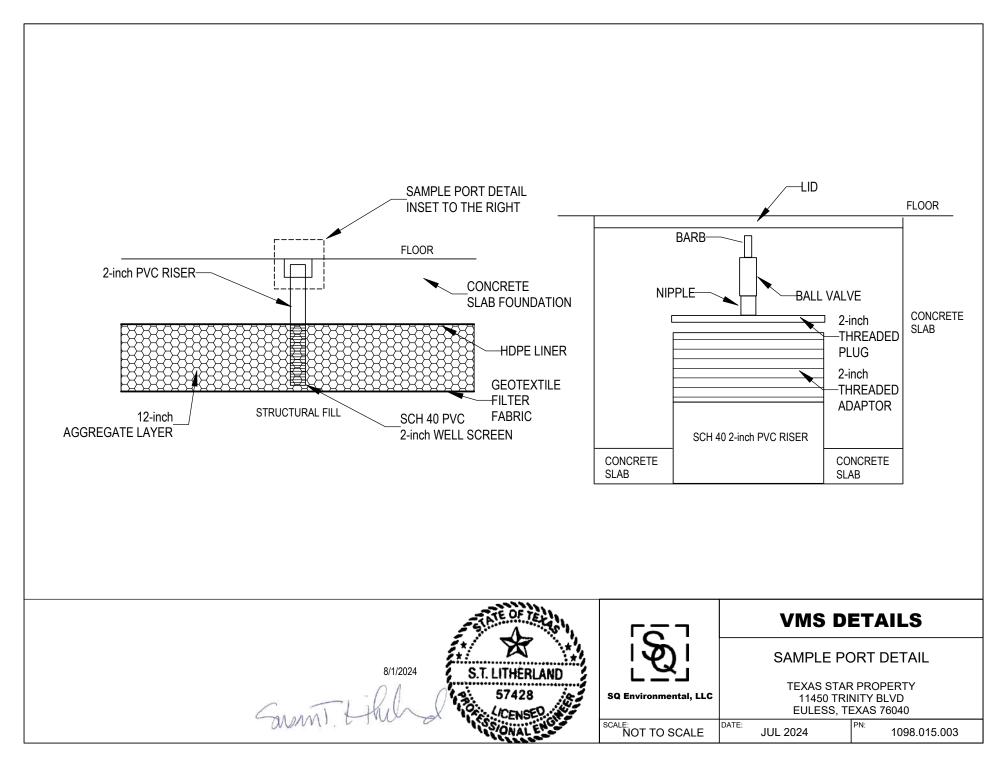


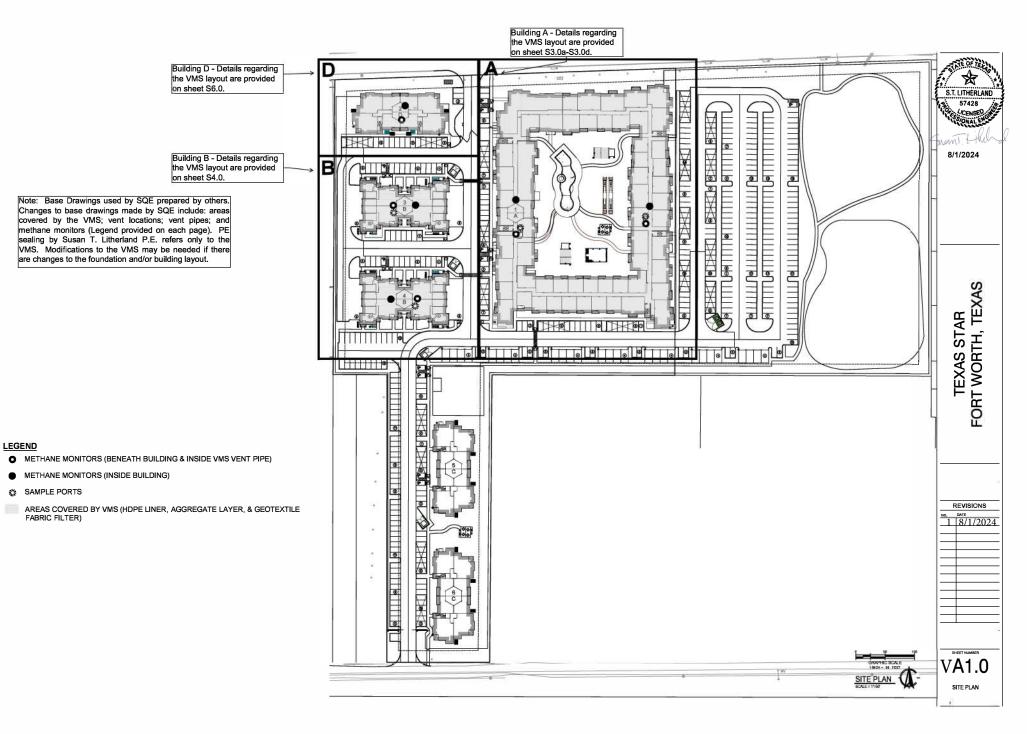
## Texas Star Property West VMS Details Revision 1 - 8/6/2024 (not to scale)

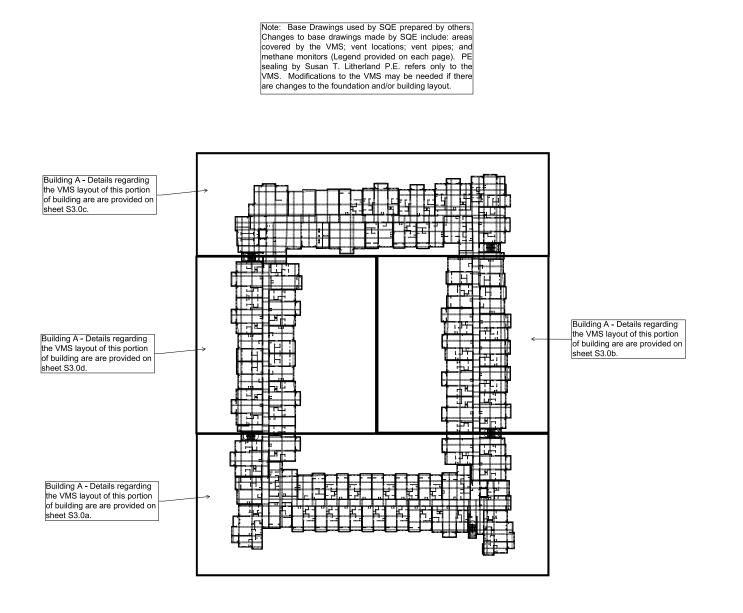
# **Detail 1: VMS Layout for Vents**

Plan View (See VS3.0a, VS3.0b, VS3.0c, VS3.0d, VS4.0, and VS6.0.):









01 BUILDING TYPE 'A' - OVERALL FOUNDATION PLAN

TEXAS STAR FORT WORTH, TX

REVISIONS

1 8/1/2024

VS3.0 BLDG. 'A' OVERALL

FOUNDATION

PLAN

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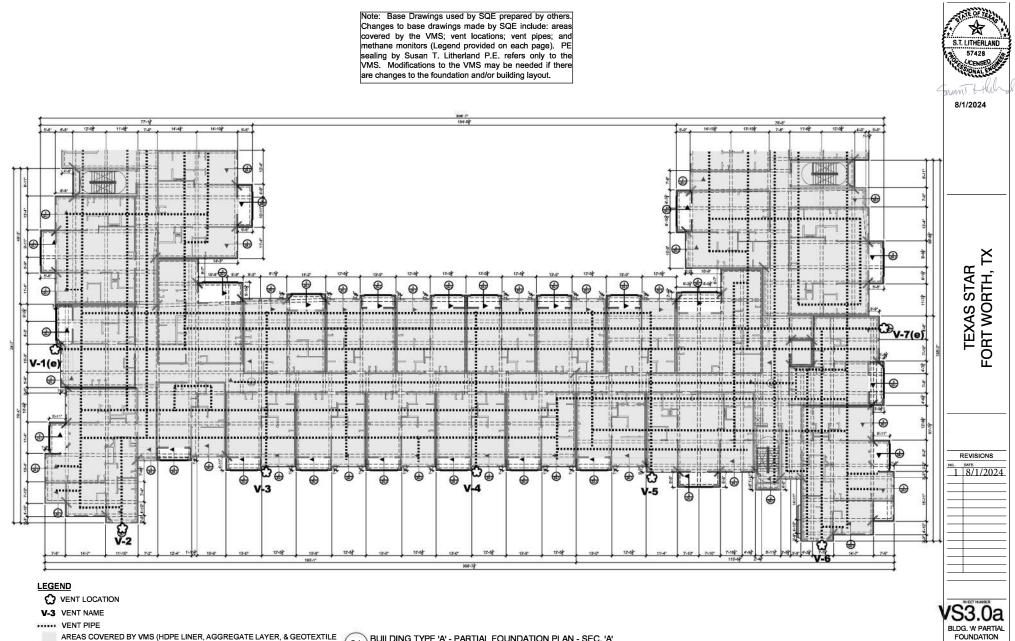
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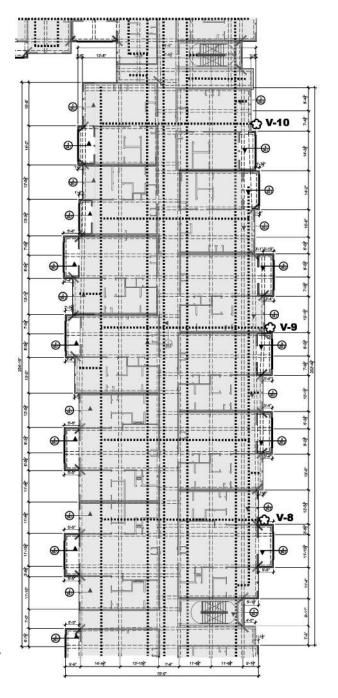
PLAN

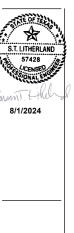


AREAS COVERED BY VMS (HDPE LINER, AGGREGATE LAYER, & GEOTEXTILE FABRIC FILTER)

01 BUILDING TYPE 'A' - PARTIAL FOUNDATION PLAN - SEC. 'A'

Note: Base Drawings used by SQE prepared by others. Changes to base drawings made by SQE include: areas covered by the VMS; vent locations; vent pipes; and methane monitors (Legend provided on each page). PE sealing by Susan T. Litherland P.E. refers only to the VMS. Modifications to the VMS may be needed if there are changes to the foundation and/or building layout.





TEXAS STAR FORT WORTH, TX





PLAN

#### LEGEND

O VENT LOCATION

V-3 VENT NAME

····· VENT PIPE

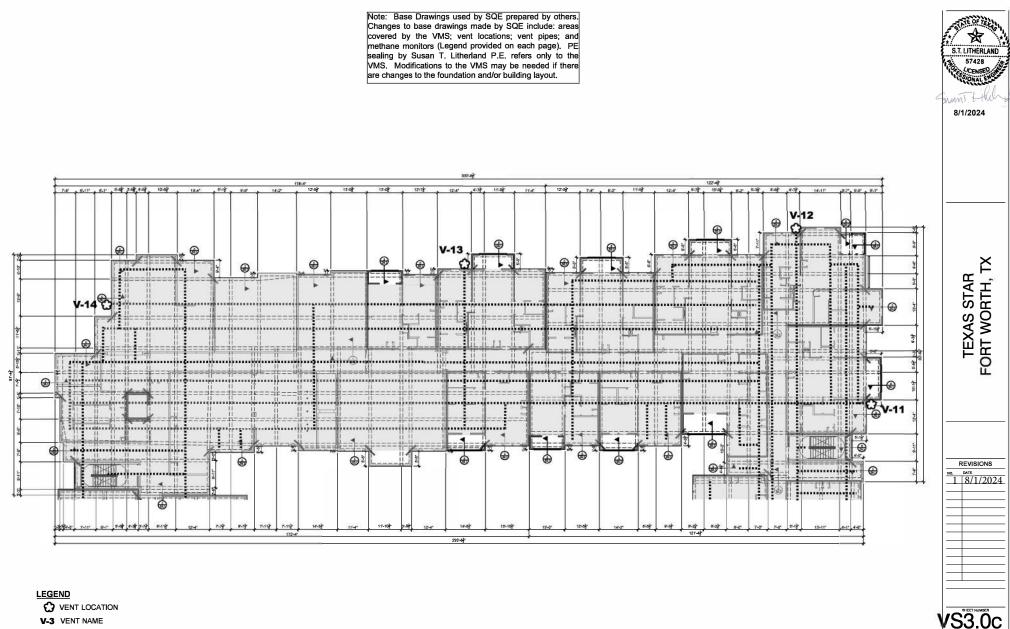
AREAS COVERED BY VMS (HDPE LINER, AGGREGATE LAYER, & GEOTEXTILE FABRIC FILTER)

01 BUILDING TYPE 'A' - PARTIAL FOUNDATION PLAN - SEC. 'B'

BLDG. 'A' PARTIAL

FOUNDATION

PLAN

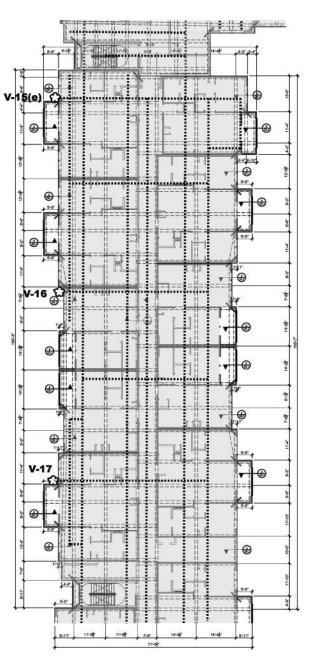


····· VENT PIPE

AREAS COVERED BY VMS (HDPE LINER, AGGREGATE LAYER, & GEOTEXTILE FABRIC FILTER)

01 BUILDING TYPE 'A' - PARTIAL FOUNDATION PLAN - SEC. 'C'

Note: Base Drawings used by SQE prepared by others. Changes to base drawings made by SQE include: areas covered by the VMS; vent locations; vent pipes; and methane monitors (Legend provided on each page). PE sealing by Susan T. Litherland P.E. refers only to the VMS. Modifications to the VMS may be needed if there are changes to the foundation and/or building layout.





S.T. LITHERLAND

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V-3 VENT NAME

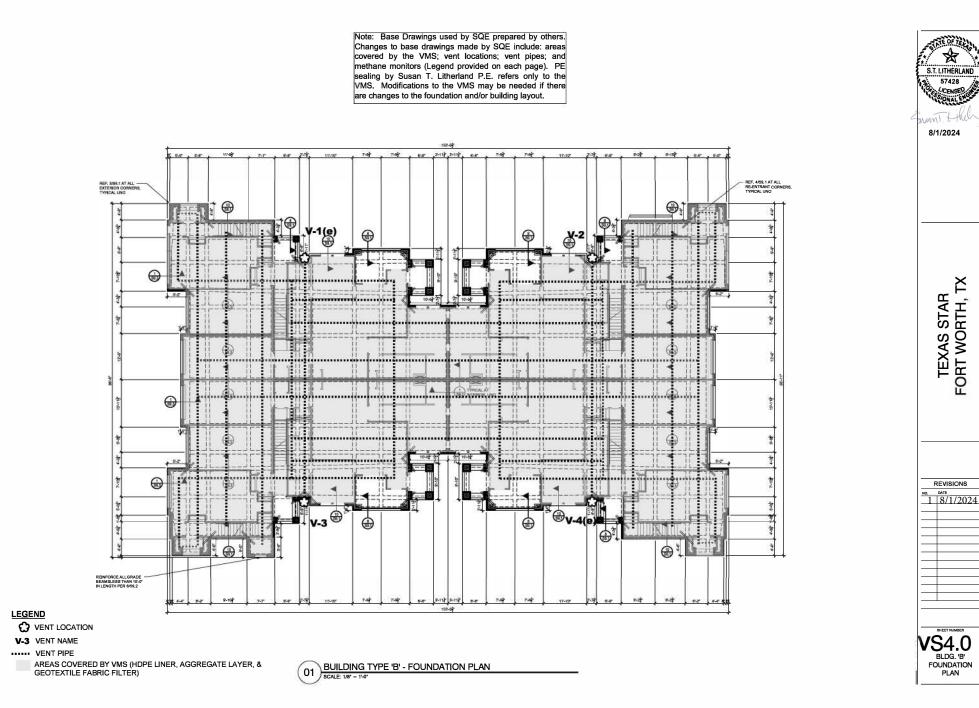
VENT PIPE

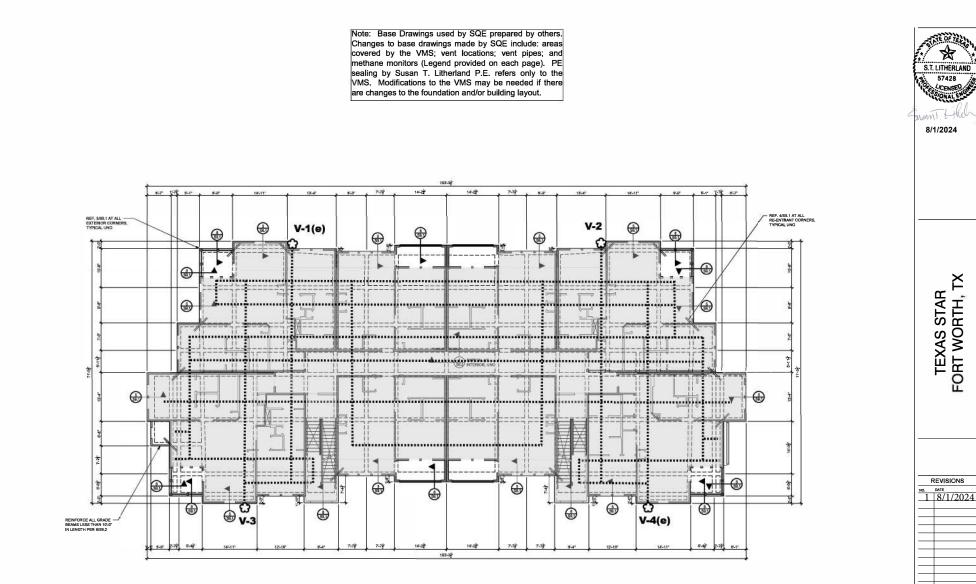
AREAS COVERED BY VMS(HDPE LINER, AGGREGATE LAYER, & GEOTEXTILE FABRIC FILTER)

(01) BUILDING TYPE 'A' - PARTIAL FOUNDATION PLAN - SEC. 'D' SCALE: 3/32' - 1'-0'



PLAN



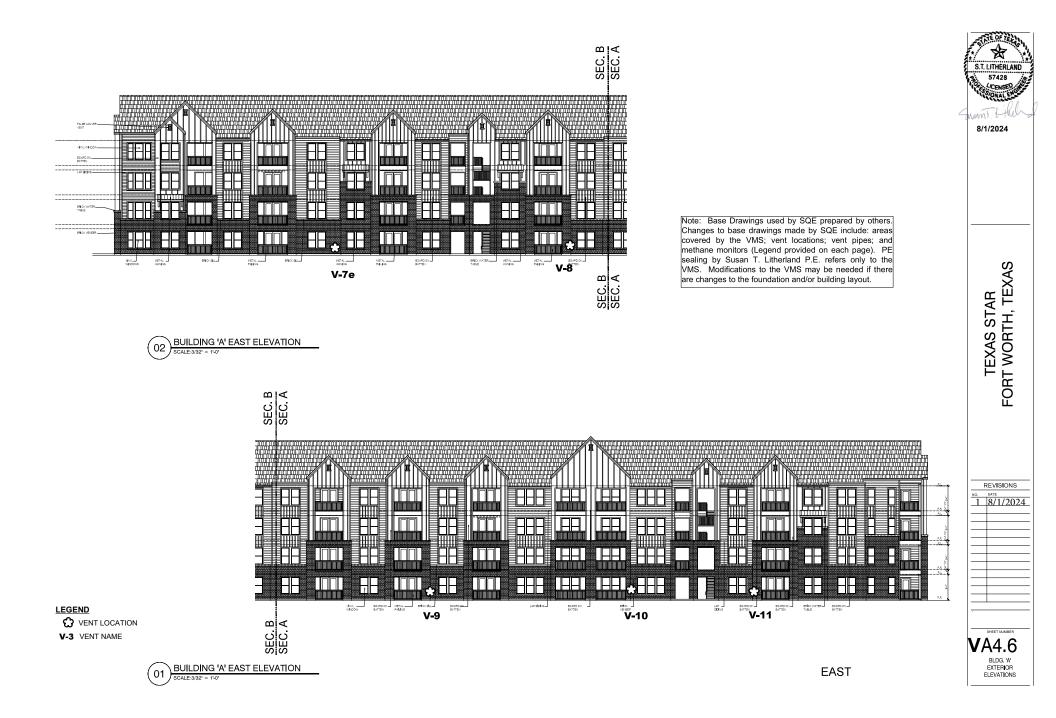


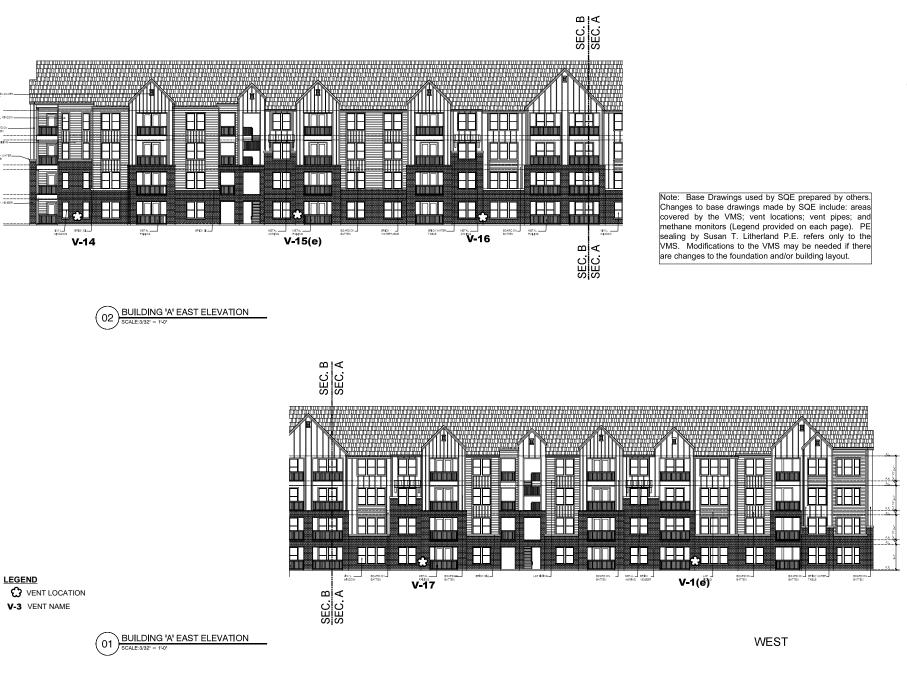
- LEGEND
- VENT LOCATION
- V-3 VENT NAME
- ····· VENT PIPE

AREAS COVERED BY VMS (HDPE LINER, AGGREGATE LAYER, & GEOTEXTILE FABRIC FILTER)

01 BUILDING TYPE 'D' - FOUNDATION PLAN SCALE: 1/8' - 1'-0' SHEET NAMBER VS6.0 BLDG. 'D' FOUNDATION PLAN







ST. LITHERLAND 57428 CENS

8/1/2024

FORT WORTH, TEXAS

REVISIONS

NO. DATE

SHEET NUMBER

EXTERIOR ELEVATIONS

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**TEXAS STAR** 

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The Next Generation of GEM<sup>™</sup> Instrument

The GEM™5000 is designed specifically for use on landfills to monitor Landfill Gas (LFG) Collection & Control Systems. The GEM™5000 samples and analyzes the methane, carbon dioxide and oxygen content of landfill gas with options for additional analysis.

GEM5000 Complete Package Includes:

Instrument, hoses, heavy duty water trap filter, soft case, A.C. battery charger, electronic manual accompanies software, LANDTEC System Gas Analyzer Manager (LSGAM) software, USB download cable and hard-case. Reads: Methane, Carbon Dioxide, Oxygen, temperature (when used with optional probe), atmospheric pressure, Check also:

GF5.8 External Battery GEM5000 External Battery

Services ~



SEM5000 Portable Methane Detector

GA5000 Portable LFG Analyzer

GEM5000 Series Portable LFG Analyzer

BIOGAS 5000 Portable Biogas Analyzer







differential pressure and calculates gas flow.

NAV and Plus model packages also include more features such as GPS and additional gas measurements

# \*\*GEM5000 Accessories & Spare Parts\*\*

Description

Technical Specification

# Description

The GEM<sup>™</sup>5000 is the next generation in the GEM<sup>™</sup> Series of LANDTEC instruments for accurate measurement and monitoring on landfills

Now Available. Please call our sales team to request further information or to place your order.

## **FEATURES**

Measures % CH4, CO2 and O2 Volume, static pressure and

differential pressure

• Calculates balance gas, flow (SCFM) and calorific value (KW or BTU)>

- High Accuracy and Fast Response Time
- Lighter and More Compact
- Annual recommended factory service
- Certified intrinsically safe for landfill use
- Calibrated to ISO/IEC 17025
- 3 year warranty

## BENEFITS

Designed specifically for use on landfills to monitor landfill

gas (LFG) extraction systems, flares, and migration control systems.

• No need to take more than one instrument to site

• Can be used for monitoring subsurface migration probes and for measuring gas composition, pressure and flow in gas extraction systems

• The user is able to set up comments and questions to record information at site and at each sample point

- Ensures consistent collection of data for better analysis
- Streamlined user experience reduces operational times

# DOWNLOADS

Manual – LSGAM Software – Brochure – Easy Steps – Discharge Battery Pack – Easy Steps, Gas Check – Easy Steps, Workflow

# **Related Products**



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A QED Company

1-800-LANDTEC

differential pressure and calculates gas flow.

NAV and Plus model

packages also include more

features such as GPS and

additional gas measurements

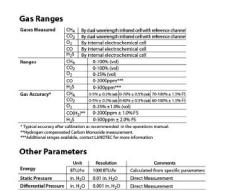
# \*\*GEM5000 Accessories &

## Spare Parts\*\*

Description

Technical Specification

# Technical Specification



Important Note: The information in this document is correct at the time of generation. We do, how reserve the right to change the specification without prior notice as a result of continuing develop

Pump	
Flow	Typically 550cc/min
Flow with 80 in. H2O vacuum	Approximately 80cc/min

FFF

Environmenta	al Conditions
Operating Temperature Range	14°F - 122°F (-10°C to +50°C)
Operating Pressure	-100 in. H <sub>2</sub> O, +100 in. H <sub>2</sub> O (-250mbar, +250mbar)
Relative Humidity	0-95% non condensing
Barometric Pressure	± 14.7 in Hg (±500mbar) from calibration pressure
Barometric Pressure Accuracy	± 1% typically

#### **Power Supply**

Battery Life Typical use 8 hours from fully charged Charge Time Approximately 3 hours from complete discharge

### **Certification Rating**

 
 ATEX
 II 2G Ex ib IIA T1 Gb (Ta=-10°C to +50°C)

 IS017025
 ISC/IEC17025:2005 Accreditation #66916

 CSA
 Ex ib IIA T1 (Ta=-10°C to +50°C) (Canada), AEx ib IIA T1 (Ta=-10°C to +50°C) USA

# **Related Products**





# FOUR CHANNEL WALL MOUNT CONTROLLER

# Gas Detection For Life

# Beacon<sup>™</sup> 410A Model



# **Features**

- Simultaneously control up to 4 gas monitoring channels
- · OLED display of all 4 channels
- LEL / O2 / CO2 / toxic direct connect sensors
- · Accepts any 4-20 mA transmitter, 2 or 3 wire
- · Up to 3 programmable alarm levels per channel
- · Up to 3 configurable alarm relays per channel
- · 4-20 mA analog & Modbus digital output standard
- · 115 / 220 VAC or 24 VDC operation
- · Audible alarm with silence feature
- RFI / EMI Resistant
- · Alarm reset switch
- · Built in trouble alarm with relay
- · Weather and corrosion resistant NEMA 4X enclosure

# **Applications**

- · Petrochemical plants
- Refineries
- · Water & wastewater treatment plants
- · Pulp & paper mills
- · Gas, telephone, & electric utilities
- Parking garages
- · Manufacturing facilities
- Steel

The Beacon 410A is a highly configurable, microprocessor-based, flexible and easy to use 4 channel gas monitoring controller. It simultaneously displays the gas type, readings, and status for four channels of gas detection. It can monitor any combination of direct connect sensors (LEL, O2, CO2, and toxic gas sensors), as well as any 4-20mA transmitter.

Each channel has up to three fully configurable alarm points. A built-in silenceable audible alarm alerts you to alarm conditions. Each channel also has two dedicated fully configurable relays and there is a bank of common relays as well. The common relays can optionally be configured as additional relays allowing up to 3 alarm relays per channel. Each channel provides a 4-20mA output signal. A digital Modbus interface for remote logging of data via a Modbus network is standard. A Min-Max feature retains high & low peak readings for review at any time.

A fully configurable, high visibility strobe is available as an option. The unit can be powered from 115/220 VAC, or an external 24 VDC source. A trickle charging battery backup feature with battery assembly is also available as an option.

All features and functions of the Beacon 410A are controlled by easy to use menus on the OLED display. All features including form-C relay contacts of the Beacon 410A are built into the unit so you never need to purchase or maintain any "add-on" cards or components.

RKI Instruments, Inc. • 33248 Central Ave. Union City, CA 94587 • Phone (510) 441-5656 • (800) 754-5165 • Fax (510) 441-5650

World Leader In Gas Detection & Sensor Technology www.rkiinstruments.com



Physical					
Dimensions	Height: 12.5" (31.8 cm) x Width: 11" (27.9 cm) x Depth: 6.4" (13.6 cm)				
Enclosure	NEMA 4X Fiberglass / polyester with lexan window for indoor and outdoor locations				
Conduit Connection	3/4" NPT conduit hubs, 4 provided, for sensor, power, & relay wiring				
Wiring Termination	Screw Type terminal block, 14 gauge max				
Power	115 VAC, 220 VAC, or 24 VDC nominal. Battery backup option available				
Optional Accessories	Strobe light, and Battery Backup Assembly				
Controls	Display PCB Control Switches:• UP/YES push button switch• ESCAPE push button switch• External reset switch• External reset switch				

Environmental	
<b>Operating Temperature</b>	-4°F to 122°F (-20°C to 50°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)
Enclosure Rating	NEMA-4X enclosure, chemical and weather resistant. Suitable for indoor and outdoor installations

Inputs	
Direct Wired Sensors	LEL, Oxygen, Carbon Dioxide, and toxic gas sensors. Remote amp not required for less than 500 feet
4-20 mA	Accepts any 4-20 mA transmitter (24 VDC, 2 or 3 wire). A wide variety of RKI/Riken sensors are available with 4-20 mA signals. Wiring distances up to 8,000 feet
Sampling Methods	Diffusion and sample draw heads available

Outputs	
Relays	Two flexible, programmable Form-C (C, NO, NC) relays per channel, plus five common relays (Fail, Alarm-1, Alarm-2, Alarm-3, Alarm-Any). Common relays may optionally be assigned to function as additional channel alarm relays, providing for up to three alarm relays per channel. 10A contact rating, 250V.
4-20 mA	Signal output, 4-20 mA (maximum load impedance 500 ohms), per channel
RS-485	Modbus format RS-485 serial output of all channel data, including gas reading and alarm status.
Display	Four line OLED display
Audible	Built-in audible alarm, 94 dB, mounted on enclosure Coded output: pulsing = gas alarm, steady = fail
Visual	<ol> <li>Alarm LED's (on Display PCB)         <ul> <li>Alarm 1 = yellow</li> <li>Alarm 2 = orange</li> <li>Alarm 3 = red</li> <li>Fail = yellow</li> </ul> </li> <li>Green Pilot LED to indicate AC power connected (on Display PCB)</li> <li>An optional 24 VDC NEMA 4X strobe mounted to top of case.</li> </ol>

Approvals	CSA Certified to CSA C22.2 No. 61010-1-12 and UL61010-1
Warranty	One year materials and workmanship





# **Authorized Distributor:**

- Toll Free: (800) 754-5165 Phone: (510) 441-5656
- Fax: (510) 441-5650 www.rkiinstruments.com

# **M2A STAND ALONE TRANSMITTER**



The RKI M2A<sup>™</sup> is a state-of-the-art transmitter that can operate as an independent, stand-alone monitor or as part of an integrated system. The M2A connects with an analog or digital signal to virtually any controller, PLC, or DCS. Setup procedures are simplified with user friendly push buttons and OLED menus. It utilizes a magnetic wand technique for performing non-intrusive calibration. The M2A provides an automatic zero drift correction feature, which results in more stable readings and reduces the need for adjustments due to sensor aging.

The housing of the M2A does not need to be opened for zeroing or calibration, making it unnecessary to declassify the area for routine maintenance. It is designed so that a complete field calibration can be performed by one person. Sensor construction is rated Class I, Div. 1 Groups B, C, D for flammables, CO, H2S, O2, and CO2, and Class I, Div. 2 for all other toxics.

The transmitter provides a 4-20 mA output in addition to a Modbus digital output. It also has two levels of alarms with relays, plus a fail alarm with relay. A digital display of the gas concentration, as well as alarm and status lights, can be viewed through the front window.

The toxic sensors are electrochemical type plug-in sensors, which provide high specificity, fast response, and long life. The plug-in design allows quick replacement in the field with no tools required. Toxic sensors are designed for use in Class I, Div. 2 hazardous locations. Sensors available for NH3, AsH3, Cl2, ClO2, HCN, PH3, and SO2

The M2A represents the latest leading edge technology in sensor / transmitters today.

World Leader In Gas Detection & Sensor Technology

RKI Instruments, Inc. | 33248 Central Ave. Union City, CA 94587 | Phone (800) 754-5165 | (510) 441-5656 | Fax (510) 441-5650

www.rkiinstruments.com

# **Explosion Proof**

Class I, Div. 1, Groups B, C, D

	Combi	ustibles	LEL	02	H2S	СО	CH4	HC	CO2
	LEL	PPM	H2 Specific	Oz Oxygen	Hydrogen Sulfide	Carbon Monoxide	Methane	Hydrocarbons	CO2 Carbon Dioxide
#	65-2640RK	65-2647RK	65-2641RK	65-2643RK-05	65-2645RK-05	65-2646RK-05	65-2649RK-CH4 65-2658RK-CH4	65-2649RK-HC	65-2660RK-02 65-2660RK-03 65-2660RK-05
CSA	65-2640RK-05	65-2647RK-05	65-2641RK-05						65-2660RK-10
Sensors		Catalytic		Galvanic cell	Electro	chemical		Infrared	
Measuring Ranges	0 - 100% LEL	0 - 9000 ppm CH4	0 - 100% LEL	0 - 25.0% Vol.	0 - 100 ppm	0 - 300 ppm	0 - 100% LEL 0 - 100% Vol.	0 - 100% LEL	-02 0 - 5000 ppm -03 0 - 5% Vol. -05 0 - 50% Vol. -10 0 - 100% Vol.
Resolution	1% LEL	20 ppm	1% LEL	0.1% Vol.	11	ppm	1% LEL /	1% Vol.	20 ppm / 0.01% Vol / 0.1% Vol. / 1% Vol.
Lower Detectable Limit (LDL)		2% of full sca	ale	0.1% Vol.			2% of full scale		
Max Current Draw (24VDC)		h alarm 1 and I all relays ene	alarm 2 active ergized		nA with alarm 1 and ve and all relays en			A with alarm 1 an e and all relays er	
Response Time (T-90)		5 Seconds or	less	90 Seconds or less	60 Seconds or less	90 Seconds or less		30 Seconds or le	SS
Life Expectancy	-	with normal vice	3 to 5 years with normal service	2 to	3 years with norma	l service	5 yea	rs plus with norma	Il service
Accuracy (which ever is greater)	± 5% of re	eading or ± 2%	% of full scale	± 0.5% Vol. O2	± 5% of reading or ± 2 ppm H2S	± 5% of reading or ± 5 ppm CO	± 5% of	reading or ± 2 %	of full scale
Weather Resistant	:			F	Patented water repe	ellent sensor coating			
Alarms									
Alarm Settings	;	Two fully programmable alarm set points, increasing / decreasing, latching / self-resetting, on delays, off delays, normally energized or de-energized							
Alarm Indication	1	Visual LEDs. Alarm 1, Amber; Alarm 2, Red; Fail, Red							
Relays	;			5 amp	form 'C' contacts for	r alarm 1, alarm 2, a	nd fail		
Physical									
Dimensions		Height: 8.5" (215 mm), Width: 5.2" (132 mm), Depth: 4.5" (114 mm)							
Display	,	Alphanumeric OLED display. 8 characters per line; 2 lines for gas concentration readout, plus user-friendly calibration and setup							
Enclosure		Explosion proof for Class I, Div 1, Groups B, C, D.							
Enclosure Rating			NEMA 4X, e	explosion proof, w	atertight, cast alum	inum with o-ring sea	l and epoxy powde	r coating	
Controls			Ma			Calibrates without op available for calibrati			
<b>Operating En</b>	vironmer	nt							
Operating Temperature		-40°F to 167 -40°C to 75°	-	-4°F to 113°F -20°C to 45°C	-40°F to 104°F -40°C to 40°C	23°F to 104°F -5°C to 40°C		-40°F to 122°F -40°C to 50°C	
Relative Humidity	,	5 - 95% RH non-condensing							
Location		Indoor or outdoor. Explosion proof for Class I, Div. 1, Groups B, C, D.							
Operating Voltage	10 VDC - 30 VDC								
Outputs									
Analog		Linear 4-20 mA signal, into 1000 ohms impedance max (24DC), 0 - 500 ohms max (12VDC) corresponding to 0 - full scale							
Digita			Modb	us RTU output sta	andard, fully configu	urable, 2-wire RS-48	5, 1200 to 19.2k ba	ud	
Approvals	65-264	640RK JL 0RK-05 SA US	65-2641RK UL 65-2641RK-05 C CSA US		C CSA US			C UL US	
Controllers				110, Beacon 200.	Beacon 410A. Bea	.con 800 as well as n	l nost DCS / PLC svs	stems	
Warranty			200001	-, _ 200011 200,	One year material				
wairanty					Une year material				

# **Toxic Gas Transmitters**

# Class I, Div. 2

	<b>O2</b> Oxygen	H2S Hydrogen Sulfide	<b>CO</b> Carbon Monoxide	<b>Toxics</b> See Chart Below		CO2 Carbon Dioxide	
Part#	65-2666RK *65-2644RK	65-2662RK	65-2663RK	See Chart Below		65-2661RK-02 65-2661RK-03 65-2661RK-05 65-2661RK-10	
Sensors	Galvanic cell		Electrochemical		Infrared		
Measuring Ranges	0-25% Vol.	0-100 ppm	0-300 ppm	See Chart Below	-02 -03 -05 -10	0         -         5000         ppm           0         -         5%         Vol.           0         -         50%         Vol.           0         -         100%         Vol.	
Resolution	0.1% Vol.	1 p	opm	See Chart Below	20 ppr	n / 0.01% Vol. / 0.1% Vol. / 1%Vol.	
Lower Detectable Limit (LDL)	0.1% Vol.			2% of full scale			
Response Time (T-90)		35 Seconds or less		60 Seconds or less		30 Seconds or less	
Max Current Draw (24VDC)	125 m/	A with alarm 1 and alarm	2 active and all relays en	ergized	160 m/	A with alarm 1 and alarm 2 active and all relays energized	
Life Expectancy		2 to 3 years with	h normal service	1		5 years plus	
Accuracy (which ever is greater)	± 0.5% Vol. O2	± 5% of reading or ± 2 ppm H2S	± 5% of reading or ± 5 ppm CO	± 10% of reading or ± 5% of full scale	$\pm$ 5% of reading or $\pm$ 2% of full scale		
Alarms							
Alarm Settings	Two fully programmable alarm set points, increasing / decreasing, latching / self-resetting, on delays, off delays, normally energized or de-energized,						
Alarm Indication	Visual LEDs. Alarm 1=Amber; Alarm 2=Red; Fail=Red						
Relays	5 Amp form 'C' contacts for alarm 1, alarm 2, and fail						
Physical							
Dimensions		Height: 8.5" (215 mm), Width: 5.2" (132 mm), Depth: 4.5" (114 mm)					
Display		Alphanumeric OLED display. 8 characters per line; 2 lines for gas concentration readout, plus user-friendly calibration and setup					
Sensor Rating		Non explosion proof cons	struction, designed for Cla	iss I, Div. 2, Groups B, C,	D (no ce	rtification)	
Housing J-Box	٦	NEMA 4X, explosion proo	f, watertight, cast aluminu	m with o-ring seal and epo	oxy powc	ler coating	
Controls		•		brates without opening the ailable for calibration and s		J.	
Sensor			Aluminum / Plastic (nor	n explosion proof)			
<b>Operating Environme</b>	nt						
Operating Temperature	-4°F to 113°F -20°C to 45°C	-40°F to 104°F -40°C to 40°C	23°F to 104°F -5°C to 40°C	14°F to 104°F -10°C to 40°C		-40°F to 122°F -40°C to 50°C	
Relative Humidity		5 - 95% RH non-condensing					
Location	Indoor or outdoor						
Operating Voltage	10 VDC - 30 VDC						
Outputs							
Analog	Linear 4-20 m	A signal, into 1000 ohms	impedance max (24DC),	0 - 500 ohms max (12VD0	C) corres	ponding to 0 - full scale	
Digital		Modbus RTU output standard, fully configurable, 2-wire RS-485, 1200 to 19.2k baud					
Controllers		Beacon 110, Beacon 200, Beacon 410A, Beacon 800 as well as most DCS / PLC systems					
Warranty			One year materials ar	nd workmanship			
*Partial pressure sensor for helium	(Ho) applications Consul	t factory for dotaile					

\*Partial pressure sensor for helium (He) applications. Consult factory for details.

senter		-	M2A Toxic Transmitter Ser	nsor Ordering Informat	ion	
		Part Number With J-Box	Gas	Range	Resolution	Sensor Type
		65-2670RK-NH3-75	Ammonia (NH3)	0 - 75.0 ppm	0.1 ppm	CT-7
		65-2670-NH3-1	Ammonia (NH3)	0 - 100 ppm	1 ppm	CT-7
- In	- I I I I I	65-2670-NH3-2	Ammonia (NH3)	0 - 200 ppm	1 ppm	CT-7
	a the second	65-2670-NH3-5	Ammonia (NH3)	0 - 500 ppm	1 ppm	CT-7
		65-2648RK-AsH3	Arsine (AsH3)	0 - 1.50 ppm	0.1 ppm	ESM -01
		65-2670RK-CL2-3	Chlorine (Cl2)	0 - 3.00 ppm	0.01 ppm	CT-7
		65-2670RK-CL2-10	Chlorine (Cl2)	0 - 10.0 ppm	0.1 ppm	CT-7
ESM-01	CT-7	65-2670RK-CLO2	Chlorine Dioxide (ClO2)	0 - 1.00 ppm	0.01 ppm	CT-7
		65-2648RK-HCN	Hydrogen Cyanide (HCN)	0 - 15.0 ppm	0.1 ppm	ESM -01
<ul> <li>* Sensor being phased out, use CT-7 type</li> </ul>		65-2648RK-PH3	Phosphine (PH3)	0 - 1.00 ppm	0.01 ppm	ESM -01
when possible.		65-2648RK-SO2	Sulfur Dioxide (SO2)	0 - 6.00 ppm	0.01 ppm	ESM -01

(800) 754-5165

M2A Stand Alone Transmitter

# **AVAILABLE ACCESSORIES**



Remote Mount Calibration Adaptor



Flow through adaptors



Air aspirator adaptors / panels



**Calibration kits** 



Remote horns & lights

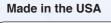


Calibration adaptors

# Direct Interface with Beacon 110 / 200 / 410A / 800 Controllers

M2A Wiring Matrix					
	Number	Maximum Distance to Controller			
	of Wires to Controller	18 AWG wire	16 AWG wire	14 AWG wire	
M2A Transmitter	3	2500 ft.	5,000 ft.	8,000 ft.	



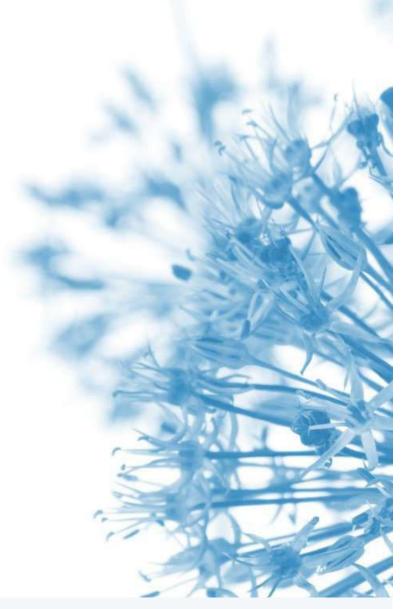


Authorized Distributor:



Att 9 Page 31, Rev3 8/6/24







# Carbon Monoxide, Propane and Methane Gas Detector

Model No. HS80504



- 3-in-1 detector.
- Senses dangerous levels of Carbon Monoxide, Propane and Methane Gas.
- Two independent 85dB alarm sounds, one for CO, the other for methane/liquid propane.
- Every detector has computerized calibration to help eliminate false alarms.
- Built-in self-dagnostics assures the unit is operating properly.
  Easily plugs into any standard 110-120v AC electrical outlet and
- samples the air every 2 1/2 minutes.
- Lock tab feature makes the detector tampor proof.
- 5 year warranty.





# **Combustible Gas Detector**

#### Model No. HS80501

USD \$57.95

]

Add to Cart

- Detects dangerous levels of Methane and Propane Gas.
- Computerized calibration helps eliminate false alarms.
- Built-in self-diagnotics asures the unit is operating properly.
  Eassily plugs into any standard 110-120v AC electrical outlet and samples the air every 2 1/2 minutes.
- Lock tab feature makes the detector tamper proof.
- Advanced surface mount circuitry.
- Powerful 85dB Alarm.
- 5 year warranty.





of CO Poisoning

00% editable and o say whatever you vebsite visitors. All e fully editable so ld your own to e each page.

mptoms are related to carbon monoxide poisoning iscussed with all members of the household:

nausea, vomiting, fatigue (often described as "flu-

<u>re</u> g headache, drowsiness, confusion, rapid heart rate.

<u>re</u> s, convulsions, cardiopulmonary failure, death.



#### Facts and Concerns about Carbon Monoxide (CO)

Carbon Monoxide (CO) is a colorless, odorless, tasteless gas, which is very toxic and nearly impossible to detect without the use of sensing equipment. Carbon Monoxide can be absorbed into the body's bloodstream nearly 10 times faster than pure oxygen. Thus it can limit the body's ability to absorb oxygen whenever carbon monoxide is present, even in small amounts. This reduced ability of the body to absorb oxygen is known as chemical asphyxiation and it can result in death whenever carbon monoxide is present in small quantities over a period of time.

#### **Sources of CO Gas**

Carbon monoxide results from of carbon-based fuels such as r wood, coal, heating oil, kerosen propane. Many of these fules c the home, for example in kitche water heaters, fireplaces, porta grills and automobiles. If incon occurs in any of these devices a vented to the outside, the dang exists.

## **DISASTROUS EXPLOSIONS CAN OCCUR FROM LEAKS OF COMBUSTIBLE GASES**

Such as natural gas (methane) and LPG gas (propane).

These types of gases are used to fuel a variety of common appliances found in the home. Cooking stoves/ovens, hot-water heaters, clothes dryers, space heaters, fireplace starters and heating furnaces are the most common gas-fuel burning appliances. Natural gas and propane can cause devasting explosions from even the smallest leaks from any of these appliances.

ess: Remico Street SW dville, MI. 49418

516-530-6540



Att 9 Page 34, Rev3 8/6/24 Safety Siren<sup>™</sup> Carbon Monoxide, Propane & Methane DETECTOR

**Owner's Manual** 

Model Number HS80004 HS80104 HS80204 HS80504

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Family Safety Products Inc.

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### FACTS AND CONCERNS ABOUT CARBON MONOXIDE:

Carbon Monovide (CO) is a colorloss, odorless, tasteless gas, which is w y toxic and nearly impossible to detect without the use of sensing equipment. Carbon monoxide can be absorbed into the body's bloodstream nearly 10 times faster than pure oxygen. Thus it can limit the body's ability to absorb oxygen whenever carbon monoxide is present, even in small amounts. This reduced ability of the body to absorb oxygen is known as chemical asphysiation and it can result in death whenever carbon monoxide is present in small quantilies over a period of time.

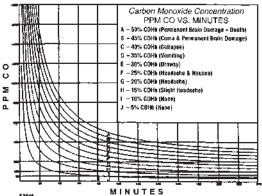
As the level of carbon monoxide rises in a closed environment, the toxic effects require less and less time to occur. This relationship can be seen in Figure 1. While it takes over three hours for an atmosphere with 0.01% CO to produce a headache, it takes only one hour for 0.02% CO to produce the same effects. At 0.04% CO the time required to produce the same effects. At 0.04% CO the time required to produce the same the source an ularm at the following exposure levels as defined by Underwriters Laboratories:

in less than 90 minutes at 0.01% CO (100ppm CO) in less than 35 minutes at 0.02% CO (200ppm CO) in less than 15 minutes at 0.04% CO (400ppm CO)

#### Warning:

This device may not alarm at low carbon monoxide levels. The federal Occupational Safety and Health Administration (OSHA) has established that continuous exposure to CO levels of 50 ppm should not be exceeded in an eight hour period. This detector has not been investigated for carbon monoxide detection below 100 ppm. Individuals with a medical condition may consider using a more sensitive device.

Figure 1 - Carbon Monoxide Concentration versus Time and % COHh



\$3508

### Sources of Catton Plage 36, Rev3 8/6/24

Carbon monoxide results from incomplete combustion of earbonbased fuels such as natural gas, charcoal, wood, coal, heating oil, kerosene, gasoline and propane. Many of these fuels can be found throughout the home, for example in kitchen appliances, furnaces, water heaters, fireplaces, portable heaters, barbeeue grills, and automobiles. If incomplete combustion occurs in any of the of the devices shown below and they are improperly vented to the outside, the danger of CO poisoning exists.

#### Figure 2. Sources of carbon monoxide







Water Heater

Automobile

Source Heater







Fireplace

Charcoal Grill

#### Sources of Combustible Gas.

Disastrous explosions can occur from leaks of combustible gases, such as natural gas (methane) and LPG gas (propane). These gases are used to fuel a variety of common appliances found in the home. Cooking, stoves/ovens, hot-water heaters, clothes dryers, space heaters, fireplace starters, and heating furnaces are the most common gas-fuel burning appliances. Natural gas and propane can cause devastating explosions from even the smallest leaks from any of these appliances.

#### Sources of Combustible Gases





Furnace



Fireplace



Space Heater





Store

# Att 9 Page 37, Rev3 8/6/24 Symptoms of Carbon Monoxide Poisoning

The following symptoms are related to carbon monoxide poisoning and should be discussed with all members of the household:

Mild Exposure:

Slight headache, nausea, vomiting, fatigue (often described as "flu-like" symptoms).

Medium Exposure:

Severe throbbing headache, drowsiness, confusion, rapid heart rate.

Extreme Exposure:

Unconsciousness, convulsions, cardiopulmonary failure, death,

Many cases of reported carbon monoxide poisoning have indicated that although victims were aware they were not well, they became disoriented to the point they were unable to save themselves by either exiting the building or calling for assistance. Young children and household pets may be the first affected by CO poisoning.

#### OPERATING INSTRUCTIONS

#### Installation

This HS 80004 SafetySiren<sup>TM</sup> Carbon Monoxide and Combustible Gus Sensor plugs directly into a standard 110-volt AC household outlet. The unit should be oriented vertically so that all of the script on the face of the unit appears in the upright position. The ventilation slots must not be blocked and the unit must be kept dust free. A proper airflow must be maintained through the unit to obtain an air sampling representative of the local environment. The only maintenance the unit requires is a thorough vacuuming once every six months.

WARNING: There are no user serviceable parts inside the unit. Do not remove the back cover. Removal of the back cover will void the warranty.

CAUTION: When the unit has been stored unplugged for several weeks, its sensitivity to combustible gases will decline. To restore the unit to normal sensitivity, allow a 24-hour warmup period.

Once the unit is plugged into the wall outlet, the green power indicator should light up. The red indicator will flash approximately once every three seconds to indicate the unit is operating properly. It should be noted that the sounding of the alarm will indicate whether the sensor has detected unsale levels of CO or combustible gas. Continuous appearance of the red indicator and the continuous sounding of the audible buzzer indicates a presence of potentially dangerous levels of CO. Continuous appearance of the red indicator and the intermittent sounding of the audible alarm indicates the presence of potentially dangerous levels of constrained by the sense of the red indicator and the intermittent sounding of the audible alarm indicates the presence of potentially dangerous levels of combustible gases. If the unit begins beeping once every 5 seconds or the red LED light is not flashing once very 3 seconds. then a fault has

occurred in Attan Page 78no And Asis 6424 need the unit from the AC power immediately and call Panily Safety Products at 616-530-6540.

WARNING: Make sure that the unit is not plugged into a wall outlet controlled by a light switch.

CAUTION: This carbon monoxide and combustible gas detector is designed to detect carbon monoxide gas and ANY source of combustion or the combustible gases of methane and propane. It is NOT designed to detect smoke, fire, or other gases.

#### Location of the Detector

The Consumer Product Safety Commission recommends that each household have at least one Carbon Monoxide detector placed in the steeping areas of the home. A second detector located near appliances or equipment using combustible fuel adds an extra measure of safety. Figure 3 shows suggested locations in the home. Make sure that airflow through the unit's ventilation slots is not inhibited by curluins, furniture or other items. The audible alarms should be able to be heard from all sleeping areas in the home. Units must not be placed within five feet of open flame cooking appliances. Also, avoid placing units near paint thinner furnes or in areas where the temperature varies outside the range of 40.0°F (4.4°C) to 100°F (7.8°C).

CAUTION: This detector will only indicate the presence of carbon monoxide and combustible gas at the sensor. Carbon monoxide and combustible gas may be present in other areas.



#### Att 9. Page 39, Rev3 8/6/24 Testing the SafetySiren<sup>24</sup> for Carbon Monoxide and Combustible Gas Sensor

To verify the circuitry is operating properly, use the Test/Reset button built into the unit. Simply press down on the button during normal operation and note the red indicator. The red indicator will light continuously and the audible alarm will sound as long as the button is held down. Once you release the Test/Reset, the red indicator will return to blinking at a three-second rate and the audible alarm will cease, indicating the unit has returned to a normal operating mode. Test the unit monthly. If the unit begins beeping once every 5 seconds or the red LED light is not flashing once every 3 seconds, then a fault has occurred in the unit. Disconnect the unit from the AC power immediately and call Family Safety Products at 616-530-6540.

#### Resetting the Alarm

The Test / Reset button may also be used to reset the audible alarm during the alarm mode. Once the alarm is activated by detection of high CO or combinistible gas levels, simply press the Test/Reset button to disable the audible alarm. If the high CO level or combustible gas level continues, the audible alarm will again sound within a 2.5 minute period. The red indicator will remain ht during the time the audible alarm is disabled, indicating that the alarm condition still exists.

#### WHAT TO DO WHEN THE ALARM SOUNDS

#### WARNING If a continuous alarm sounds for Carbon Monoxide

Activation of this device indicates the presence of carbon monoxide which can be FATAL.

1) If anyone has a headache or an upset stomach, call the Fire Department and move to a location which has fresh air. DO A HEAD COUNT TO CHECK THAT ALL PERSONS ARE ACCOUNTED FOR. DO NOT RE-ENTER THE PREMISES UNTIL THAS BEEN AIRED OUT AND THE PROBLEM CORRECTED!

If no one exhibits symptoms of discomfort associated with carbon monoxide poisoning, simply:

2) Operate the reset button.

- Turn off appliances, vehicle, or other sources of combustion at once (furnace, water heater, wood burning stove, RV, automobile, or the like).
- 4) Get fresh air into premises or vehicle.
- Call a qualified technician and have the problem fixed before restarting appliances or vehicle.

## If the intermitten Bang sounds BEV 3.86/5/24 Gas

An intermittent audible alarm from this device indicates the presence of combustible gases, the source of which may be an appliance such as a furnace, water heater, oveu/stove, or dryer.

- Do not operate any electrical devices such as light switches or telephones.
- Do not plug or unplug any electrical devices because they may cause a spark.
- Immediately extinguish any flames or pilot lights.
- · Ventilate the area by opening doors and windows.
- Determine the source of the gas. Seek a qualified technicion or call your local gas company.
- Turn off the gas supply.

#### SafetySiren™ for Carbon Monoxide and Combustible Gas Sensor Model HS 80004 Specifications

Power Source				
CO Sensor CO Sensor calibrated at 200 ppm CO specific to avoid false alarms.				
CG Sensor				
Temperature				
CO Audible Alarm Continuous 85dB alarm at 10 ft. for CO				
CG Audible Alarm Intermittent alarm for Combustible Gas				
Visual Alarm				
Green LED Operation Continuous Operation When Power On				
Detection frequeacy Air sampled every 2.5 minutes for CO. Air sampled continuously for Combustible Gas after an initial warm-up of 2.5 minutes				
Test				
Dimensions				
Weight				

### Att 9 Page 41. Rev3 8/6/24

Your Safety Siren<sup>™</sup> for Carbon Monoxide and Combustible Gas has a free-year warranty from date of purchase against defects in material and workmanship. Units returned to the manufacturer during this period because of such defects will be repaired or replaced free of charge. For repairs within the warranty period or receipt of a faulty unit, call Family Safety Products at 616-530-6540 to receive a Return Authorization Number (RAN). Include a written description of the problem. You may then ship the unit to the address listed below along with the RAN, and proof of purchase.

The warranty covers only defects in material or workmanship in normal use and not damage from negligent handling, misuse, or lack of proper care. Important: Do not remove the back cover. Such removal will void the warranty. This warranty stands in place of any other warranty either expressed or implied.

Family Safety Products, Inc. is not liable for any personal injury, property damage or any incidental or consequential damage resulting from gas leakage, fire, or explosion. The sole remedy for breach of this limited warranty does not, in any instance, exceed the purchase price. Your SafetySiren<sup>TM</sup> for Carbon Monoxide and Combustible Gas sensor does not constitute property, disability, life or any other type of insurance.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

Family Safety Products. Inc. 2879 Remico SW Grandville, MI 49418 USA

#### Indice

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Al detectar gas combustible
Datos sespecíficos relacionados con el sensor del SafetySiren <sup>TM</sup> para
monóxido de carbono y gas combustible
Garantía

#### DATOS AFREGOUPACIONAS ACLACIONADOS CON EL MONOXIDO DE CARBONO

El monóxido de carbono (CO) es un gas incoloro, inodoro e insaboro que es muy tóxico y casi imposible de detectar, si no se utiliza un equipo sensor. El monóxido de carbono puede ser absorbido por la circulación de la sangre del cuerpo con una rapidez casi dicz veces mayor a la del oxígeno puro. En consecuencia, puede limitar la capacidad que tiene el cuerpo de absorber oxígeno cuando existe una presencia de monóxido de curbono, incluso cuando se en pequeñes cantidades. Esta capacidad reducida del cuerpo para absorber oxígeno se conoce con el nombre de asifixia químea y puede cuasar la muerte cuando existe una presencia de pequeñas cantidades de monóxido de carbono durante un periodo determinado de fiempo.

A medida que sube el nivel de monóxido de carbono en un ambiente cerrado, los efectos tóxicos tardan cada vez menos en presentarse. Si bien es cierto que son necesarias más de tres horas para que una atmósfera con un 0.01% de CO ocasione dolores de cabeza, cuando asta contidad sube hasta el 0.02% solo es necesaria una hora para que se produzean los mismos efectos. Si el porcentaje sube hasta el 0.04% de CO, el tiempo necesario para que se ocasionen dolores de cabeza es solo de 25 minutos. La unidad SafetySiren™ HS 80004 ha sido diseñada para activar la alarma cuando se alcanzan los tiempos de exposición que se indican a contina, tal y como los define la entidad Underwriters Laboratories:

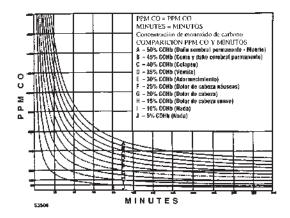
en menos de 90 minutos con un 0.01% (100 ppm CO) en menos de 35 minutos con un 0.02% (200 ppm CO) en menos de 15 minutos con un 0.04% (400 ppm CO)

#### Advertencia:

Es posible que no se active la alarma de este dispositivo cuando los niveles de monóxido de carbono son bajos. La citidad del gobierno federal, denominada Administración para la Seguridad y la Salud Ocupacional (OSHA) ha determinado que la exposición continuada a niveles de CO de 35 ppm no debe prolongarse por un período superior a las ocho horas. No se ha estudiado la capacidad de este detector para responder a niveles de monóxido de carbono inferiores a los 100 ppm. Es posible que a las personas con problemas de salud les convenga utilizar un dispositivo de detección de mayor sensibilidad.

#### Att 9 Page 43, Rev3 8/6/24

Figura 1 – Concentración de monóxido de carliono comparada en función del tiempo y del % de COHb.



#### Enentes de monóvido de carbono

El monóxido de carbono proviene de la combustión incompleta de los combustibles derivados del carbono como, por ejemplo, gas, carbón de quemar, madera, carbón, combustibles para sistemas de calefacción, gasolina y propano. Muchos - estos combustibles se pueden encontrar en las casas; por ejemplo, en los aparatos de cocina, sistemas de calefacción, calentadores de agua, chimeneas, calentadores portátiles, barbacoas con parrillas y vehículos. Cuando se produce una combustión incompleta en cualquiera de los artículos indicados anteriormente, sin que exista una ventilación adecuada al exterior, se presenta el peligro de intexicación por CO.

#### Figura 2 - Fuentes de monóxido de carbono



Calentador de agua



Vehiculo



Calentador portátil





Sistema de calefacción

Barbacoa de carbán



Pueden occumir explosiones desastrosas como resultado de fugas de gases combustibles tales como el gas natural (metano) y los gases LPG (butano y propano). Estos tipos de gas se utilizan para prender una variedad de equipos de uso doméstico. Entre los más comunes se encuentran las homillas y los homos para cocinar, los calentadores de agua caliente, las secadoras de ropa, los calefactores portátiles, los dispositivos para prender chimencas y los hornos para calefacción. El gas natural, el butano y el propano pueden causar explosiones devastadoras, aun cuando la fuga emitida por tales equipos es mínima.

Fuentes de gas combustible







Chimenen

Sistemu de calefacción

Secudora de rapa





Calentador de neua



Hornilla

20

#### Síntomas de la intoxicación por monóxiño de carbono

Los síntomas que se indican a continuación se encuentran relacionados con la intoxicación por monóxido de carbono y todas las personas que habitan en la casa deberían ser conscientes de los mismos:

#### Exposición de grado menor:

Dolor de cabeza suave, náuseas, vómitos, fatiga (los sintomas se describen frecuentemente como si fueran similares a los provocados por la gripe).

Exposición de grado medio:

Dolor de cabeza con palpitaciones, adormecimiento, confusión, ritmo cardiaco rápido.

Esposición de grado extremo:

Pérdida de conciencia, convulsiones, problemas cardiopulmonares, muerte.

Muchos de los casos de intoxicación por monóxido de carbono que se han dado a conocer han indicado que, si bien las víctimas eran conscientes de que no se sentian bien, se desorientaron hasta el punto de ser incapaces de prevenir las consecuencias saliendo del edifício o pidiendo ayuda. Sas hijos y sus animales domésticos pueden ser los primeros en sufrir los efectos de una intoxicación por CO.

## INSTRUCCIONES FARAEL FUNCIONAMIENTO

#### Instalación

ELHS 800044 SafetySiren™ para Sensor de Monóxido de Carbono y de Gas Combustible se enchufa directamente en un tomacorientes residencial común de 110 vollios CA. La unidad debe quedar verticalmente orientada de manera que toda la inscripción situada en la cara de la misma aparezea en tal posición. Las aberturas de ventilación no deberán estar bloqueadas y la unidad deberá estar siempre desempolvada. Se debe mantener la circulación de aire adecuada a través de la unidad con el fin de obtener una muestra de aire que sea representativa de la atmósfera local. El único tipo de servicio de mantenimiento que la unidad requiere consiste en limpiarla completamente con una aspiradora cada esis meses.

ADVERTENCIA: En el interior de la unidad no existen componentes de interés para el usario. No retire la cubierta trasera. Si se retira la cubierta trasera, la garantía será anulada.

PRECAUCION: Si no se utiliza la unidad durante varias semanas estando desenchufada de la electricidad, alsminulrá su capacidad de detección. La unidad requerirá un poriodo de recelentamiento de 24 horas para volver a funcionar con su capacidad de detección normal.

Una vez que la unidad esté conectada al tomacorrientes de la pared, se encenderá el indicador de luz verde. El indicador de luz roja se iluminará intermitentemente cada tres segundos para indicar que la unidad está funcionando correctamente. Si el indicador de luz roja se ilumina continuamente y se escucha un zumbido, esto quiere decir que la atmósfera contiere un nivel de CO que puede ser peligroso. Si se detecta un alto nivel de gas combustible, la operación continua del indicador con luz roja y y el sonido internitente de la atarna de zumbido indicarán la posibilidad de que exista una condición peligrosa. Si la unidad comienza a sonar cada 5 segundos, o si el indicador de luz roja no se encience cada tres segundos, esto indica que existe un fallo en el sistema. Si cualquiera de estas dos condiciones persiste, desconecte inmediatemente la unidad y llame a Family Safety Products marcando el 616-530-6540.

# ADVERTENCIA: Asegúrese de que la unidad no esté conectada a un tomacorrientes contralado por un interruptor de luz.

PRECAUCION: Este detector de monóxido de carbono ha sido diseñado para detectar gas de monóxido de carbono proveniente de CUALQUIER fuente de combustión. No ha sido diseñado para detectar humo, fuego u otro tipo de gases.

### Ubicación natione de Rev3 8/6/24

El Consumer Product Safety Commission (Cornisión para la Seguridad de los Productos) recomienda que cada hogar tenga al menos un detector colocado en el área que se utiliza para dormir. Otro detector situado cerca de electrodomésticos o de equipo que consuma gas combustible constituye una medida de seguridad adicional. En la Figura 3 se sugieren ubreaciones dentro de una casa. Asegúrese de que la circulación de aire a través de las aberturas de venificación de la unidad no se encuentre obstaculizada por cortinas, muebles u otros objetos. Se debarán instalar las alarmas de formar que se puedan escuchar en todas las áreas del hogar utilizadas para dormir. Se deberá montener una distancia mínima de cinco pies entre las unidades y cualquier equipo de cocina que funcione con llamas abiertas. Además, evite colocar las unidades cerca de los vapores emitidos por un diluyente de pintura o en áreas cuya temperatura sea inferior a los 40.0/P (4.4°C) o superior a los 100 F 473.78°C).

Precaucion: Este detector sólo indica la presencia en el sensor de gas de monóxido de carbono o de gas combustible. Es posible que en otras áreas también exista monóxido de carbono y gas combustible.

Figura 3. Sugerencias de ubicaciones para los sensores de SafetySiceu<sup>TM</sup> para Monóxido de Carbono y de Gas Combustible

#### Comprobación del funcionamiento de SafetySiren™ para Sensor de Monóxido de Carbono y de Gas Combustible

Para comprobar que el conjunto de circuítos esté funcionando correctamente, utilice el botón "Test/Reset" (Comprobación/Reactivación) incorporado a la unidad. Sólo tiene que oprimir el botón durante el funcionamiento normal y observar el indicador de luz roja. El indicador de luz roja permanecerá intrninado y la alarma sonará mientras el botón se manlenga oprimido. Una vez que suelte el botón "Test/Reset", el indicador de luz roja volverá a iluminarse de forma internitente a intervalos de tres segundos y la alarma dejará de sonar, lo cual indica que la unidad ha vuelto a su funcionamiento normal. Compruebe mensualmente el funcionamiento de la unidad. Si la unidad no funciona de la manera indicada anteriormente. desconéctela inmediatamente del suministro de electricidad de CA y llame a Fantily Safety Products marcando al 616-530-6540.

#### Reactivación del dispositivo de alarma

También se puede utilizar el botón "Test/Reset" para reactivar el dispositivo de alarma sonora mientras la unidad se encuentra en el modo de alarma. Si se activa la alarma debido a la detección de altos niveles de CO o de gas combustible, simplemente oprima el botón "Test/Reset" para desactivar la alarma sonora. Si continúa existiendo un alto nivel de CO o gas combustible, la alarma volverá a sonora al cabo de 2.5 segundos. El indicador de luz roja permanecerá iluminado mientras la alarma sonora se encuentre desactivada, para indicar que persisten las condiciones de alarma.

# QUE HACTER COSENSO SUENALA ALARMA

#### ADVERTENCIA

Si la alarma suena continuamente debido a la detección de Monóxido de Carbono

La activación de este dispositivo indica la presencia de monóxido de carbono, lo cual puede tener consecuencias FATALES.

1) Si alguien tiene dolor de cabeza o mal de estómago, llame a los Bomberos y trasládese a un área donde circule aire fresco. CUENTE LAS PERSONAS QUE SE ENCUENTRAN PRESENTES PARA ASEGURARSE DE QUE NO FALTE NADIE, ;NO VUELVA A ENTRAR A LA CASA O AL LOCAL HASTA QUE SE HAYA EVACUADO EL AIRE CONTAMINADO Y SE HAYA CORREGIDO EL PROBLEMA!

Se nadie tiene síntomas de malestar relacionados con la intoxicación por monóxido de carbono, simplemente:

2) Oprima nuevamente el botón de reactivación.

3) Apague de inmediato todo electrodoméstico, vehículo u otra fuente de combustión (hormo, calentador de agua, hornilla de carbón de madera, vehículo recreativo, automóvil, o cualquier equipo de casta indole).

4) Haga que el aire fresco circule por el interior de la caso, del local o del vehículo.

5) Llame a un técnico competente para que corrija el problema antes de volver a encender los electrodomésticos o vehículos.

#### Si suena la alarma intermitente debido a la detección de Gas Combustible

La alarma de este dispositivo suena intermitente para indicar la presencia de gases combustibles, cuya fuente puede ser un horno de recalentar, un calentador de agua, un horno u hornilla para cocinar o una secadora de ropa.

- No active o utilice ningún equipo eléctrico; por ejemplo, interruptores de luz o teléfonos.
- No enchufe o desenchufe πìngún dispositivo eléctrico, puesto que se pueden producir chispas.
- Extínga inmediatemente cualquier llama abierta o llama de piloto.
- · Abra puertas y ventanas para ventilar el área.
- Determine la fuente de la emisión de gas. Solicite el servicio de un técnico competente o llame a la compañía de suministro de gas correspondiente a su área.
- · Apague o cierre el suministro de gas.

#### Datos específicos relationados com el Sarer Shientas para Sensor de Monázido de Carbono y de Gas Condustible

Suministro eléctrico 110 voltios CA/60	Hz a 10 Vatios
Sensor de CO El Sensor ha sido	regulado para detectar
específicamente C	O a 200 ppm, lo cual
permite evitar fals	as alarmas
Sensor de GC La alarma se activa	a duando el sensor
detecta que existe menos de un 25% del límite inf	crior de nivel le gas
explosivo; 3.8% por voltanen de gas natural (meta	no) en el ambiente;
2.1% por volumen de gas LP (propano) en el amb	ientc
Temperatura	8°C (100%F)
Alarma sonora	ntinuos a 10 pies
Para gas combustil	ole, alarma intermitente
Alarma visible	egundos durante
funcionamiento normal); el indicador de luz ROJ/	A permanece encenido
cuando existe una condición de alarma.	
Funcionamiento del	
indicador con luz verde Iluminación contr	nua cuando la unidad se
encuentra funcion	ando bajo condiciones
de peligro.	
Frecuencia de detección Para CO, Toma de	muestra de aire cada 2.5
Para Gas Combustible, toma de muestra de aire co	patinua, espués de
calentamiento inicial de 2.5 minutos	
Prieba El botón "Test" pe	ermite comprobar que le
unidad esté funcionando correctamente. Al ponerl	o nuevamente en cl
modo de alarma, el botón "Test" volverá a activar	la alarma sonora basta
que se efectúe una nueva toma de aire	
Dimensiones 4.7 pulgadas x 3.1	pulgadas x 2.1 pulgada
Pesi)	

#### Garantía Limitada

Su SafetySiren<sup>D4</sup> para Monóxido de Carbono y Gas Corobustible tiene una garantía de cinco años contra defectos de los materiales o de la mano de obra. Esta garantía comienza a partir de la fecha de adquisición, Las unidades que scan devueltas al fabricante durante este período por motivo de tales defectos, serán reparadas o reemplazadas sin cargo alguno. Para solicitar reparaciones dentro del período cubierto por la garantía, o después de después de haber recibido una unidad defectuosa, llarte a Family Safety Products al 616-530-6540 y se la dará un Return Authorization Number (RAN - Número de Aprobación de Devoluciones). Escriba una nota describiendo el problema. Dirija el envíe de la unidad a la dirección que figira más sobajo e incluya cl RAN.

La garantía cubre únicumente los defectos de material o de mano de obra en unidades sometidas a uso normal, pero no cubre daños por manejo negligente, uso indebido o cuidado inapropiado. Importante: no retire la cubierta trasera. El becho de retirar la cubierta trasera tendrá como resultado la anulación de la garantía. Esta garantía prevalece sobre cualquier otra garantía, bien sea ésta explícita o implícita.

Fanily Safety Products, Inc., no asume la responsabilidad de ningún lesión que pueda sufrir una persona, de ningún daño a la propiedad o de ningún daño accidental o emergente que pueda tener origen en una fuga de gas, incendio o explosión. El único recurso derivado del incumplimiento de esta garantia limitada no sobrepasará, bajo ninguna circumstancia, el precio de adquisición del producto. Su SafetySiren™ para Monóxido de Carbono y Gas Combustible no constituye un seguro de la propiedad, un seguro contra daños y perjuicios, un seguro de vida o de cualquier otro tipo.

# Esta garantia le otorga serechos legales específicos. Puede que usted

goce de otros derechos que pueden variar de un estado a otro.

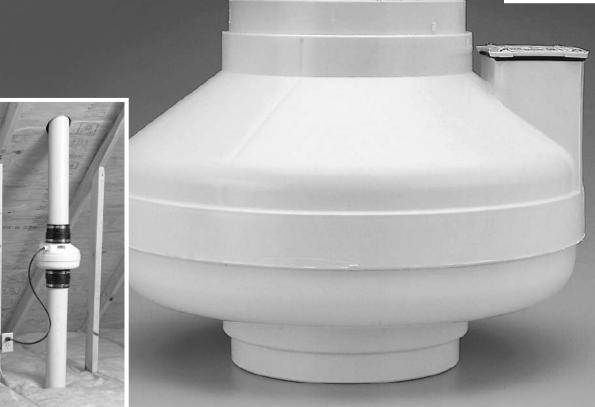
Family Safety Products, Inc. 2879 Remico SW Grandville, MJ 49418 USA



# HP SERIES

FANS FOR RADON APPLICATIONS WITH IMPROVED UV RESISTANCE!





# TRUST THE INDUSTRY STANDARD. Here's Why:

Don't put your reputation at stake by installing a fan you know won't perform like a Fantech! For nearly twenty years, Fantech has manufactured quality ventilation equipment for Radon applications. Fantech is the fan

Radon contractors have turned to in over 1,000,000 successful Radon installations worldwide.



Fantech external rotor motor

# FANTECH HP SERIES FANS MEET THE CHALLENGES OF RADON APPLICATIONS:

HOUSING

- UV resistant, UL Listed durable plastic
- UL Listed for use in commercial applications
- Factory sealed to prevent leakage
- Watertight electrical terminal box
- Approved for mounting in wet locations i.e. Outdoors MOTOR
- Totally enclosed for protection
- High efficiency EBM motorized impeller
- Automatic reset thermal overload protection
- Average life expectancy of 7-10 years under continuous load conditions

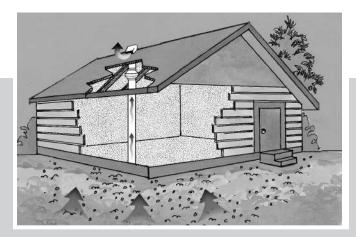
RELIABILITY

- Five Year Full Factory Warranty
- Over 1,000,000 successful radon installations worldwide



# **HP Series Fans are Specially Designed with Higher Pressure Capabilities for Radon Mitigation Applications**

MOST RADON MITIGATORS WHO PREVIOUSLY USED THE FANTECH FR SERIES FANS HAVE SWITCHED TO THE NEW HP SERIES.



# PERFORMANCE DATA

Fan	Volts	Wattage	tage Max. CFM vs. Static Pressure in Inches W.G.							Max.		
Model	VOILS	Range	Amps	0"	0.5"	0.75"	1.0"	1.25"	1.5"	1.75"	2.0"	Ps
HP2133	115	14 - 20	0.17	134	68	19	-	-	-	-	-	0.84
HP2190	115	60 - 85	0.78	163	126	104	81	58	35	15	-	1.93
HP175	115	44 - 65	0.57	151	112	91	70	40	12	-	-	1.66
HP190	115	60 - 85	0.78	157	123	106	89	67	45	18	1	2.01
HP220	115	85 - 152	1.30	344	260	226	193	166	137	102	58	2.46



# PERFORMANCE CURVES

Fantech provides you with independently tested performance specifications.

The performance curves shown in this brochure are representative of the actual test results recorded at Texas Engineering Experiment Station/Energy Systems Lab, a recognized testing authority for HVI. Testing was done in accordance with AMCA Standard 210-85 and HVI 916 Test Procedures. Performance graphs show air flow vs. static pressure.

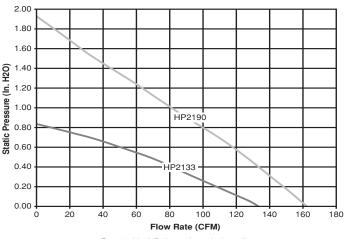
Use of HP Series fans in low resistance applications such as bathroom venting will result in elevated sound levels. We suggest FR Series or other Fantech fans for such applications.

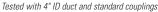
# HP FEATURES INCLUDE

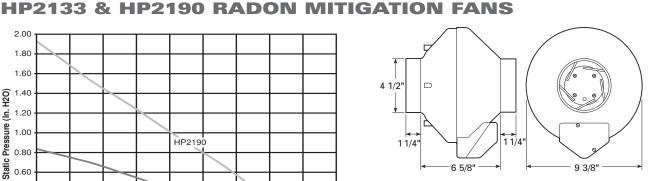
- Improved UV resistant housings approved for commercial applications.
- UL Approved for Wet Locations (Outdoors)
- Sealed housings and wiring boxes to prevent Radon leakage or water penetration
- Energy efficient permanent split capacitor motors
- External wiring box
- Full Five Year Factory Warranty

#### NOTE:

Installations that will result in condensate forming in the outlet ducting should have a condensate bypass installed to route the condensate outside of the fan housing. Conditions that are likely to produce condensate include but are not limited to: outdoor installations in cold climates, long lengths of outlet ducting, high moisture content in soil and thin wall or aluminum outlet ducting. Failure to install a proper condensate bypass may void any warranty claims.







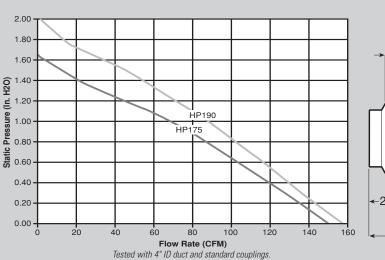
HP2133 - For applications where lower pressure and flow are needed. Record low power consumption of 14-20 watts! Often used where there is good sub slab communication and lower Radon levels.

HP2190 - Performance like the HP190 but in a smaller housing. Performance suitable for the majority of installations.

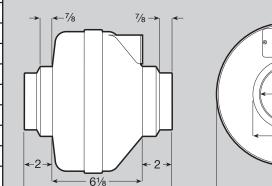
#### Fans are attached to PVC pipe using flexible couplings.

For 4" PVC pipe use Indiana Seals #156-44, Pipeconx PCX 56-44 or equivalent. For 3" PVC pipe use Indiana Seals #156-43, Pipeconx PCX 56-43 or equivalent.





**HP175 & HP190 RADON MITIGATION FANS** 



101/8

# 

**HP175** – The economical choice where slightly less air flow is needed. Often used where there is good sub slab communication and lower Radon levels.

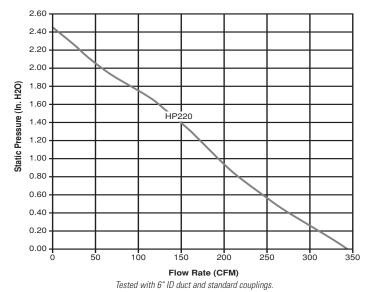
**HP190** – The standard for Radon Mitigation. Ideally tailored performance curve for a vast majority of your mitigations.

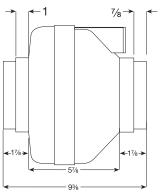
#### Fans are attached to PVC pipe using flexible couplings. For 4" PVC pipe use Indiana Seals #151-44, Pipeconx PCX 51-44 or equivalent.

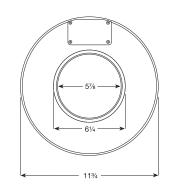
For 3" PVC pipe use Indiana Seals #156-43, Pipeconx PCX 56-43 or equivalent.



**HP220 RADON MITIGATION FAN** 







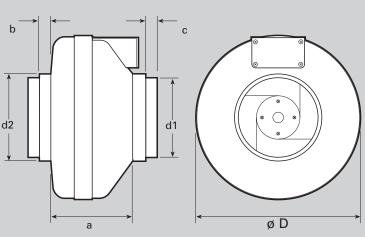
**HP 220** – Excellent choice for systems with elevated radon levels, poor communication, multiple suction points and large subslab footprint. Replaces FR 175.

#### Fans are attached to PVC pipe using flexible couplings.

For 4" PVC pipe use Indiana Seals #156-64, Pipeconx PCX 56-64 or equivalent. For 3" PVC pipe use Indiana Seals #156-63, Pipeconx PCX 56-63 or equivalent.



**FR SERIES** THE ORIGINAL MITIGATOR

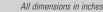


DIMEN	DIMENSIONAL DATA									
model	øD	d1	d2	а	b	С				
FR100	9 1/2	3 7/8	4 7/8	6 1/8	7/8	7/8				
FR110	9 1/2	3 7/8	4 7/8	6 1/8	7/8	7/8				
FR125	9 1/2	-	4 7/8	6 1/8	7/8	-				
FR140	11 3/4	5 7/8	6 1/4	5 7/8	1	7/8				
FR150	11 3/4	5 7/8	6 1/4	5 7/8	1	7/8				
FR160	11 3/4	5 7/8	6 1/4	6 3/8	1	7/8				
FR200	13 1/4	7 7/8	9 7/8	6 1/4	1 1/2	1 1/2				
FR225	13 1/4	7 7/8	9 7/8	6 1/4	1 1/2	1 1/2				
FR250	13 1/4	-	9 7/8	6 1/4	-	1 1/2				

Att 9 Page 53, Rev3 8/6/24







# PERFORMANCE DATA

Fan	Energy		Valta	Rated				CFM vs. Static Pressure in Inches W.G.						Max.	Duct
Model	Star	RPM	Volts	Watts	Range	Amps	0"	.2"	.4"	.6"	.8"	1.0"	1.5"	Ps	Dia.
FR100	$\checkmark$	2950	120	21.2	13 - 22	0.18	137	110	83	60	21	-	-	0.90"	4"
FR125	$\checkmark$	2950	115	18	15 - 18	0.18	148	120	88	47	-	-	-	0.79"	5"
FR150	$\checkmark$	2750	120	71	54 - 72	0.67	263	230	198	167	136	106	17	1.58"	6"
FR160	-	2750	115	129	103 - 130	1.14	289	260	233	206	179	154	89	2.32"	6"
FR200	$\checkmark$	2750	115	122	106 - 128	1.11	408	360	308	259	213	173	72	2.14"	8"
FR225	$\checkmark$	3100	115	137	111 - 152	1.35	429	400	366	332	297	260	168	2.48"	8"
FR250*	-	2850	115	241	146 - 248	2.40	649	600	553	506	454	403	294	2.58"	10"

FR Series performance is shown with ducted outlet. Per HV/s Certified Ratings Program, charted air flow performance has been derated by a factor based on actual test results and the certified rate at .2 inches WG. \* Also available with 8" duct connection. Model FR 250-8. Special Order.

#### NOTE

Installations that will result in condensate forming in the outlet ducting should have a condensate bypass installed to route the condensate outside of the fan housing. Conditions that are likely to produce condensate include but are not limited to: outdoor installations in cold climates, long lengths of outlet ducting, high moisture content in soil and thin wall or aluminum outlet ducting. Failure to install a proper condensate bypass may void any warranty claims.



**EVE** DURING ENTIRE WARRANTY PERIOD:

FANTECH will replace any fan which has a factory defect in workmanship or material. Product may need to be returned to the Fantech factory, together with a

WARRANTY copy of the bill of sale and identified with RMA number.

#### FOR FACTORY RETURN YOU MUST:

- Have a Return Materials Authorization (RMA) number. This may be obtained by calling FANTECH
- either in the USA at 1.800.747.1762 or in CANADA at 1.800.565.3548. Please have bill of sale available.
- The RMA number must be clearly written on the outside of the carton, or the carton will be refused. • All parts and/or product will be repaired/replaced and shipped back to buyer; no credit will be issued.

0R

The Distributor may place an order for the warranty fan and is invoiced.

The Distributor will receive a credit equal to the invoice only after product is returned prepaid and verified to be defective.

FANTECH WARRANTY TERMS DO NOT PROVIDE FOR REPLACEMENT WITHOUT CHARGE PRIOR TO INSPECTION FOR A DEFECT. REPLACEMENTS ISSUED IN ADVANCE OF DEFECT INSPECTION ARE INVOICED, AND CREDIT IS PENDING INSPECTION OF RETURNED MATERIAL. DEFECTIVE MATERIAL RETURNED BY END USERS SHOULD NOT BE REPLACED BY THE DISTRIBUTOR WITHOUT CHARGE TO THE END USER, AS CREDIT TO DISTRIBUTOR'S ACCOUNT WILL BE PENDING INSPECTION AND VERIFI-CATION OF ACTUAL DEFECT BY FANTECH.

#### THE FOLLOWING WARRANTIES DO NOT APPLY:

• Damages from shipping, either concealed or visible. Claim must be filed with freight company.

2. Misuse, abuse, abnormal use, or accident, and 3. Incorrect electrical voltage or current.

· Damages resulting from improper wiring or installation.

• Removal or any alteration made on the FANTECH label control number or date of manufacture.

Damages or failure caused by acts of God, or resulting from improper consumer procedures, such as:

 Any other warranty, expressed, implied or written, and to any consequential or incidental damages, loss or property, revenues, or profit, or costs of removal, installation or reinstallation, for any breach of warranty.

#### WARRANTY VALIDATION

1. Improper maintenance

- The user must keep a copy of the bill of sale to verify purchase date.
- These warranties give you specific legal rights, and are subject to an applicable consumer protection legislation. You may have additional rights which vary from state to state.

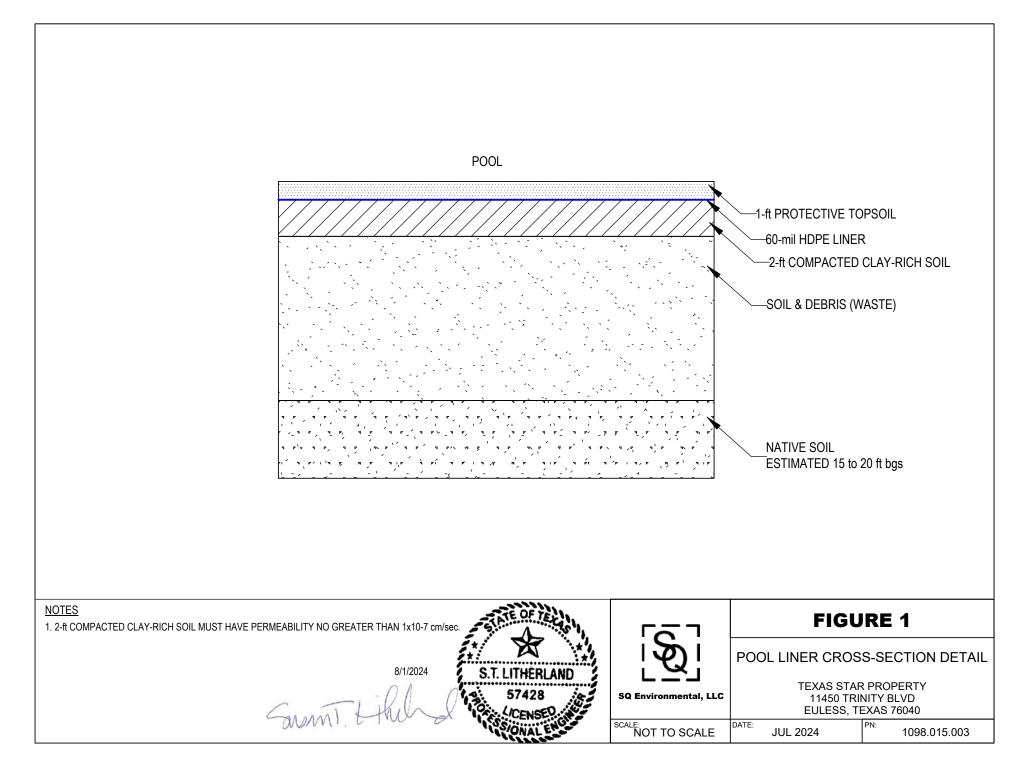
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Item #: 411741 Rev Date: 021010

Fantech, reserves the right to modify, at any time and without notice, any or all of its products' features, designs, components and specifications to maintain their technological leadership position.



# Landprint.

7822 Mason Dells Drive Dallas, Texas 75230 469,967.3100 www.landprint.la



Texas Star Multifamily

Project

Fort Worth, Texas

Stonehawk Capital Partners

Project Number	SCPn003
Drawn By	CC, JJ
Checked By	CC, JJ
ssue Date	05-29-2024
Revisions	
PERMIT	2024-05-29
Sheet Title	
Sitework	
Materials	
Schedule	

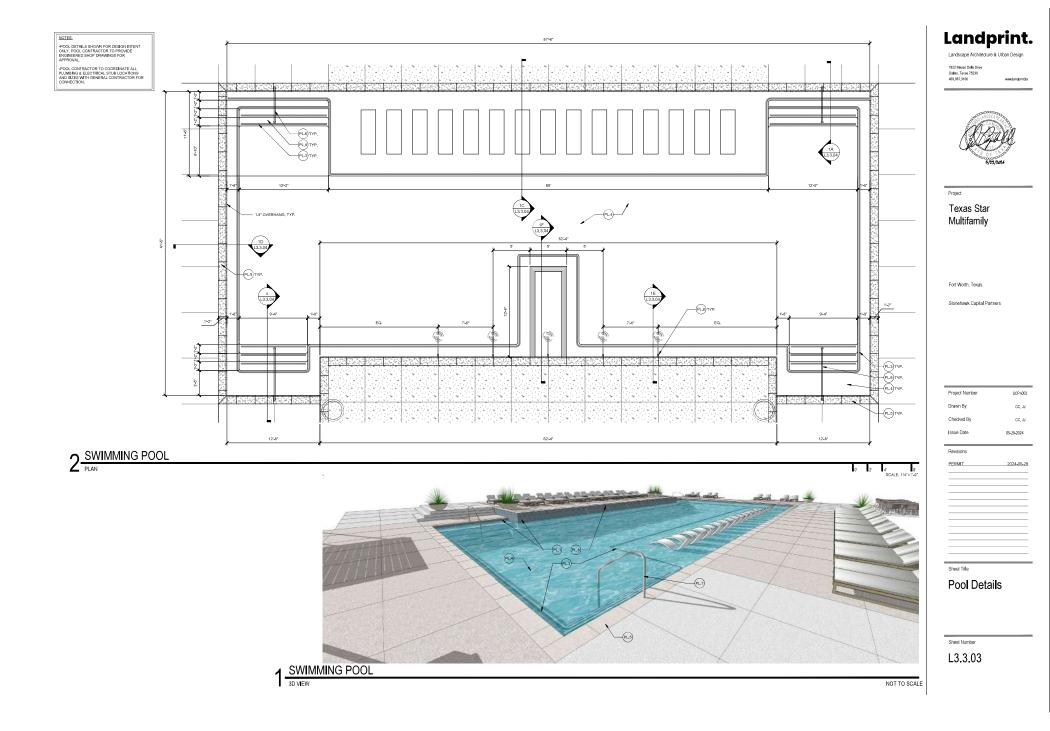
Sheet Number L3.0.01

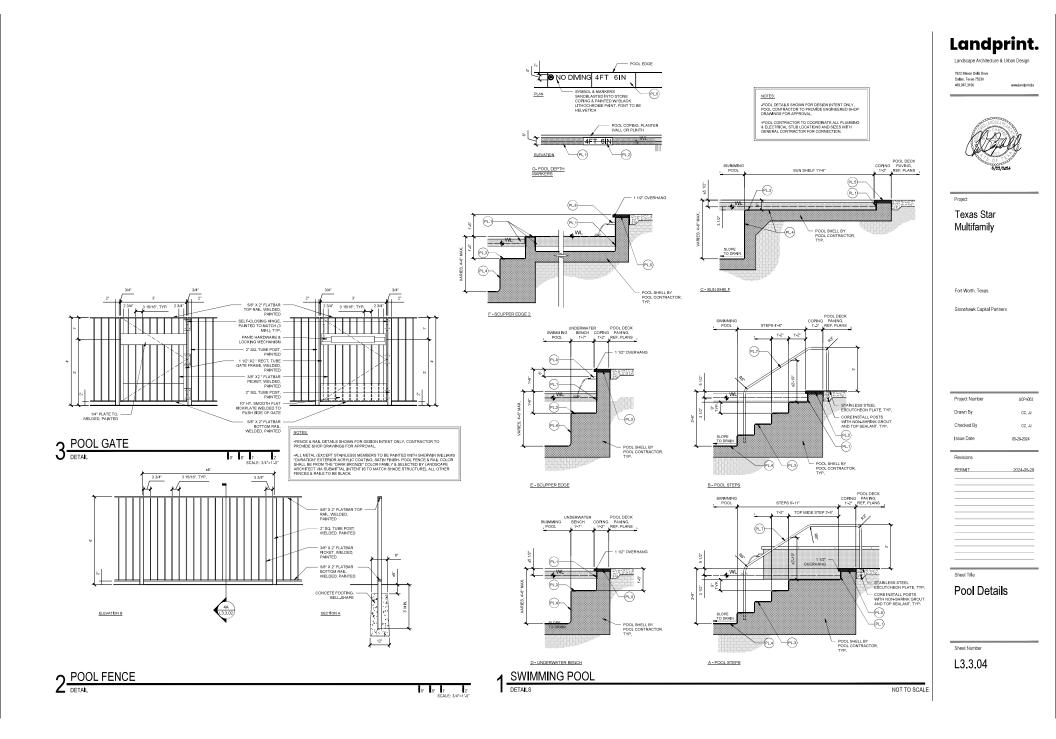
			rdscape Material Sch				
			DECRIPTION/MODEL # CRETE	COLOR	FINISH	CONTACT	REMARK
			STANDARD GREY CONCRETE 1	GREY	LIGHT BROOM	CONTRACTOR'S CHOICE	CONTRACTOR TO PROVIDE EXE MOCK-UP FOR LANDSCAFE ARCHITECT APPROVAL PRIOR TO CONSTRUCTION. SAW CUT JOINTS ONLY REF. PLANEFOR LAYOUT, REF. DETALS SHEET L13.01
		C.2	STANDARD GREY CONCRETE 2	GREY	MEDIUM SANDBLAST	CONTRACTOR'S CHOICE	INDEPENDENT OF CONTRACT, THE DEPARTMENT LIST CONTRACTOR TO PROVIDE \$X5 WACK-UP FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO CONSTRUCTION, SAW CUT JOINTS ONLY. BEE PLANE FOR LANCHIT REF. DETAILS SHEET LIST
		C.3	CAST-IN-PLACE CONCRETE WALL	GREY	RUBBED CONCRETE	CONTRACTOR'S CHOICE	SHOWN FOR DESIGN INTENT ONLY, MATERIALS AND DETAILS OF ALL RETAINING/PLANTER WALLS TO BE VERIFIED BY OWNER AND STRUCTURAL ENGINEER
		C.4	BURNISHED BLOCK WALL, WRIDUS SIZES AND SHAPES, STACKED BOND PATTERN	COMAL	BTANDARD	TEXASBULDINGPRODUCTS.C	CONTRACTOR TO PROVIDE SUBMITTAL LANDSCAPE ARCHITECT APPROVAL PROR TO CONSTRUCTION, REF DETAILS SHEET L3 3 07 & L3 3 09
		EDG					
			3/16" X 4" STEEL EDGING	BLACK	POWERCOATED	JD RUSSELL CO 800,888.6872	LOCATED PER PLAN, TYPICALLY AT ALL AREAS SEPERATING SCO FROM PLANTING BEDS AND GRAVEL BEDS
	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FUEL	FFAM	CE & GATE				JEEDO
1	COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO SUBMIT SAMPLE TO LA, FOR APPROVAL	F.1	POOL FENCE	BRONZE OR BLACK (TO	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET
8	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FULL		48" HEIGHT	MATCH ARCHITECTURE)	201 0000000	-	13.3.04
	COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBMIT SAMPLE TO LA. FOR APPROVAL	F.2	PRIVATE YARD FENCE, BEER GARDEN FENCE, DOG PARK FENCE & GUARDRAIL 42' HEIGHT	ERONZE OR BLACK (TO MATCH ARCHITECTURE)		CONTRACTOR'S CHOICE	REF, PLANS FOR LAYOUT, REF, DETAILS ON SHEET L3.3.08
	CONTRACTOR TO PROVIDE QUANTITIY TO INSURE FULL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO		PERIMETER FENCE 72" HEIGHT	ERONZE OR BLACK (TO MATCH ARCHITECTURE)		CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET L3.3.08
	SUBMIT SAMPLE TO L'A. FOR APPROVAL EXPOSED ACORECATE POOL FINISH	F.4	WOOD FENCE AT SOUTHERN PROPOERTY LINE - 72° HEIGHT, HORIZONTAL BOARD-ON-BOARD, STAINED CEDAR	BENJAWIN MOORE CORDOVAN BROWN	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET L3.3.08
DICE	CONTRACTOR TO PROVIDE SAMPLES OF COLOR TO	0.0.1					
	LANDSCAPE ARCHITEC FOR APPROVAL PRIOR TO	GRA		· · · · · · · · · · · · · · · · · · ·			
IOICE	PURCHASING CONTRACTOR TO PROVIDE QUANTITY TO INSURE FULL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBMIT SAMPLE TO L.A. FOR APPROVAL	G.1	DECOMPOSED GRANITE	NATURAL	NATURAL	CONTRACTOR'S CHOICE	COMPACTED AND WATERED IN, 4" DEPT MINIMUM CONTRACTOR TO SUBMIT SAMPLES FOR APPROVAL BY LANDSCAPE ARCHITECT
E RE.CDM	OR APPRIVED EQUAL INSTALL PER MANUFACTUER'S SPECIFICATIONS, CONTRACTOR TO PROVIDE SUBMITTAL FOR APPROVAL BY OWNER AND LANDSCAPE ARCHITECT	G.2	#57 STONE, 1 34" AGGREGATE WASHED, GENERAL DRIANGE GRAVEL	NATURAL	NATURAL	CONTRACTOR'S CHOICE	FOR GENERAL DRAINAGE AND COMPACTED FILL
203.		G.3	MEDIUM LAVA ROCK FIRE PIT ROCK	STANDARD	NATURAL	WOODLAND DIRECT 844.278.0343	CONTRACTOR TO SUBMIT SAMPLES TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION
HOICE	REF. PLANS FOR LAYOUT REF. DETAILS ON SHEET 13.3.02						
		G.4	TEXAS BLACK STAR, 2" TO 3" DWM.	NATURAL	NATURAL	OUTDOOR WAREHOUSE 972.423.4001	OR APPRIVED EQUAL, CONTRACTOR TO SUBMIT SAMPLES TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION
	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S	MISC	ELLANEOUS				
	SPECIFICATIONS SURFACED MOUNTED, LOCATE PER PLAN, INSTALL PER		OUTDODR GRILL	STAINLESS STEEL	STANLESS STEEL	AELCORPORTION	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF.
TS	MANUFACTUER'S SPECIFICATIONS LOCATE PER PLAN, INSTALL PER MANUFACTUER'S SPECIFICATIONS		AEI CORPORATION PGS T SERIES MODEL # 527TLP WITH EMERGENCY STOP	Charles of the	STATE STATE	LORI HEM GHAUS 949.474.3070	DETAILS ON SHEET L3.3.09
	LOCATE PER PLAN, INSTALL PER MANUFACTURE'S SPECIFICATIONS	10.25	OUTDOOR GRILL AELCORPORATION DOUBLE DOOR CABINET	STAINLESS STEEL		AEI CORPORTION LORI HEMIGHAUS 949 474 3071	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3 3.00
ете	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS	M.3	FREPLACE BURNER, 55" CROSSFIRE H SYSTEM BY WARMING TRENDS, (1) PER FIRE PIT	STANDARD	STANDARD	WOODLAND DIRECT 844 279.0343	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3 3.07
COM	OR APPROVED EQUAL, LOCATE PER PLAN, INSTALL PER MANUFACTUER'S SPECIFICATIONS OR APPROVED EQUAL, LOCATE PER PLAN	M.5	BIG ASS FAN 16 BLACK 60° DIN	BLACK	POWERCOATED	BI3 ASS FANS 877 244 3267	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3.3.06
M	OR APPROVED EQUAL, LOCATE PER PLAN. REF. TO DETAIL ON SHEET L3.3.01	M.6	ARTIFICIAL TURF - NATIVE GRASS	STANDARD	STANDARD	SYNTHETIC GRASS PROS MARCO GORTANA 214.577.30804	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3.3.01
HOICE		M.7	PUTTING GREEN TURF - SHORT GAME ELITE	STANDARD	STANDARD	SYNTHETIC GRASS PROS MARCO GORTANA 214 577 3082	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3 3.0"
HOICE	LIMESTONE BLOCK, LOCATE PER PLAN. PROVIDE	8.M	STEEL PIREPLACE BASE BOX	BRONZE OR BLACK (TO MATCH	PAINTED	CONTRACTOR'S CHOICE	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3.3.07
	PHOTOS OF ACTUAL SLABS FOR APPROVAL PRIOR TO PURCHASING, EXPOSED WEDGE HOLES ON PERIMETER EDGES.	M.9	WOOF FIBER ENGINEERED WOOD FIBER MULCH	ARCHITECTURE) NATURAL	NATURAL	DOG-ON-IT-PARKS.COM	OR APPRIVED EQUAL, INSTALL PER MANUFACTUER'S SPECIFICATIONS

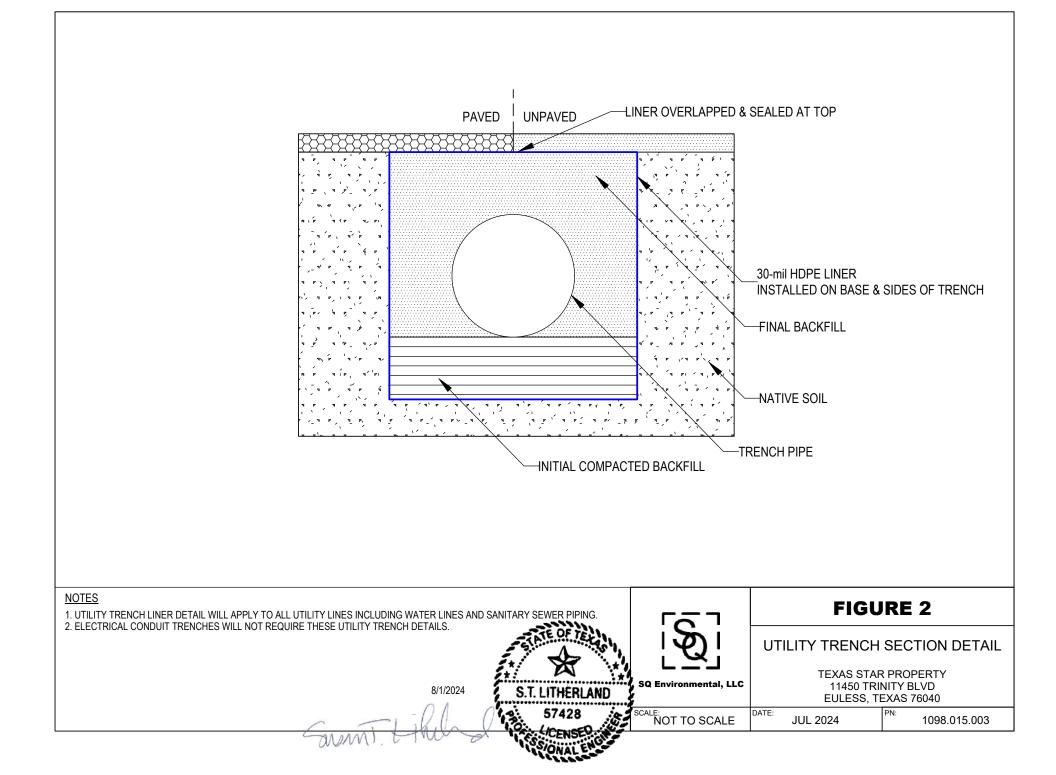
	1990 (1990) A A K-1902 (1990)				
PL.1	WATERLINE TILE WOGA 2042YZV PORCELAIN SIZE: 2X24	MID WARM GREY	STANDARD	KNOX TILE DONNA MOLENDON 214.761.5659	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FUL COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO SUBMIT SAMPLE TO L.A. FOR APPROVAL
PL.2	WATERLINE DEPTH MARKERS CUSTOM MOGAIC 1X1 SERIES: FRESH	FIELD COLOR: WHITE GLOSSY 1X1 SCRIPT COLOR: BLACK GLOSSY	STANDARD	KNOX TILE DONNA MCLENDON 214.761.5670	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FUL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBWIT SAMPLE TO L.A. FOR APPROVAL
PL3	SELINEARTOR/ BENCH LINE RESH BLACK SIZE: 1X1	BLACK	ANTI-SLIP	KNOX TILE DONNA MOLENDON 214.761.5671	CONTRACTOR TO PROVIDE QUANTITIN TO INSURE FUL COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO SUBMIT SAMPLE TO L.A. FOR APPROVAL
PL.4	MAMOND BRITE EXPOSED AGGREGATE POOL FINISH	FRENCH GREAY	STANDARD	SGM 809.641.0247	EXPOSED AGGREGATE POOL FINISH
PL.5	JUEDERS UMESTONE POOL COPING, 2"THICK	CHARCOAL	SAWN TOP & BCTTON & 4 SIDES	CONTRACORS CHOICE	CONTRACTOR TO PROVIDE SAMPLES OF COLOR TO LANDSCAPE ARCHITEC FOR APPROVAL PRIOR TO PURCHASING
PL.6	POOL HANDRAIL, 1 1/2" DIA.	STAINLESS STEEL	BRUSHED #4	CONTRACTOR'S CHOICE	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FUL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBMT SAMPLE TO LA FOR APPROVAL
PL.8	2' DIAMETER CANNON SCUPPER, ROUND ESCUTCHEON PLATE	STAINLESS STEEL	POUSHED	BCBE WATER & FIRE FEATURE, BCBEWATERANDFIRE.CDM	OR APPRIVED EQUAL, INSTALL PER MANUFACTURYS SPECIFICATIONS, CONTRACTOR TO PROVIDE SUBMIT FOR APPROVAL BY OWNER AND LANDSCAPE ARCHITE
RAIL	ING				
R.1	STEPS HANDRAIL 1 1/2" DIA	TO MATCH ARCHITECTURAL RAILING	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET 133.02
SITE	FURNITURE	post and			
	TRASH RECEPTACLE, DUMOR WODEL# 272-32-80	TEXTURED CHARCOAL		DLMOR 801.558.4018	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS
	SKE RACK DUMOR MODEL # 290-00/S-1	TEXTURED CHARCOAL		DLMOR 800.598.4019	SURFACED MOUNTED. LOCATE PER PLAN, INSTALL PE MANUFACTUER'S SPECIFICATIONS
SF.3	PET STATION MODEL# 1003-L	GREEN	POWERCOATED	DOGIPOT PRODCUTS 80(354.7851	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS
SF.4	TABLE 299-60H\$ FREESTANDING 2 NENCHES	TEXTURED CHARCOAL	POWERCOATED	DLMOR 800.598.4019	LOCATE PER PLAN. INSTALL PER MANUFACTURE'S SPECIFICATIONS
SF.5	CONCRETE CORN HOLE BOARDS	GREY	SMOOTH	STONE AGE CONCRETE TABLE TENNIS 541.671.6318	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS
SF.6	20G WATERING STATION	SATIN FINISH	STAINLESS STEEL	DOG-ON-IT-PARKS.COM	OR APPROVED EQUAL, LÓCATE PER PLAN, INSTALL PE MANUFACTUER'S SPECIFICATIONS
SF.7	WOOD ARC HAMMOCK STAND - SREEDAN LARCH	WOOD	STANDARD	CARIBBEANHAMMOCKS.COM	
SF.8	12"L X 18 W X 24"H METAL BOX PLANTER: 85 \$721824	F&F DARK BRONZE MATTE	POWDERCOATED	FORMAND FIBER.COM	OR APPROVED EDUAL, LOCATE PER PLAN, REF. TO DETAIL ON SHEET L3.3.01
STOP					
5.1	LEUDER LINESTONE COUNTER TOP 114" MIN, THICKNESS	CHARCOAL	SAWN WITH EASED EDGES ON ALL SIDES	CONTRACTOR'S CHOICE	
5.2	EUDER LINESTONE BLOCK 90° X 18° X 14°	CHARCOAL	REF. DETAIL ON SHEET L3.3.01	CONTRACTOR'S CHOICE	LIMESTONE BLOCK, LOCATE PER PLAN, PROVIDE PHOTOS OF ACTUAL SLABS FOR APPROVAL PRIOR TO PURCHASING, EXPOSED WEDGE HOLES ON PERMETE EDGES

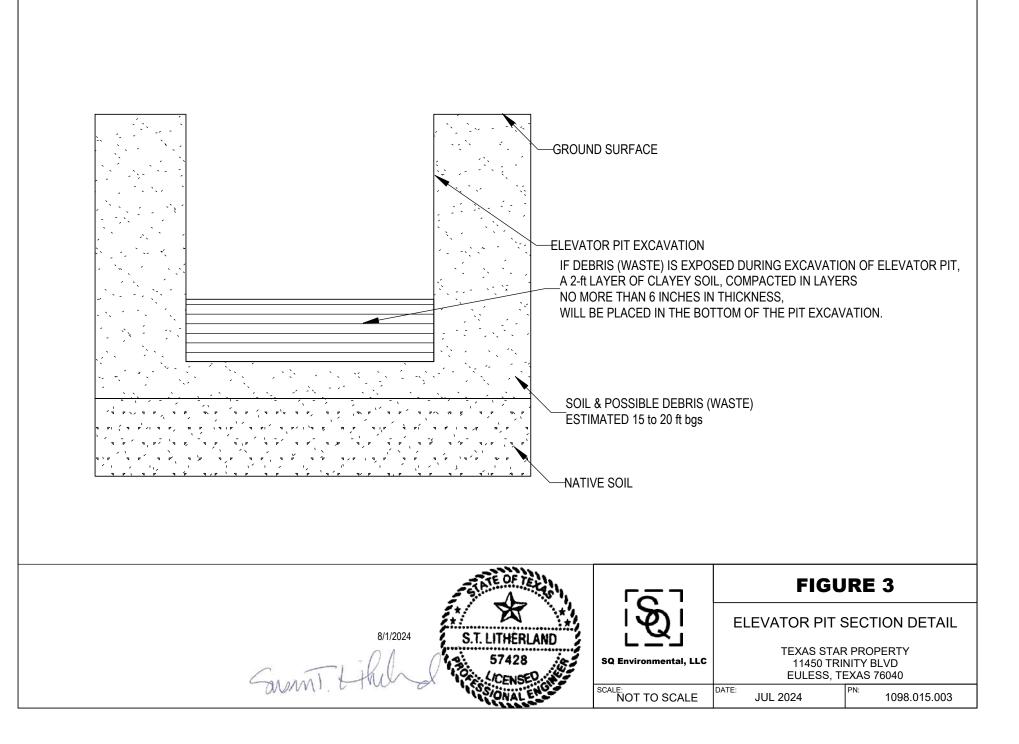
POOL

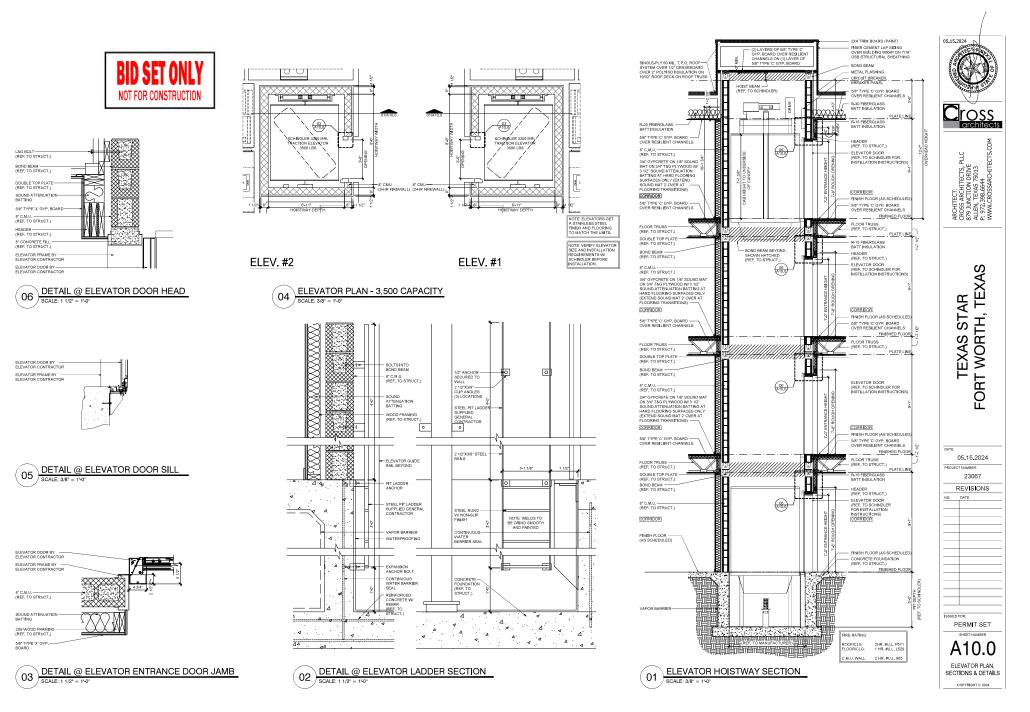
Landscape Architecture & Urban Design











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# 12 STRUCTURES GAS MONITORING, SITE OPERATING, SAFETY & EVACUATION PLAN

A VMS (provided in **Attachment 9**) designed in accordance with 30 TAC 330.957(m) will be installed during development and construction of the four buildings on the subject property, which will direct any vapors (methane or other) out from beneath the buildings, and the vapors monitored to verify that there is no vapor accumulation beneath the buildings. Methane sensors will also be located within the buildings. The Methane Monitoring Plan provided in **Attachment 12** includes the requirements of a Structures Gas Monitoring Plan (SGMP), Site Operating Plan, and Safety and Evacuation Plan related to the VMS and subject property.

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# ATTACHMENT 12 METHANE MONITORING PLAN

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#### **STRUCTURES GAS MONITORING PLAN**

This SGMP fulfills the requirements of 30 TAC §330.957(t). It will be part of the operating record for the development permit. A copy of this information will be maintained onsite throughout the life of the facility. The SGMP includes a VMS with an impermeable barrier installed below the structures with vent risers located adjacent to the buildings. This system will allow any vapors (methane or other) that migrate though the soil to the area beneath the structures to be vented outside of the structure, as shown in **Section 9**. A monitoring system will be installed within the VMS piping network beneath the buildings that will include controller units and remote sensors that can detect methane and other explosive gases at concentrations below 1% by volume (BV) or 20% of the Lower Explosive Limit (LEL). This system will have audible and visual alarms that will trigger if methane concentrations exceed 1% beneath a building. The monitoring system is intended to confirm that the concentration of vapor (methane or other) beneath the facility structures does not exceed 20% of the LEL. Methane sensors will also be installed within the buildings, and sample ports for field monitoring will be installed for the aggregate layer.

#### Facility Characteristics and Potential Migration Pathways (§330.957(t)(2)(A))

The nature and age of the incidental debris that has been found in the area of the planned structures is discussed in detail in **Section 2**. Based on soil vapor sample results described in **Section 10**, elevated methane concentrations appear to be confined to the deeper gravel zone below 10 ft from the surface, and methane does not appear to be migrating vertically to shallow soils or the surface due to the higher clay content in the upper 10 ft of soil across the property. Although there is no true "cap" on the property, the upper 10 ft of clayey soil appears to minimize the vertical migration of methane gas. As part of the property development, any excavations will not exceed a depth of 10 ft bgs (and likely no deeper than 7 ft bgs), leaving at least 2 ft of the overlying clayey soil at the subject property undisturbed.

The planned multi-family residential development will consist of a four-story building, a three-story building, and two two-story buildings. The planned facility layout is included in **Section 14**. The buildings will be constructed on a reinforced concrete slab foundation. The VMS, which will consist of a geotextile filter fabric, a 12-inch-thick permeable layer of aggregate with a network of vent pipes, and covered with a sealed plastic barrier, will be installed beneath each of the buildings and beneath any areas with an ignition source. The planned residential units will be leased and occupied by residents and the duration of occupation could be up to 24 hours. The foundation design and VMS will minimize the potential for any vapors in the underlaying soil to enter the buildings. Potential ignition sources include water heaters, heating, ventilation, and air conditioning (HVAC) units, and static or sparking associated with equipment. As has been discussed, monitoring of the vapors within the VMS piping network will be performed so that vapors beneath the buildings will be maintained at 20% or less of the LEL, to eliminate the potential for explosive conditions within or near the building. Methane sensors will also be installed within the buildings.

#### Building Design Characteristics Related to Gas Accumulation Prevention (§330.957(t)(2)(B))

As described in **Section 9**, the design of the residential structures includes several features that will minimize the potential for the accumulation of methane gas within the building. The addition of an engineered fill layer above the soil will provide additional separation and protection from potential methane gas migration. The vapor barrier and ventilation system design will be installed beneath the foundation of the ground floor residential areas and any areas where there could be an ignition source. The system will consist of a granular layer up to 12-inches in thickness, which will act as bedding for a network of slotted vent pipes. The vent pipes will be extended through any internal beams to allow venting of the area where vapors could accumulate. The pipes will be extended outside of the structure to allow venting. The granular layer and vent pipe system will be covered with a plastic layer, which will be sealed at overlaps, and all penetrations. A geotextile filter fabric will be installed beneath the granular layer and above the structural

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fill. As part of the installation oversight, smoke tests will be performed on the system to verify that it is property sealed, prior to pouring of the concrete foundations. Some or all of the vent pipes will be fitted with fans so that active venting can be performed if passive venting is not sufficient to prevent the buildup of vapors under the building. The additional engineered fill, vapor barrier, and ventilation system provide the primary systems to prevent vapor migration into the structure and minimize the potential for methane gas accumulation beneath the buildings. The sub-slab gas collection system will be under negative pressure from an electric exhaust fan if and when needed. Methane is lighter than air and will dissipate upward and away from vents on each building.

The vapor monitoring system within the VMS piping network will provide continuous monitoring for methane to provide early detection and warning in the event of methane gas accumulation beneath the buildings. In addition to the monitoring equipment in the VMS piping, methane monitoring will be conducted continuously using methane sensors within the buildings to verify that methane is not entering the buildings in concentrations above residential risk-based levels. In addition, the landfill gas collection system will have ports for sampling the aggregate layer beneath the slab. Proposed locations of the methane gas sensors are provided in the VMS design plan included in **Section 9**.

# Gas Collection and Ventilation System Description (§330.957(t)(2)(C))

The VMS will consist of an impermeable methane barrier layer, aggregate layer, and geotextile filter fabric, as described in **Section 9**. The barrier and ventilation layer will be installed beneath the slabs of the ground floor of the residential areas and portions of the buildings where there could potentially be a source of ignition.

# Gas Monitoring Equipment (§330.957(t)(2)(D))

The vapor monitoring system will include a total of five controllers and five sensors (a controller and sensor for each building with two in Building A) in the VMS piping system. Landfill gas will be monitored by three different sensors. Within the occupied spaces, a permanently mounted Family Safety Products, Inc. Safety Siren Pro Series methane detector (Model No. HS80504), or similar, will be used. On the sub-slab landfill gas collection system, a permanently mounted RKI Instruments M2A gas sensor, or similar, will monitor the exhaust gas stream. The exhaust fan will be a FanTech HP 190 or similar. Locations of sensors are provided in **Attachment 9**. For port landfill gas measurements, a Landtec GEM 5000 portable landfill gas detector, or similar, will be used. The VMS design plan included in **Section 9** provides a plan for the location of the vapor monitoring equipment. Specification sheets for the monitoring equipment will be provided following finalization of the VMS design. Calibration will be performed at least twice annually or every six months.

### Implementation Schedule for Monitoring Equipment (§330.957(t)(2)(E))

Monitoring equipment will be installed and tested prior to completion of construction of the proposed residential structures. The monitoring equipment will be in continuous operation at least one week prior to buildings being occupied.

### Sampling and Analysis Plan (§330.957(t)(2)(F))

Indoor air samples will be initially collected prior to residential occupancy. This will be a one-time sampling event to characterize the indoor air. Five samples will be collected, one from each building with two from Building A. These samples will be collected using evacuated "Summa" canisters fitted with regulators that will collect the sample over a 24-hour period. The selected analytical laboratory will provide canisters and chain of custody forms for the sampling activities.

The sampling method to collect the indoor air samples includes using an evacuated 1.4-liter Summa canister equipped with a flow controller calibrated to draw in 1.4-liters of ambient indoor air over an

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approximate 24-hour time period. The main valve on the Summa canister will be opened to initiate the sampling and then closed after approximately 24 hours has elapsed, while observing the gauge on the flow controller to ensure the Summa canister does not equilibrate to ambient conditions.

The ambient indoor air samples collected from the residential buildings will be analyzed for methane by EPA method TO-3. The samples will be shipped to an accredited laboratory offsite that will perform the approved testing.

Laboratory QA/QC procedures will be provided by the laboratory chosen to perform the analysis and will be included with the test results.

### Analysis Of Landfill Gas Samples (§330.957(t)(2)(G))

Two landfill gas samples (SV-10R and SV-11R) were collected at 12 ft bgs from previous vapor sample locations SV-10 and SV-11 on 12 July 2024. The samples were analyzed for methane, carbon monoxide, hydrogen sulfide, mercaptans, and ammonia by ALS Environmental in Simi Valley, California. Volatile organic compounds (VOCs) were analyzed during previous sampling events. Water vapor was measured in the field. Laboratory results are provided at the end of this attachment. The analytical results of constituents reported above the laboratory method detection limit (MDL) are summarized below.

Analyte	SV-10R	SV-11R	Air RBEL / VISL (Res)
Hydrogen sulfide	0.0088 mg/m <sup>3</sup>	ND (<0.0036 mg/m <sup>3</sup> )	0.0695 mg/m <sup>3</sup>
Carbonyl sulfide	0.011 mg/m <sup>3</sup>	0.011 mg/m <sup>3</sup>	3.48 mg/m <sup>3</sup>
Carbon disulfide	0.0062 mg/m <sup>3</sup>	0.010 mg/m <sup>3</sup>	0.73 mg/m <sup>3</sup>
Ammonia	0.22 mg/m <sup>3</sup>	0.11 mg/m <sup>3</sup>	0.33 mg/m <sup>3</sup>
Water vapor	21 ppm	21 ppm	
Carbon dioxide	7.65%	0.796%	
Oxygen	15.2%	21.5%	
Nitrogen	77.1%	77.7%	
Methane (4/26/2023)	11%	12%	10%
VOCs	ND	ND	

Based on these landfill gas samples, the landfill gases do not contain significant concentrations of mercaptans, hydrogen sulfide, carbon monoxide, ammonia, or VOCs. Carbon dioxide was detected in the landfill gas sample from SV-10R, and methane has been detected in other gas monitoring probes in the past. Carbon dioxide and methane will be monitored guarterly from the sample ports.

## Sampling Plan and Procedures

During each landfill gas monitoring event, the integrity of each monitoring port or probe will be inspected and recorded on the Landfill Gas Monitoring System Data Sheets included in this attachment. If any

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monitoring port or probe is observed to be damaged, the port or probe will be repaired. If irreparable, the damaged port or probe will be decommissioned and replaced with a new monitoring port or probe.

The landfill gas collection system under each building will be continuously monitored for methane concentration by permanently installed sensors. In addition, field monitoring will be periodically performed for the ports on the landfill gas collection system under each building. This period field monitoring will include measurements of for methane, carbon dioxide, and oxygen as a check on the permanently installed sensors. The frequency of the field monitoring of the ports beneath the buildings will occur quarterly for the first year, and then annually for the following three years.

For the field monitoring, a CES-Landtec GEM 5000 Landfill Gas Monitor (GEM 5000), or similar, will be used to measure the methane and carbon dioxide concentrations at each port. This meter provides the readings of methane and carbon dioxide (and oxygen) as a percentage by volume in air.

The field monitoring of the landfill gas collection system will be conducted on a quarterly basis for the first year and then annually for the following three years. The field monitoring events will be conducted in accordance with the following procedure:

- 1. Perform equipment checks and calibration tests.
- 2. Inspect the sampling location. The inspection is to include the following:
  - a. Verify that the location is accessible as necessary for monitoring.
  - b. Verify that any surface protective devices are in place and are in good condition, and
  - c. Verify that the label is in place and clearly readable.
- 3. Open any protective cover.
- 4. Turn on the CES-Landtec GEM 5000, or similar, meter and allow for the meter to adjust to the ambient air.
- 5. Connect the GEM 5000, or similar, meter to the quick-connector or port.
- 6. Open the valve on the port.
- 7. Turn on the GEM 5000 pump, or similar, and allow for the meter to purge the port.
- 8. Allow the meter to purge the trapped air for at least 30 seconds to get an accurate reading.
- 9. Record the observed methane, carbon dioxide, and oxygen readings.
- 10. Record the ambient barometric pressure from the GEM 5000, or similar, meter.
- 11. Disconnect the GEM 5000, or similar, methane meter from the quick-connector or port.
- 12. Close the port and reinstall any protective cover.

The above procedure will be repeated to obtain readings at each port location. All readings and inspection results will be recorded on the Landfill Gas Monitoring System Data Sheets with any needed maintenance and/or repairs noted. All results will be placed in the operating record of the facility.

# SITE OPERATING PLAN

The proposed residential structures will consist of a four-story building, a three-story building, and two twostory buildings. The buildings will be a wood or metal framed structure and be constructed over reinforced concrete structural slabs. The VMS beneath each building will be equipped with methane sensors that will produce both an audible and visual alarm if concentrations of methane exceed 1% BV or 20% of the LEL. Methane sensors will also be installed within the buildings. Other than residential units, other spaces in the four buildings include offices, storage closets, maintenance rooms, and equipment rooms.

In accordance with §330.958, construction plans and specifications of the proposed residential structures will be prepared and maintained onsite during construction. After completion of construction, one set of asbuilt construction plans and specifications will be maintained at the permitted development. Plans maintained at the development be made available for inspection by executive director representatives.

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This SGMP, Site Operating Plan, and Safety and Evacuation Plan will be implemented and maintained in accordance with the requirements of §330.961(a) through (h) by an environmental professional or person(s) trained by an environmental professional. These documents will be considered a part of the operating record of the development and a copy will be maintained onsite in an office at the development for the life of the structure to aid in the implementation and maintenance of the SGMP, Site Operating Plan, and Safety and Evacuation Plan. Any deviation from the development permit and incorporated plans or other related documents associated with the development permit will seek approval of the executive director. The development permit holder will notify the executive director, and any local pollution agency with jurisdiction that has requested to be notified, of any incident involving the facility relative to the development permit and provisions for the remediation of the incident.

The owner or lessee of the development will provide equipment for monitoring on-site structures. Monitoring of onsite structures will include permanently installed monitoring probes and continuous monitoring systems. Structures located on top of the waste area shall be monitored on a continuous basis, and monitoring equipment shall be designed to trigger an audible alarm if the volumetric concentration of methane in the sampled air is greater than 1% within the venting pipe or permeable layer, and/or inside the structure. Areas of the structure where gas may accumulate will be monitored. Gas monitoring and control systems will be modified as needed to reflect modifications to the structure.

All sampling results will be placed in the operating record of the facility and be made available for inspection by the executive director, and any local pollution agency with jurisdiction that has requested to be notified. If methane gas levels exceeding the limits are detected, the owner, operator, or lessee shall notify the executive director and take action.

The ponding of water over waste in the closed MSW landfill will be prevented. Ponded water that occurs on a closed MSW landfill unit will be eliminated as quickly as possible.

Surface drainage in and around the structure will be controlled to minimize surface water running onto, into, and off the closed MSW landfill.

All conduits intended for the transport or carrying of fluids over or within the closed MSW landfill will be double-containment. Or, a high-density polyethylene (HDPE) 30-mil sealed barrier will be installed along the bottom, sides, and extending approximately 1 ft on top of the trench and sealed. The trench will then be filled with clean, compacted backfill on the bottom, clean backfill on all sides, and a on the sides and bottom of the trench

The owner or lessee shall promptly record and retain in the operating record the following information:

- all results from gas monitoring and any remediation plans pertaining to explosive and other gases;
- all unit design documentation for the placement of gas monitoring systems and leachate or gas condensate removal or disposal related to the closed MSW landfill unit;
- copies of all correspondence and responses relating to the development permit;
- all documents relating to the operation and maintenance of the building, facility, or monitoring systems as they relate to the development permit; and
- any other document(s) as specified by the approved development permit or by the executive director.

The owner, operator, or lessee shall provide written notification to the executive director, and any local pollution agency with jurisdiction that has requested to be notified, for each occurrence that documents listed in subsection (h) of this section are placed into or added to the operating record. All information contained in the operating record shall be furnished upon request to the executive director and shall be made available at all reasonable times for inspection by the executive director or his representative.

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The following equipment is expected to be used at the structures and a maintenance schedule for this equipment is provided below.

Description	Procedures and Function	Maintenance Schedule
Offices	Daily office use	As-needed office updates
Cleaning/maintenance	General	As-needed
equipment	housekeeping/maintenance	maintenance/cleaning
HVAC	Interior climate control	Semi-annually
Electric water heaters	Hot water control	Annually
Lighting	Interior lighting control	As-needed replacement
IT/Network equipment	Telephone, internet, cameras, etc.	As-needed repair/replacement

The equipment list will be reviewed and updated as needed. In addition, two of the structures will have enclosed garages for vehicles.

# SAFETY AND EVACUATION PLAN

The residential structures will consist of two to four story buildings with offices, residential spaces, community spaces, restrooms, and garages on two of the buildings. As previously discussed, the VMS beneath each building will be equipped with methane sensors that will produce both an audible and visual alarm if concentrations of methane beneath the building exceeds 1% BV or 20% of the LEL.

By maintaining the potential concentration of methane beneath the building at 1% or 20% of the LEL, methane cannot accumulate to these levels in the building. Typically, "attenuation" levels through a building slab are 0.03 meaning that even as a worst case, the methane concentrations in the building cannot exceed 33% of 20% of the LEL since the "trigger" will be the methane concentration beneath the building, and not in the building. Methane will also be installed within the buildings and will be equipped with methane monitors with audible alarms. In the event that the methane monitors within the VMS detect elevated levels of methane, the VMS vent fans will immediately be turned on (if they were not already running) and monitoring at the sample ports will be performed to verify that the concentrations within the buildings are below the threshold levels.

Building occupants will be notified that the building is located over methane gas, and that controls are in place to minimize the potential danger posed by the methane gas. In the event that the methane monitors inside the building detect elevated levels of methane, alarms will be triggered, and residents will evacuate the building and only re-enter when conditions are safe. Each living space will be equipped with a graphic evacuation plan map directing occupants where to go in the event of an alarm including a rally point and contact phone numbers.

REV3 20240806

# LANDFILL GAS SAMPLE PORT MONITORING DATA SHEET

SAMPLE PORT LOCATION ID	SAMPLER NAME	DATE	TIME	METHANE (%)	CARBON DIOXIDE (%)	OXYGEN (%)	OTHER
NOTES (COI	NDITION/DAM	AGE):					
NOTES (COI	NDITION/DAM	AGE):		·			
NOTES (COI	NDITION/DAM	AGE):					
NOTES (COI	NDITION/DAM	AGE):					



# LABORATORY REPORT

July 22, 2024

Sam Enis SQ Environmental, LLC PO Box 1991 Austin, TX 78767

# RE: TX Star, Euless / 1098.015.003

Dear Sam:

Enclosed are the results of the samples submitted to our laboratory on July 15, 2024. For your reference, these analyses have been assigned our service request number P2402855.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at <u>www.alsglobal.com</u>. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

ALS | Environmental

Sue Anderson Project Manager



Client: SQ Environmental, LLC Project: TX Star, Euless / 1098.015.003 Service Request No: P2402855

# CASE NARRATIVE

The samples were received intact under chain of custody on July 15, 2024 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

#### Fixed Gases Analysis

The samples were analyzed for fixed gases (hydrogen, oxygen, nitrogen, carbon monoxide, methane and carbon dioxide) according to modified EPA Method 3C (single injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD). This procedure is described in laboratory SOP VOA-EPA3C. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not included in the NELAP accreditation.

#### Sulfur Analysis

The samples were also analyzed for twenty sulfur compounds per ASTM D 5504-20 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



# CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	https://dec.alaska.gov/spar/csp/lab-approval/list-of-approved-labs	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure- certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental- laboratories/index.html	E871020
Louisiana DEQ (NELAP)	https://internet.deq.louisiana.gov/portal/divisions/lelap/accredited- laboratories	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental- health/dwp/professionals/labCert.shtm	2022028
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	006-999-456
New Jersey DEP (NELAP)	https://dep.nj.gov/dsr/oqa/certified-laboratories/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oklahoma DEQ (NELAP)	labaccreditation.deq.ok.gov/labaccreditation/	2207
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryA ccreditation/Pages/index.aspx	4068-012
Pennsylvania DEP	hhttp://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory- Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413- 23-14
Utah DOH (NELAP)	https://uphl.utah.gov/certifications/environmental-laboratory-certification/	CA016272023 -15
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at <u>www.alsglobal.com</u>, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

# Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. <u>P402855</u> and laboratory batch no(s). <u>GC38071724 & GC13071624</u> consists of:

"This signature page, the laboratory review checklist, and the following reportable data:

**R1** - Field chain-of-custody documentation;

- R2 Sample identification cross-reference;
- **R3** Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
    - b. dilution factors,
    - c. preparation methods,
    - d. cleanup methods, and
    - e. if required for the project, tentatively identified compounds (TICs).
- **R4** Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

- a. LCS spiking amounts,
- b. Calculated %R for each analyte, and
- c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a. Samples associated with the MS/MSD clearly identified,
- b. MS/MSD spiking amounts,
- c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d. Calculated %Rs and relative percent differences (RPDs), and
- e. The laboratory's MS/MSD QC limits
- **R8** Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and
  - c. The laboratory's QC limits for analytical duplicates.

 $\boxtimes$  R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all

problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

**Check, if applicable:** [] This laboratory meets an exception under 30 TAC §25.6 and was last inspection by [] TCEQ or [] \_\_\_\_\_\_ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (printed)	<u>Date</u>
Sue Anderson	Jul Luder	Project Manager	07/22/2024

# Laboratory Review Checklist: Reportable Data - Page 2 of 4

-			Date: 07/22/2024					
•			atory Job Number: P2402855					
Reviewe		Sue Anderson Prep E	Batch Number(s): GC380717	24 & G0	C13071	624		
#1	A <sup>2</sup>	Description		Yes	No	NA <sup>3</sup>	NR⁴	ER#
R1	0	Chain-of-custody (C-O-C)						
		Did samples meet the laboratory's stand	ard conditions of sample	~				
		acceptability upon receipt? Were all departures from standard conditional	tions described in on	-				
		exception report?	uons described in an					
R2	0	Sample and quality control (QC) Ident	ification					-
		Are all field sample ID numbers cross-rel	ferenced to the laboratory					
		ID numbers?						
		Are all laboratory ID numbers cross-refer QC data?	renced to the corresponding	~				
R3	0	Test reports						••
		Were all samples prepared and analyzed	I within holding times?	~		<b> </b>		
		Other than those results < MQL, were all	other raw values	/		<b>*</b>		
		bracketed by calibration standards? Were calculations checked by a peer or s	supervisor?					
		Were all analyte identifications checked I						
		Were sample detection limits reported fo	•	~				
		Were all results for soil and sediment sar	· · · · · · · · · · · · · · · · · · ·					
		weight basis?						
		Were % moisture (or solids) reported for samples?	all soil and sediment			/		
		Were bulk soils/solids samples for volatile methanol per SW846 Method 5035?	e analysis extracted with			$\checkmark$		
		If required for the project, are TICs report	ted?			$\checkmark$		
R4	0	Surrogate recovery data				~		1
	····	Were surrogates added prior to extraction	n?					
		Were surrogate percent recoveries in all laboratory QC limits?	samples within the					
R5	01	Test reports/summary forms for blank	samples					
		Were appropriate type(s) of blanks analy	zed?					+
		Were blanks analyzed at the appropriate	frequency?	$\checkmark$				-
		Were method blanks taken through the e		/				1
		including preparation and, if applicable, of Were blank concentrations < MQL?	leanup procedures?	V				
R6	OI	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?	Sayler	14	V			
		Was each LCS taken through the entire a		-				1
		including prep and cleanup steps?						
		Were LCSs analyzed at the required freq	uency?					
		Were LCS (and LCSD, if applicable) %R: limits?	s within the laboratory QC					

	-		RC Date: 07/22/2024					
			_aboratory Job Number: P2402855	5				
Reviewe	er Name:	Sue Anderson F	Prep Batch Number(s): GC380717	24 & G(	C13071	624		
# <sup>1</sup>	A <sup>2</sup>	Description		Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER#
	F	Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		/				
Was the LCSD RPD within QC			ts?					
R7 OI		Matrix spike (MS) and matrix spil	ke duplicate (MSD) data					
	I	Were the project/method specified MSD?	analytes included in the MS and					
		Were MS/MSD analyzed at the app	propriate frequency?					
		Were MS (and MSD, if applicable) limits?	%Rs within the laboratory QC					
		Were MS/MSD RPDs within laborate	tory QC limits?					
<b>R8</b> OI	01	Analytical duplicate data						•
		Were appropriate analytical duplica	tes analyzed for each matrix?					
		Were analytical duplicates analyzed	d at the appropriate frequency?	$\overline{\mathbf{V}}$				
		Were RPDs or relative standard deviations within the laboratory QC limits?						
R9	0	Method quantitation limits (MQLs	5):			•		
	- <b></b> I	Are the MQLs for each method ana data package?	lyte included in the laboratory	~				
		Do the MQLs correspond to the cor zero calibration standard?	ncentration of the lowest non-	$\checkmark$				
		Are unadjusted MQLs and DCSs in package?	cluded in the laboratory data	$\checkmark$				
R10	OI	Other problems/anomalies						
		Are all known problems/anomalies/s LRC and ER?	special conditions noted in this	/				
		Was applicable and available techn minimize the matrix interference effe		$\checkmark$				
		Is the laboratory NELAC-accredited Accreditation Program for the analy associated with this laboratory data	tes, matrices and methods	/				
Items i 2. O = or	identified	by the letter "R" must be included in the by the letter "S" should be retained an alyses; I = inorganic analyses (and ge	he laboratory data package submit id made available upon request for	the app			-	• •

NA = Not applicable;
 NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

# Laboratory Review checklist: Supporting Data - Page 3 of 4

		me: ALS Environmental	LRC Date: 07/22/2024					
		TX Star, Euless	Laboratory Job Number: P2402855					
		ne: Sue Anderson	Prep Batch Number(s): GC38071724 & GC130		l No.	MA3		E0#5
#1	<b>A</b> <sup>2</sup>	Description		Yes	No	NA <sup>3</sup>	NR⁴	ER# <sup>5</sup>
S1	01	Initial calibration (ICAL)						
		limits?	ive response factors for each analyte within QC	~				
		Were percent RSDs or correlation	coefficient criteria met?					
		Was the number of standards reco	mmended in the method used for all analytes?					
		calculate the curve?	the lowest and highest standard used to					
		Are ICAL data available for all instr	uments used?		]			
		standard?	n verified using an appropriate second source	~	ĺ			
<b>S</b> 2	OI	calibration blank (CCB):	verification (ICCV and CCV) and continuing					
		Was the CCV analyzed at the mether	nod-required frequency?	$\checkmark$				
		Were percent differences for each	analyte within the method-required QC limits?	1				
		Was the ICAL curve verified for ear	ch analyte?					
		Was the absolute value of the anal	yte concentration in the inorganic CCB < MDL?		•			
<b>\$3</b> 0		Mass spectral tuning						
		Was the appropriate compound for	the method used for tuning?					+
		Were ion abundance data within th	e method-required QC limits?					
S4	0	Internal standards (IS)				$\checkmark$	<b></b>	
		Were IS area counts and retention	times within the method-required QC limits?					
S5	OI	Raw data (NELAC Section 5.5.10	)					
		Were the raw data (for example, cf analyst?	romatograms, spectral data) reviewed by an	$\checkmark$				
			integrations flagged on the raw data?				_	+
<b>S</b> 6	0	Dual column confirmation		1				+
·····		Did dual column confirmation result	Is meet the method-required QC?	- · · · · ·				
<b>S</b> 7	0	Tentatively identified compound	s (TICs)					+
	. 4	If TICs were requested, were the m checks?	ass spectra and TIC data subject to appropriate					
<b>S</b> 8	1	Interference Check Sample (ICS)	results					-
		Were percent recoveries within me	thod QC limits?					
S9	1	Serial dilutions, post digestion s	pikes, and method of standard additions				•	
	I	Were percent differences, recovering in the method?	es, and the linearity within the QC limits specified					
S10	01	Method detection limit (MDL) stu	dies					
		Was a MDL study performed for ea	ch reported analyte?		$\checkmark$			1
		Is the MDL either adjusted or supp	orted by the analysis of DCSs?	$\checkmark$				1
<u>S11</u>	01	Proficiency test reports						+
	<u> </u>	· · ·	acceptable on the applicable proficiency tests or	$\checkmark$				

Laboratory Na	ame: ALS Environmental	LRC Date: 07/22/2024					
Project Name	: TX Star, Euless	Laboratory Job Number: P2402855					
Reviewer Nar	ne: Sue Anderson	Prep Batch Number(s): GC38071724 & GC130	71624				
# <sup>1</sup> A <sup>2</sup>	Description		Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
S12 01	Standards documentation			· · ·			
I	Are all standards used in the analys appropriate sources?	es NIST-traceable or obtained from other		ŕ			
<b>\$13</b> OI	3 OI Compound/analyte identification procedures						
I	Are the procedures for compound/a	$\overline{\mathbf{V}}$					
<b>S14</b> OI	Demonstration of analyst competence	emonstration of analyst competency (DOC)					
	Was DOC conducted consistent with NELAC Chapter 5?						
	Is documentation of the analyst's co	$\overline{\mathbf{V}}$					
S15 OI	Verification/validation documenta	tion for methods (NELAC Chapter 5)	1				
I	Are all the methods used to generat where applicable?	V					
S16 OI	Laboratory standard operating pr	ocedures (SOPs)		1			
	Are laboratory SOPs current and or	file for each method performed	V				
1. Items ident	Laboratory standard operating pr Are laboratory SOPs current and or s identified by the letter "R" must be inc lified by the letter "S" should be retained		V the TF		-	-	ort(s)

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

# Laboratory Review Checklist: Exception Reports - Page 4 of 4

Labora	tory Name: ALS Environmental	LRC Date: 07/22/2024					
Project	t Name: TX Star, Euless	Laboratory Job Number: P2402855					
Review	ver Name: Sue Anderson	Prep Batch Number(s): <u>GC38071724 &amp; GC13071624</u>					
ER #1	DESCRIPTION						
R6	The LCS/DLCS for the sulfur analysis includes Hydrogen Sulfide, Carbonyl Sulfide and Methyl Mercaptan. All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan.						
1.		t be included in the laboratory data package submitted in the TRRP- by the letter "S" should be retained and made available upon request					
2.	O = organic analyses; I = inorganic a	analyses (and general chemistry, when applicable);					
3.	NA = Not applicable;						
4.	NR = Not reviewed;						
_	<ol> <li>ER# = Exception Report identification number (an Exception Report should be completed for an iter "NR" or "No" is checked).</li> </ol>						

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# ALS ENVIRONMENTAL

### DETAIL SUMMARY REPORT

Client:	SQ Environmen	tal, LLC						Service Request: P2402855
Project ID:	TX Star, Euless	/ 1098.01	5.003					
								Can
Date Received:	7/15/2024							
Time Received:	09:18							Gases Sulfur
								E Q
								Modified -
								11D odi
			Date	Time	Container	Pi1	Pf1	
Client Sample ID	Lab Code	Matrix	Collected	Collected	ID	(psig)	(psig)	3C AS
SV-10R	P2402855-001	Air	7/12/2024	10:15	1SS01668	-2.27	7.70	X X
SV-11R	P2402855-002	Air	7/12/2024	11:20	1SS01512	-1.47	7.83	X X

Att 12 Page 18, Rev3 8/6/24

# Air - Chain of Custody Record & Analytical Service Request



2655 Park Center Drive, Suite A Simi Valley, California 93065 Phone (805) 526-7161 Page  $\underline{\mathcal{I}}$  of  $\underline{\mathcal{I}}$ 

	Phone (805)	526-7161		Requested Turnaround Time in Business Days (Surcharges) please circle 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-S					dard	ALS Project	102855
						, , (,	, ,, ,		ALS Contact		
Company Name & Address (Reporting SQ Environmental PO BOX 1991	Information)			Project Name 77 57 Project Number	ar, Eules	5			Analysi	s Method	
Austin TX 78767 Project Manager	_			P.O. # / Billing Infor	10 <u>98-015-0</u> mation	203					
Sam Enis									Methanc,		Comments
Phone	Fax								co, '		e.g. Actual Preservative or
512-574-1199 Email Address for Result Reporting	I			Sampler (Print & Sign					· ·		specific instructions
Linai Abdess for Result Reporting					NA) CHHA	Deal	Mile		Hybrogen subicle,		
- Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume			
SU-10R	1	7/12/24	10:15		56500110	-27	- Z		V		
SV-11R	2	7/12/24	11:20		56500120		-2		V		
		THE P	11.00								
Report           Tier I - Results (Default if not specified)           Tier II (Results + QC Summaries)		(Results + QC a	& Calibration S	ummaries) Surcharge <u>//</u>	EDD required Ye	es / No Units:		Chain of INTACT	Custody Seal	(Circle) ABSENT	Project Requirements (MRLs, QAPP)
Relinquished by: (Signature)			Date; 07/12/24	Time:	Received by: (Signa	iture)	EX		Date:	Tlme:	
Relinquished by: (Signature)	7-1-5	6-1	Date:	Time:	Received by: (Signa	iture)	/	7-	Date:	Time: 6918	Cooler / Blank Temperature°C

# ALS Environmental Sample Acceptance Check Form

	: SQ Environme		~~r-	le moorpunite		Work order:	P2402855			
Project:	TX Star, Eules	ss / 1098.015.003								
Sample	(s) received on:	7/15/24		1	Date opened:	7/15/24	by:	ADAV	TD	
		<u>I</u> samples received by ALS. Thermal preservation and p		-	-	-			idication	of
compnance	of noncomorning.	Illerinar preservation and r	JII win only be e	valuated entities at a	lie request or and	Cheffe and or as re-	quirea by the means	<u>Yes</u>	<u>No</u>	<u>N/A</u>
1	Were sample (	containers properly m	narked with cl	ient sample ID	?			X		
2	Did sample co	ontainers arrive in goo	od condition?					X		
3	Were chain-of	f-custody papers used	and filled out	ι?				X		
4	Did sample co	ontainer labels and/or	tags agree wi	th custody pap	ers?			X		
5	Was sample v	olume received adequ	ate for analys	is?				X		
6	Are samples w	vithin specified holding	g times?					X		
7	Was proper te	mperature (thermal p	vreservation) c	of cooler at rece	eipt adhered to	o?				X
8	·	seals on outside of co Location of seal(s)?		.tainer?			Sealing Lid?			
	e	e and date included?								
9	Were seals inta Do container	act? rs have appropriate <b>pr</b>	•eservation, a	according to me	thod/SOP or	Client specified	1 information?			$\mathbf{X}$
		nt indication that the su		-						X
		ials checked for preser	1							X
	Does the clien	t/method/SOP require	that the analy	st check the sa	mple pH and	if necessary alt	er it?			X
10	Tubes:	Are the tubes capp	•		1 1					X
11	Badges:	Are the badges pro	operly capped	I and intact?						X
		Are dual bed badg	zes separated :	and individuall <sup>.</sup>	v capped and	intact?				X
12	Lab Notification	e		•						X
13	Client Notifica	ation: Client has been no	otified regarding	g HT exceedance	es and/or other	CoC discrepanci	es?			X
Lah	Sample ID	Containan	Doguinad	Dessived	Adjusted	VOA Hoodenov	Danai	int / Drog	ownettor	

Lab Sample ID	Container	Required	Received	Adjusted	VOA Headspace	_
	Description	pH *	pН	pH	(Presence/Absence)	Comments
P2402855-001.01	1.0 L Source Silonite Canister					
P2402855-002.01	1.0 L Source Silonite Canister					
P2402855-003.01	1.0 L Source Silonite Canister					Return Unused

Explain any discrepancies: (include lab sample ID numbers):

ND

7.65

0.18

0.18

# ALS ENVIRONMENTAL

# RESULTS OF ANALYSIS

Page 1 of 1

SQ Environmental, LLC SV-10R TX Star, Euless / 1098.015.003			5	
EPA Method 3C Modified		Date	Collected: 7/	12/24
Agilent 8890/GC38/TCD				
Stephanie Reynoso		Date	Analyzed: 7/	17/24
1.0 L Silonite Summa Canister		Volume(s)	Analyzed:	0.10 ml(s)
1SS01668				
Initial Pressure (psig): -2.27	Final Pressure (psig):	7.70		
		Cont	tainer Dilution	Factor: 1.80
Compound		Result	MRL	Data
		%, v/v	%, v/v	Qualifier
Hydrogen		ND	0.18	
Oxygen*		15.2	0.18	
Nitrogen		77.1	0.18	
Carbon Monoxide		ND	0.18	
	SV-10R TX Star, Euless / 1098.015.003 EPA Method 3C Modified Agilent 8890/GC38/TCD Stephanie Reynoso 1.0 L Silonite Summa Canister 1SS01668 Initial Pressure (psig): -2.27 Compound Hydrogen Oxygen* Nitrogen	SV-10R TX Star, Euless / 1098.015.003 EPA Method 3C Modified Agilent 8890/GC38/TCD Stephanie Reynoso 1.0 L Silonite Summa Canister 1SS01668 Initial Pressure (psig): -2.27 Final Pressure (psig): Compound Hydrogen Oxygen* Nitrogen	SV-10R     ALS       TX Star, Euless / 1098.015.003     ALS       EPA Method 3C Modified     Date       Agilent 8890/GC38/TCD     Date       Stephanie Reynoso     Date       1.0 L Silonite Summa Canister     Volume(s)       1SS01668     Trial Pressure (psig): -2.27       Initial Pressure (psig): -2.27     Final Pressure (psig): 7.70       Compound     Result %, v/v       Hydrogen     ND       Oxygen*     15.2       Nitrogen     77.1	SV-10R TX Star, Euless / 1098.015.003       ALS Project ID: P2 ALS Sample ID: P2 ALS Sample ID: P2 ALS Sample ID: P2 ALS Sample ID: P2 Date Collected: 7/ Date Received: 7/ Date Analyzed: 7/ Date Analyzed: 7/ Date Analyzed: 7/ Volume(s) Analyzed: 1 SS01668         Initial Pressure (psig): -2.27       Final Pressure (psig): 7.70         Compound       Result %, v/v       MRL %, v/v         Hydrogen       ND       0.18 0.18         Oxygen*       15.2       0.18         Nitrogen       77.1       0.18

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

\* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

74-82-8

124-38-9

Methane

**Carbon Dioxide** 

# ALS ENVIRONMENTAL

# RESULTS OF ANALYSIS

Page 1 of 1

Client: Client Sample ID: Client Project ID:	SQ Environmental, LLC SV-11R TX Star, Euless / 1098.015.003			Project ID: P2 Sample ID: P2	
Test Code: Instrument ID:	EPA Method 3C Modified Agilent 8890/GC38/TCD			e Collected: 7/ e Received: 7/	
Analyst:	Stephanie Reynoso		Date	e Analyzed: 7/	17/24
Sample Type: Test Notes:	1.0 L Silonite Summa Canister		Volume(s)	) Analyzed:	0.10 ml(s)
Container ID:	1SS01512				
	Initial Pressure (psig): -1.47	Final Pressure (psig):	7.83		
			Con	tainer Dilution	Factor: 1.70
CAS #	Compound		Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.17	(
7782-44-7	Oxygen*		21.5	0.17	
7727-37-9	Nitrogen		77.7	0.17	
630-08-0	Carbon Monoxide		ND	0.17	
74-82-8	Methane		ND	0.17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

**Carbon Dioxide** 

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

0.796

0.17

\* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

124-38-9

# ALS ENVIRONMENTAL

# RESULTS OF ANALYSIS

Page 1 of 1

Client: Client Sample ID: Client Project ID:	SQ Environmental, LLC Method Blank TX Star, Euless / 1098.015.003	ALS Project ID: P2402855 ALS Sample ID: P240717-MB				
Test Code:	EPA Method 3C Modified	Date Collected: NA				
Instrument ID:	Agilent 8890/GC38/TCD	Date Received: NA				
Analyst:	Stephanie Reynoso	Date Analyzed: 7/17/24				
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed: 0.10 ml(s)				
Test Notes:						

CAS #	Compound	Result	MRL	Data
		%, v/v	%, v/v	Qualifier
1333-74-0	Hydrogen	ND	0.10	
7782-44-7	Oxygen*	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
630-08-0	Carbon Monoxide	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

\* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

## LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client:	SQ Environmental, LLC	
<b>Client Sample ID:</b>	Duplicate Lab Control Sample	ALS Project ID: P2402855
<b>Client Project ID:</b>	TX Star, Euless / 1098.015.003	ALS Sample ID: P240717-DLCS
Test Code:	EPA Method 3C Modified	Date Collected: NA

Instrument ID:	Agilent 8890/GC38/TCD	Date Received: NA
Analyst:	Stephanie Reynoso	Date Analyzed: 7/17/24
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed: NA ml(s)
Test Notes:		

		Spike Amount	Re	sult			ALS			
CAS #	Compound	LCS / DLCS	LCS	DLCS	% Re	covery	Acceptance	RPD	RPD	Data
		ppmV	ppmV	ppmV	LCS	DLCS	Limits		Limit	Qualifier
1333-74-0	Hydrogen	39,700	42,900	43,600	108	110	96-117	2	5	
7782-44-7	Oxygen*	25,100	23,800	24,000	95	96	92-112	1	7	
7727-37-9	Nitrogen	49,800	47,000	47,500	94	95	89-113	1	7	
630-08-0	Carbon Monoxide	49,600	49,600	50,300	100	101	96-113	1.0	5	
74-82-8	Methane	40,000	39,100	39,700	<b>98</b>	99	95-111	1	5	
124-38-9	Carbon Dioxide	49,600	53,200	54,200	107	109	93-112	2	6	

\* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

77.75

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0.787

# ALS ENVIRONMENTAL

#### LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

Client: Client Sample ID: Client Project ID:	SQ Environmental, LLC SV-11R TX Star, Euless / 1098.015			ALS Project IE ALS Sample IE		002DUP	
Test Code:	EPA Method 3C Modified			Date Collected			
Instrument ID:	Agilent 8890/GC38/TCD			Date Received			
Analyst:	Stephanie Reynoso			Date Analyzed			
Sample Type:	1.0 L Silonite Summa Canis	ter	Volu	ume(s) Analyzed	l: 0.10	ml(s)	
Test Notes:							
Container ID:	1SS01512						
	Initial Pressure (psig):	-1.47	Final Pressure (psig):	7.83			
				Cor	ntainer Diluti	on Factor:	1.70
			Duplicate				
CAS #	Compound	Sample Result	-	Average	% RPD	RPD	Data
	1	%, v/v	%, v/v	8		Limit	Qualifier
1333-74-0	Hydrogen	ND	ND	-	-	5	
7782-44-7	Oxygen*	21.5	21.4	21.45	0.5	7	

77.8

0.778

ND

ND

ND = Compound was analyzed for, but not detected.

Nitrogen

Methane

Carbon Monoxide

Carbon Dioxide

7727-37-9

630-08-0

74-82-8

124-38-9

\* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

77.7

0.796

ND

ND

7

5

5

6

0.1

-

-

2

# RESULTS OF ANALYSIS

Page 1 of 1

Client:	SQ Environmental, LLC		
<b>Client Sample ID:</b>	SV-10R		ALS Project ID: P2402855
<b>Client Project ID:</b>	TX Star, Euless / 1098.015.003		ALS Sample ID: P2402855-001
Test Celler	A STM D 5504 20		Deta Callanta di 7/12/24
Test Code:	ASTM D 5504-20		Date Collected: 7/12/24
Instrument ID:	Agilent 6890A/GC13/SCD		Time Collected: 10:15
Analyst:	Gilbert Gutierrez		Date Received: 7/15/24
Sample Type:	1.0 L Silonite Summa Canister		Date Analyzed: 7/16/24
Test Notes:			Time Analyzed: 09:42
Container ID:	1SS01668		Volume(s) Analyzed: 1.0 ml(s)
	Initial Pressure (psig): -2.27	Final Pressure (psig):	7.70

Initial Pressure (psig): -2.27

Container Dilution Factor: 1.80

CAS #	Compound	Result μg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	8.8	13	3.8	6.3	9.0	2.7	J
463-58-1	Carbonyl Sulfide	11	22	8.4	4.6	9.0	3.4	J
74-93-1	Methyl Mercaptan	ND	18	7.1	ND	9.0	3.6	
75-08-1	Ethyl Mercaptan	ND	23	9.1	ND	9.0	3.6	
75-18-3	Dimethyl Sulfide	ND	23	9.1	ND	9.0	3.6	
75-15-0	Carbon Disulfide	6.2	14	5.6	2.0	4.5	1.8	J
75-33-2	Isopropyl Mercaptan	ND	28	11	ND	9.0	3.6	
75-66-1	tert-Butyl Mercaptan	ND	33	13	ND	9.0	3.6	
107-03-9	n-Propyl Mercaptan	ND	28	11	ND	9.0	3.6	
624-89-5	Ethyl Methyl Sulfide	ND	28	11	ND	9.0	3.6	
110-02-1	Thiophene	ND	31	12	ND	9.0	3.6	
513-44-0	Isobutyl Mercaptan	ND	33	13	ND	9.0	3.6	
352-93-2	Diethyl Sulfide	ND	33	13	ND	9.0	3.6	
109-79-5	n-Butyl Mercaptan	ND	33	13	ND	9.0	3.6	
624-92-0	Dimethyl Disulfide	ND	17	6.9	ND	4.5	1.8	
616-44-4	3-Methylthiophene	ND	36	14	ND	9.0	3.6	
110-01-0	Tetrahydrothiophene	ND	32	13	ND	9.0	3.6	
638-02-8	2,5-Dimethylthiophene	ND	41	17	ND	9.0	3.6	
872-55-9	2-Ethylthiophene	ND	41	17	ND	9.0	3.6	
110-81-6	Diethyl Disulfide	ND	22	18	ND	4.5	3.6	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

# RESULTS OF ANALYSIS

Page 1 of 1

Client:	SQ Environmental, LLC		
<b>Client Sample ID:</b>	SV-11R		ALS Project ID: P2402855
<b>Client Project ID:</b>	TX Star, Euless / 1098.015.003		ALS Sample ID: P2402855-002
Test Code:	ASTM D 5504-20		Date Collected: 7/12/24
Instrument ID:	Agilent 6890A/GC13/SCD		Time Collected: 11:20
Analyst:	Gilbert Gutierrez		Date Received: 7/15/24
Sample Type:	1.0 L Silonite Summa Canister		Date Analyzed: 7/16/24
Test Notes:			Time Analyzed: 10:01
Container ID:	1SS01512		Volume(s) Analyzed: 1.0 ml(s)
	Initial Pressure (psig): -1.47	Final Pressure (psig):	7.83

Container Dilution Factor: 1.70

CAS #	Compound	Result μg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	12	3.6	ND	8.5	2.6	
463-58-1	Carbonyl Sulfide	11	21	7.9	4.4	8.5	3.2	J
74-93-1	Methyl Mercaptan	ND	17	6.7	ND	8.5	3.4	
75-08-1	Ethyl Mercaptan	ND	22	8.6	ND	8.5	3.4	
75-18-3	Dimethyl Sulfide	ND	22	8.6	ND	8.5	3.4	
75-15-0	Carbon Disulfide	10	13	5.3	3.2	4.3	1.7	J
75-33-2	Isopropyl Mercaptan	ND	26	11	ND	8.5	3.4	
75-66-1	tert-Butyl Mercaptan	ND	31	13	ND	8.5	3.4	
107-03-9	n-Propyl Mercaptan	ND	26	11	ND	8.5	3.4	
624-89-5	Ethyl Methyl Sulfide	ND	26	11	ND	8.5	3.4	
110-02-1	Thiophene	ND	29	12	ND	8.5	3.4	
513-44-0	Isobutyl Mercaptan	ND	31	13	ND	8.5	3.4	
352-93-2	Diethyl Sulfide	ND	31	13	ND	8.5	3.4	
109-79-5	n-Butyl Mercaptan	ND	31	13	ND	8.5	3.4	
624-92-0	Dimethyl Disulfide	ND	16	6.5	ND	4.3	1.7	
616-44-4	3-Methylthiophene	ND	34	14	ND	8.5	3.4	
110-01-0	Tetrahydrothiophene	ND	31	12	ND	8.5	3.4	
638-02-8	2,5-Dimethylthiophene	ND	39	16	ND	8.5	3.4	
872-55-9	2-Ethylthiophene	ND	39	16	ND	8.5	3.4	
110-81-6	Diethyl Disulfide	ND	21	17	ND	4.3	3.4	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

# RESULTS OF ANALYSIS

Page 1 of 1

Client:	SQ Environmental, LLC
<b>Client Sample ID:</b>	Method Blank
<b>Client Project ID:</b>	TX Star, Euless / 1098.015.003

Test Code:	ASTM D 5504-20
Instrument ID:	Agilent 6890A/GC13/SCD
Analyst:	Gilbert Gutierrez
Sample Type:	1.0 L Silonite Summa Canister
Test Notes:	

ALS Project ID: P2402855 ALS Sample ID: P240716-MB

Date Collected: NA Time Collected: NA Date Received: NA Date Analyzed: 7/16/24 Time Analyzed: 09:14 Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	
75-33-2	Isopropyl Mercaptan	ND	16	6.2	ND	5.0	2.0	
75-66-1	tert-Butyl Mercaptan	ND	18	7.4	ND	5.0	2.0	
107-03-9	n-Propyl Mercaptan	ND	16	6.2	ND	5.0	2.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	6.2	ND	5.0	2.0	
110-02-1	Thiophene	ND	17	6.9	ND	5.0	2.0	
513-44-0	Isobutyl Mercaptan	ND	18	7.4	ND	5.0	2.0	
352-93-2	Diethyl Sulfide	ND	18	7.4	ND	5.0	2.0	
109-79-5	n-Butyl Mercaptan	ND	18	7.4	ND	5.0	2.0	
624-92-0	Dimethyl Disulfide	ND	9.6	3.9	ND	2.5	1.0	
616-44-4	3-Methylthiophene	ND	20	8.0	ND	5.0	2.0	
110-01-0	Tetrahydrothiophene	ND	18	7.2	ND	5.0	2.0	
638-02-8	2,5-Dimethylthiophene	ND	23	9.2	ND	5.0	2.0	
872-55-9	2-Ethylthiophene	ND	23	9.2	ND	5.0	2.0	
110-81-6	Diethyl Disulfide	ND	12	10	ND	2.5	2.0	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: SQ Environmental, LLC	
Client Sample ID: Duplicate Lab Control Sample	ALS Project ID: P2402855
Client Project ID: TX Star, Euless / 1098.015.003	ALS Sample ID: P240716-DLCS

Test Code:	ASTM D 5504-20	Date Collected: NA
Instrument ID:	Agilent 6890A/GC13/SCD	Date Received: NA
Analyst:	Gilbert Gutierrez	Date Analyzed: 7/16/24
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed: NA ml(s)
Test Notes:		

		Spike Amount	Re	sult			ALS			
CAS #	Compound	LCS / DLCS	LCS	DLCS	% Re	covery	Acceptance	RPD	RPD	Data
		ppbV	ppbV	ppbV	LCS	DLCS	Limits		Limit	Qualifier
7783-06-4	Hydrogen Sulfide	1,000	771	856	77	86	72-122	11	18	
463-58-1	Carbonyl Sulfide	1,000	820	837	82	84	72-121	2	17	
74-93-1	Methyl Mercaptan	1,000	1,050	1,120	105	112	74-127	6	18	

# ALS ENVIRONMENTAL

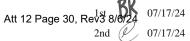
## LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

Client: Client Sample ID: Client Project ID:	SQ Environmental, LL SV-11R TX Star, Euless / 1098.01						Project ID: Sample ID:		
Test Code:	ASTM D 5504-20					Date	e Collected:	7/12/24	
Instrument ID:	Agilent 6890A/GC13/SCD					Time	e Collected:	11:20	
Analyst:	Gilbert Gutierrez					Dat	e Received:	7/15/24	
Sample Type:	1.0 L Silonite Summa Cani	ster				Date	e Analyzed:	7/16/24	
Test Notes:						Tim	e Analyzed:	10:21	
Container ID:	1SS01512					Volume(s) Analyzed: 1.0 ml(s)			
	Initial Pressure (psig):	-1.47		Final Pressu	are (psig):	7.83			
						Con	tainer Diluti	on Factor:	1.70
				Dupli	cate				
CAS #	Compound	Sample 1	Result	Sample	Result	Average	% RPD	RPD	Data
		$\mu g/m^3$	ppbV	µg/m³	ppbV	ppbV		Limit	Qualifier
7783-06-4	Hydrogen Sulfide	ND	ND	ND	ND	-	-	18	
463-58-1	Carbonyl Sulfide	10.9	4.44	9.48	3.86	4.15	14	17	J
74-93-1	Methyl Mercaptan	ND	ND	ND	ND	-	-	18	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.



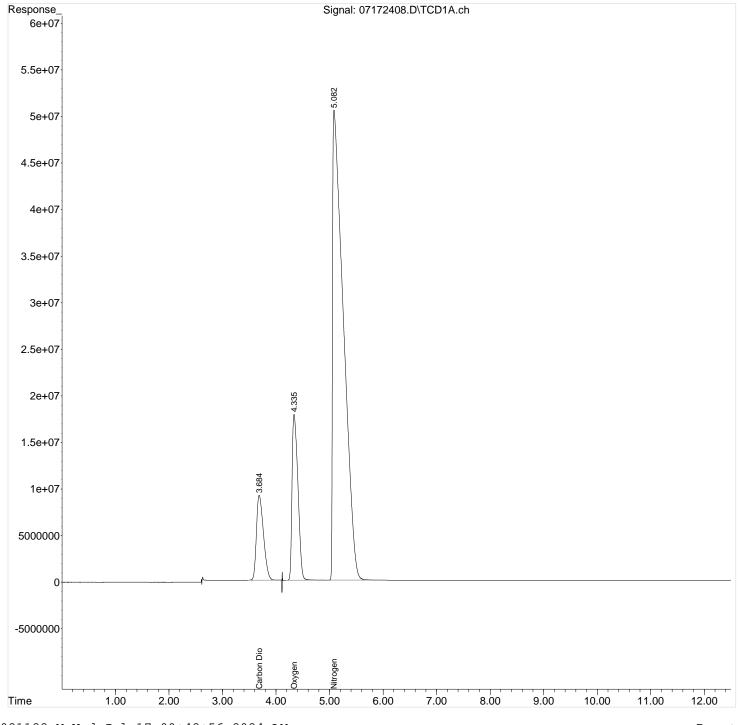
Data Path : I:\GC38\DATA\2024\_07\17\ Data File : 07172408.D Signal(s) : TCD1A.ch SR 07/17/24 Acq On : 17-Jul-2024, 09:22:44 Operator : SR/BK Sample : P2402855-001 Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 09:42:35 2024 Quant Method : I:\GC38\METHODS\C38021122.M  $ilde{\mathsf{Q}}$ uant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : R.T. Response Conc Units Compound \_\_\_\_\_ Target Compounds 0.000 1) Hydrogen 0 N.D. ppm 0.000 0 N.D. ppm 4.337 1354433776 102077.559 ppm 5.084f 7076803054 516315.193 ppm 2) Oxygen Nitrogen 3) 0 N.D. ppm 0 N.D. ppm Carbon Monoxide 0.000 4) N.D. ppm 5) Methane 0.000 3.685 832011899 51220.644 ppm Carbon Dioxide 6) \_\_\_\_\_ \_\_\_\_\_

(f)=RT Delta > 1/2 Window



Data File : 07172408.D Signal(s) : TCD1A.ch : 17-Jul-2024, 09:22:44 Acq On : SR/BK Operator : P2402855-001 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 09:42:35 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



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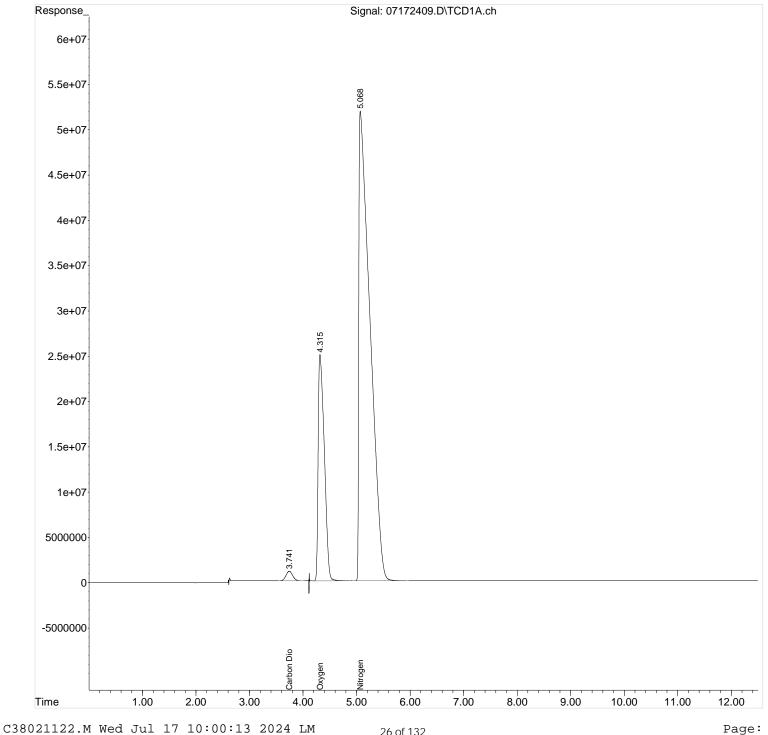
Data Path : I:\GC38\DATA\2024\_07\17\ Data File : 07172409.D SR 07/17/24 Signal(s) : TCD1A.ch Acq On : 17-Jul-2024, 09:36:53 Operator : SR/BK Sample : P2402855-002 Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 10:00:00 2024 Quant Method : I:\GC38\METHODS\C38021122.M  $ilde{\mathsf{Q}}$ uant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : Compound R.T. Response Conc Units \_\_\_\_\_ Target Compounds 0.000 1) Hydrogen 0 N.D. ppm 0.000 0 N.D. ppm 4.317 1994314979 150940.321 ppm 5.071f 7468352825 546562.446 ppm 2) Oxygen Nitrogen 3) 0 N.D. ppm 0 N.D. ppm Carbon Monoxide 0.000 4) N.D. ppm 5) Methane 0.000 3.741 90929045 Carbon Dioxide 5597.810 ppm 6) \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

(f)=RT Delta > 1/2 Window

07/17/24 Att 12 Page 33, Rev3 07/17/24 2nd

Data File : 07172409.D Signal(s) : TCD1A.ch : 17-Jul-2024, 09:36:53 Acq On : SR/BK Operator : P2402855-002 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 10:00:00 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



Att 12 Page 34, Rev3 8/0724 2nd 207/17/24

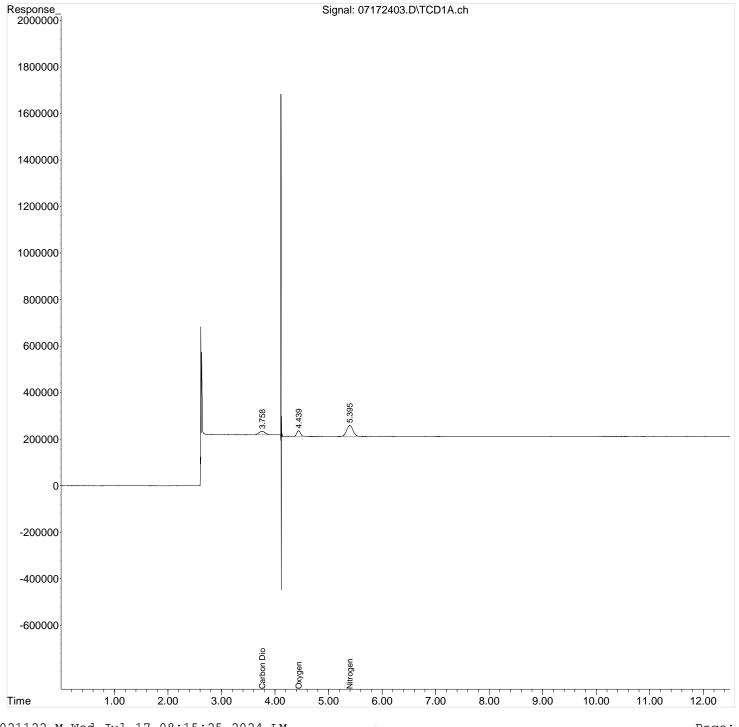
Data Fi Signal( Acq On Operato: Sample Misc ALS Via Integra Quant T Quant M Quant T QLast U Respons Integra Volume	<pre>th : I:\GC38\DATA\2024_07\17 le : 07172403.D s) : TCDIA.ch         : 17-Jul-2024, 08:00:43 r : SR/BK         : MB STD00251         : l : 1 Sample Multiplier: tion File: epa3c.e ime: Jul 17 08:15:09 2024 ethod : I:\GC38\METHODS\C380 itle : EPA 3C, ASTM D 1946 pdate : Tue Mar 08 12:45:41 e via : Initial Calibration tor: ChemStation Inj. : 100ul Phase : CarboSieve Packed Co Info :</pre>	10000 021122.M -90, VOA-E1 2022	SR 07/17 PA3C	Att 12 Pa	ge
	Compound	R.T.	Response	Conc Units	
1) 2) 3) 4) 5)	Compounds Hydrogen Oxygen	0.000	1231990	N.D. ppm d 92.038 ppm m 269.188 ppm m N.D. ppm N.D. ppm 76.874 ppm m	

(f)=RT Delta > 1/2 Window



Data File : 07172403.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:00:43 Acq On : SR/BK Operator Sample : MB STD00251 Misc : Sample Multiplier: 10000 ALS Vial : 1 Integration File: epa3c.e Quant Time: Jul 17 08:15:09 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

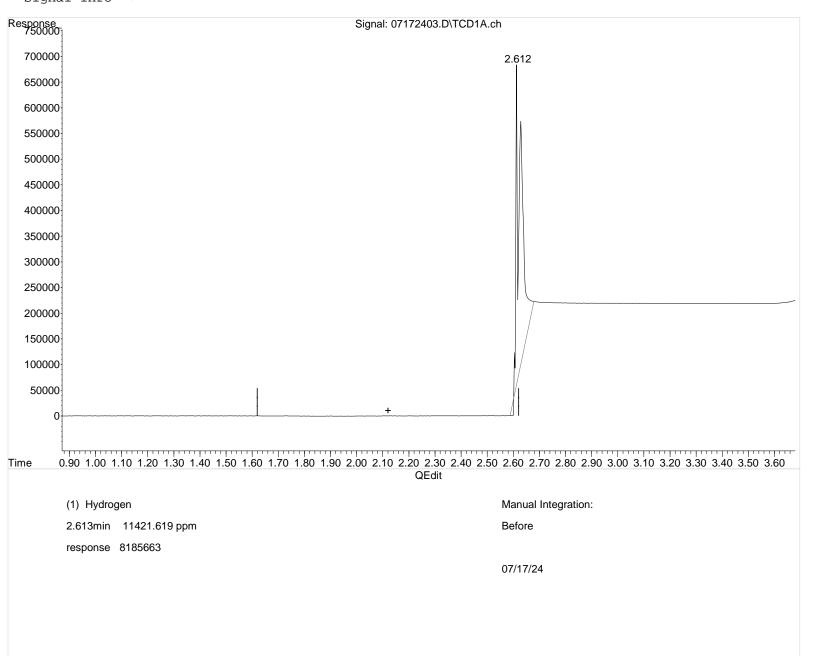
Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

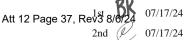


Att 12 Page 36, Revs 8/6/24 2nd 2/07/17/24

Data File : 07172403.D Signal(s) : TCD1A.ch SR 07/17/24 : 17-Jul-2024, 08:00:43 Acq On Operator : SR/BK : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column

Signal Info :





Data Path : I:\GC38\DATA\2024\_07\17\ Data File : 07172403.D Signal(s) : TCD1A.ch SR 07/17/24 : 17-Jul-2024, 08:00:43 Acq On Operator : SR/BK : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : Signal: 07172403.D\TCD1A.ch Response\_ 650000 600000 550000 500000 450000 400000 350000 300000 250000 200000 150000 100000 50000 01 \*\*\*\*\*\*\* 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80 2.90 3.00 3.10 3.20 3.30 Time

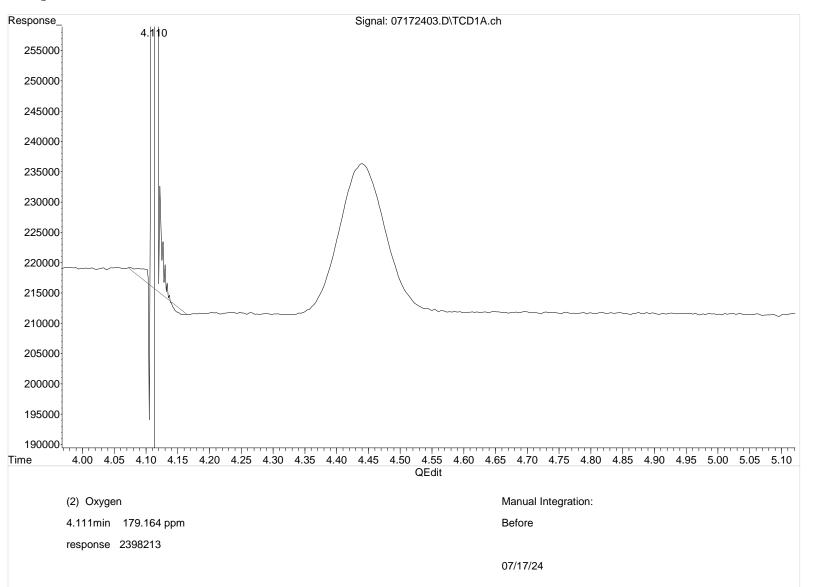
QEdit

Manual Integration: (1) Hydrogen 0.000min 0.000 ppm d After response 0 FP 07/17/24



Data File : 07172403.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:00:43 Acq On SR 07/17/24 Operator : SR/BK : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul

Signal Phase : CarboSieve Packed Column Signal Info :

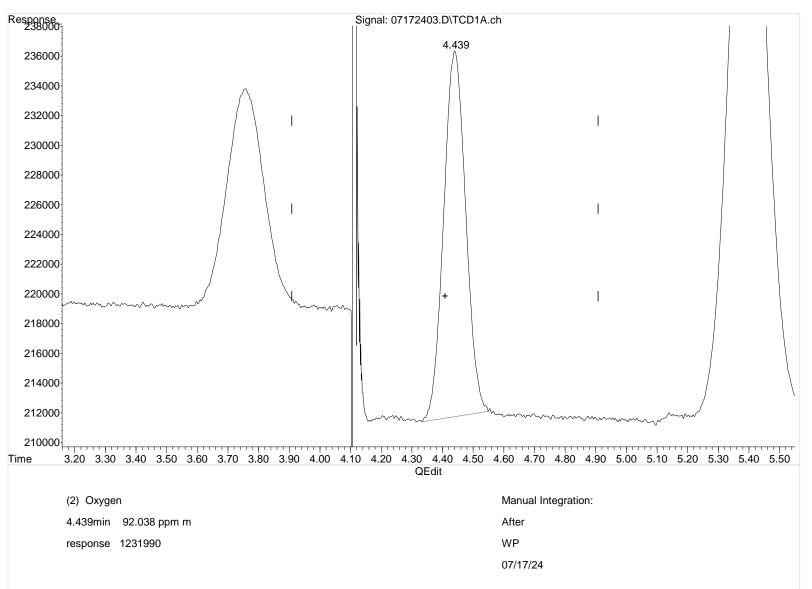


Quantitation Report (Qedit)

Att 12 Page 39, Rev 3 8/6/24 07/17/24 2nd 07/17/24

Data File : 07172403.D Signal(s) : TCD1A.ch SR 07/17/24 : 17-Jul-2024, 08:00:43 Acq On Operator : SR/BK : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul

Signal Phase : CarboSieve Packed Column Signal Info :



Quantitation Report (Qedit)

07/17/24 Att 12 Page 40, Rev3 07/17/24 2nd

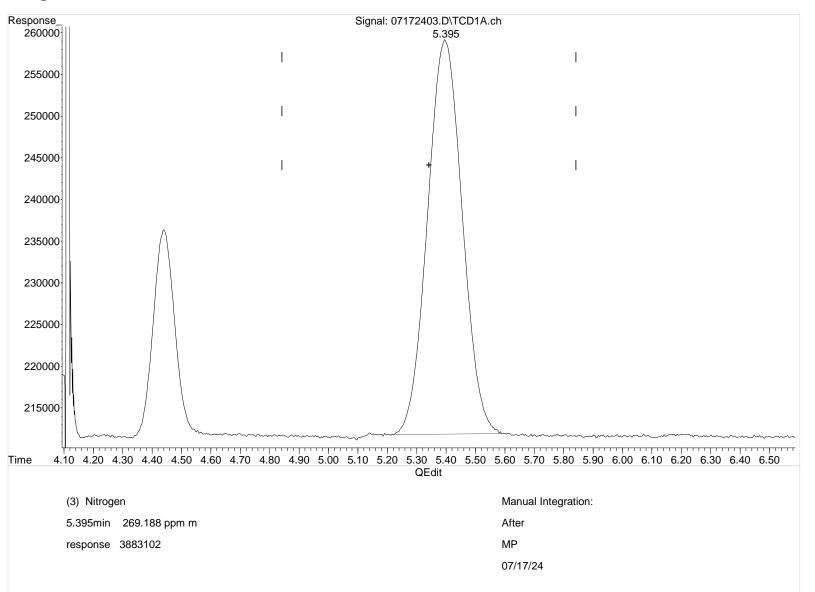
Data Path : I:\GC38\DATA\2024\_07\17\ Data File : 07172403.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:00:43 SR 07/17/24 Acq On Operator : SR/BK Sample : MB STD00251 Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : Signal: 07172403.D\TCD1A.ch Response\_ 250000 200000 150000 100000 50000 I Τ + 0 -50000 -100000 \_\_\_\_ 4.30 4.40 4.50 4.60 4.70 4.80 4.90 5.00 5.10 5.20 5.30 5.40 5.50 5.60 5.70 5.80 5.90 6.00 6.10 6.20 6.30 Time QEdit (3) Nitrogen Manual Integration: Before 5.342min 0.000 ppm response 0 07/17/24

SR 07/17/24



Data File : 07172403.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:00:43 Acq On Operator : SR/BK : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul

Signal Phase : CarboSieve Packed Column Signal Info :



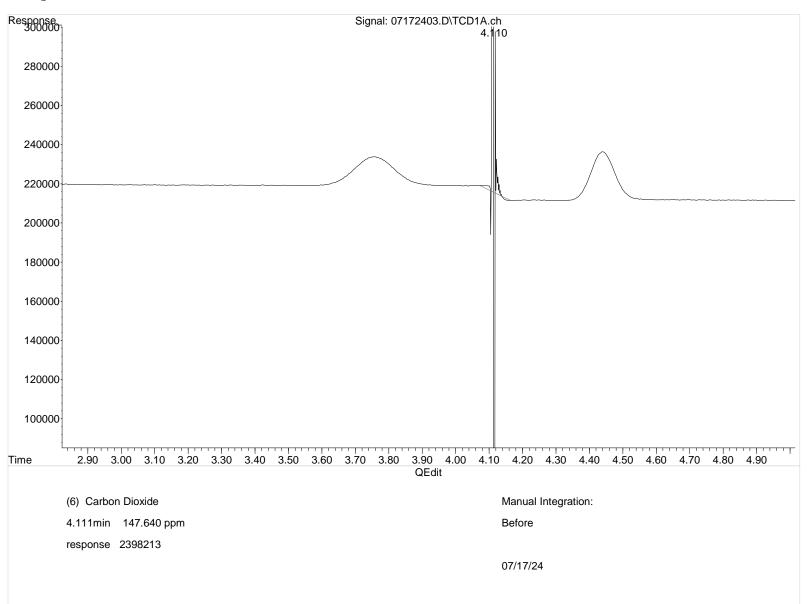
Quantitation Report (Qedit)

SR 07/17/24

Att 12 Page 42, Rev 8/6/24 07/17/24 2nd 07/17/24

Data File : 07172403.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:00:43 Acq On Operator : SR/BK : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:14:04 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



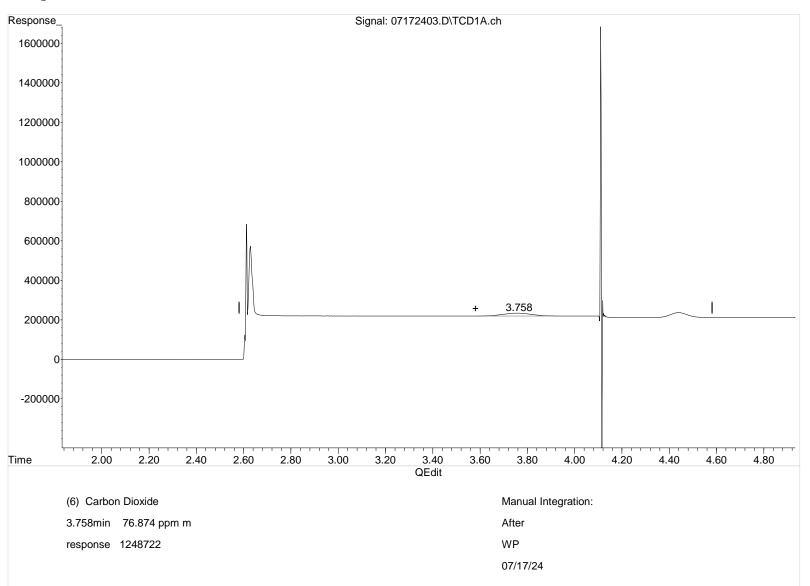
Att 12 Page 43, Revs 8/6/24 2nd 2 07/17/24

SR 07/17/24 Signal(s) : TCD1A.ch : 17-Jul-2024, 08:00 Acq On : SR/BK Operator : MB STD00251 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:15:09 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

Data Path : I:\GC38\DATA\2024\_07\17\

Data File : 07172403.D



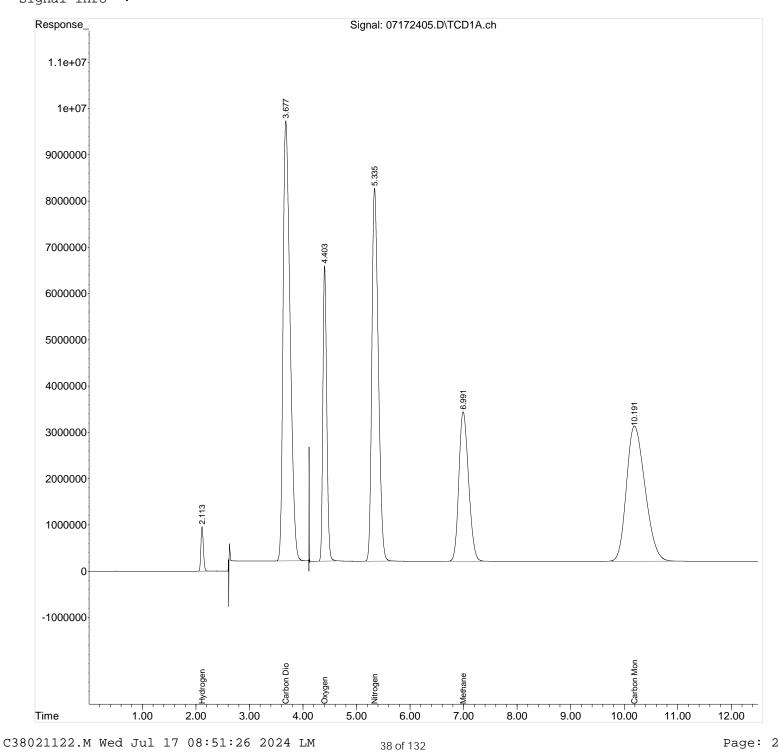
Att 12 Page 44, Rev3 8/0724 2nd 07/17/24

Data File : 07172405.D Signal(s) : TCD1A.ch Acq On : 17-Jul-2024, 08:34:3 Operator : SR/BK Sample : LCS S33-07272202 Misc :	gnal(s) : TCD1A.ch g On : 17-Ju1-2024, 08:34:39 erator : SR/BK mple : LCS S33-07272202 SR 07/17/24					
Integration File: epa3c.e Quant Time: Jul 17 08:50:28 2024 Quant Method : I:\GC38\METHODS\C Quant Title : EPA 3C, ASTM D 19 QLast Update : Tue Mar 08 12:45: Response via : Initial Calibrati Integrator: ChemStation	238021122.M 946-90, VOA-E 41 2022	PA3C				
Volume Inj. : 100ul Signal Phase : CarboSieve Packed Signal Info :	l Column					
Compound	R.T.	Response	Conc Units			
2) Oxygen 3) Nitrogen 4) Carbon Monoxide 5) Methane	4.404 5.336 10.192 6.992	317362038 674364859 703650236 406473609	42863.966 ppm 23757.237 ppm 46960.687 ppm 49630.834 ppm 39104.026 ppm 53182.556 ppm	1 1 1 1		

(f)=RT Delta > 1/2 Window



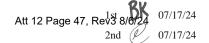
Data File : 07172405.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:34:39 Acq On Operator : SR/BK : LCS S33-07272202 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 08:50:28 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



Att 12 Page 46, Rev 8 8/0724 2nd 07/17/24 07/17/24

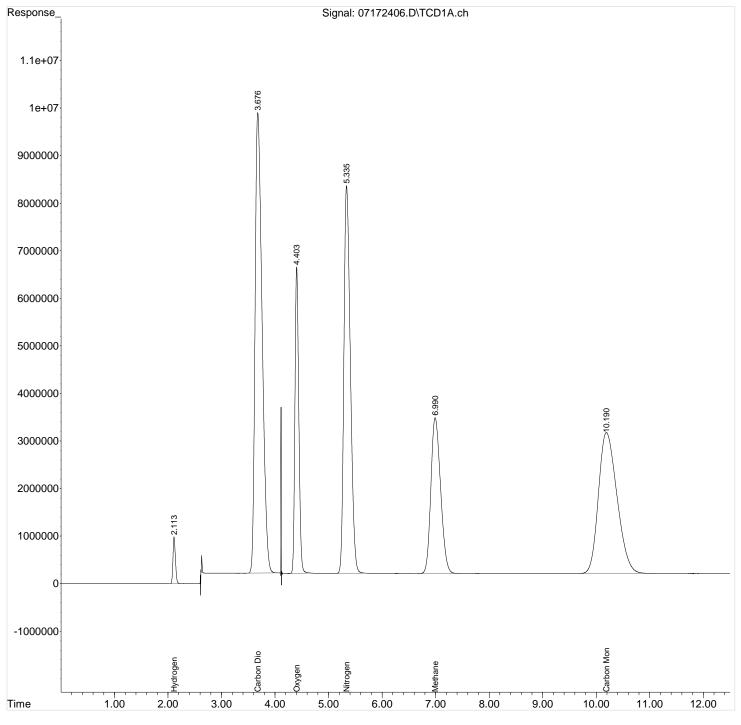
Data Path : I:\GC38\DATA\2024_ Data File : 07172406.D Signal(s) : TCD1A.ch Acq On : 17-Ju1-2024, 08:52 Operator : SR/BK Sample : LCSD S33-07272202 Misc : ALS Vial : 1 Sample Multipl Integration File: epa3c.e Ouant Time: Jul 17 09:05:45 20	2:28 Lier: 10000	SI	R 07/17/24	Att 12 Pag
Quant Method : I:\GC38\METHODS Quant Title : EPA 3C, ASTM D QLast Update : Tue Mar 08 12:4 Response via : Initial Calibra Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Pack Signal Info :	S\C38021122.M 1946-90, VOA-E 45:41 2022 ation	PA3C		
Compound	R.T.	Response	Conc Units	
Target Compounds 1) Hydrogen 2) Oxygen	2.113 4.403 5.336 10.190	31217228 320779002 681902709 713545679	43558.022 ppm 24013.555 ppm 47488.029 ppm	1 1 1

(f)=RT Delta > 1/2 Window



Data File : 07172406.D Signal(s) : TCD1A.ch : 17-Jul-2024, 08:52:28 Acq On : SR/BK Operator : LCSD S33-07272202 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 09:05:45 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



Att 12 Page 48, Rev3 8/07/24 2nd 200/07/17/24

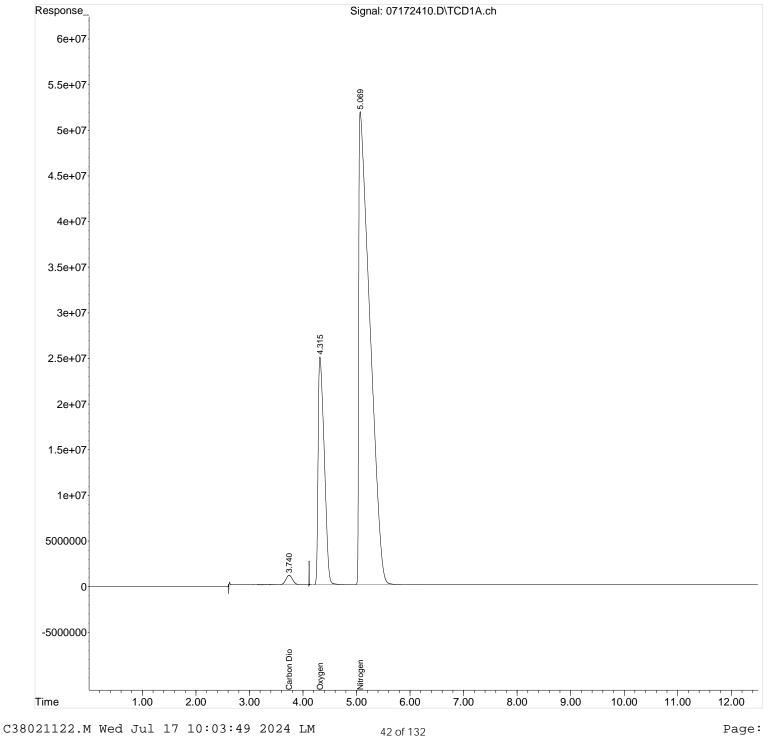
Data Path : I:\GC38\DATA\20 Data File : 07172410.D Signal(s) : TCD1A.ch Acq On : 17-Jul-2024, 09 Operator : SR/BK Sample : P2402855-002dup Misc : ALS Vial : 1 Sample Mult Integration File: epa3c.e Quant Time: Jul 17 10:03:00 Quant Method : I:\GC38\METH Quant Title : EPA 3C, ASTM QLast Update : Tue Mar 08 1 Response via : Initial Cali Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve H Signal Info :	9:49:54 ciplier: 10000 0 2024 HODS\C38021122.M M D 1946-90, VOA-E L2:45:41 2022 Lbration		R 07/17/24	Att 12 Page
Compound	R.T.	Response	Conc Units	
Target Compounds 1) Hydrogen 2) Oxygen 3) Nitrogen 4) Carbon Monoxide 5) Methane 6) Carbon Dioxide	0.000	0	N.D. ppm 150426.531 ppn 545914.047 ppn N.D. ppm N.D. ppm 5463.037 ppn	

(f)=RT Delta > 1/2 Window



Data File : 07172410.D Signal(s) : TCD1A.ch : 17-Jul-2024, 09:49:54 Acq On : SR/BK Operator : P2402855-002dup Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 10:03:00 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



Method Pat	h : I:\GC38\N	1ETHODS	\							
Method Fil	e : C38021122	2.M								
Title	: EPA 3C, AST	CM D 19	46-90,	VOA-EI	PA3C					
Last Updat	e : Tue Mar	08 12:	45:41	2022						
Response V	ia : Initial	Calibr	ation							
Calibratio										
	112202.D 2									
4 = 0.2	112205.D 5	=	021122	)6.D	б	=0212	12207.1	C		
Comp	ound	1	2	3	4	5	6	Avg		%RSD
-	rogen									
	gen									
3) Nit	rogen	1.623	1.579	1.617	1.546	1.368		1.481	Ε8	9.51
4) Car	bon Monoxide	1.348	1.440	1.385	1.462	1.453		1.418	Ε8	3.48
5) Met	hane	1.025	1.082	1.054	1.110	0.982		1.039	Ε8	5.01
6) Car	bon Dioxide	1.551	1.643	1.644	1.736	1.637		1.624	E8	4.49
(#) = Out o	f Range ###	Numbe	r of ca	alibrat	tion le	evels (	exceed	ed form	nat	###

C38021122.M Thu Jun 29 11:12:23 2023

Method Path : I:\GC38\METHODS\
Method File : C38021122.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Mar 08 12:45:41 2022
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	I:\GC38\DATA\2022_02\11\02112202.D
2	2	0	0	I:\GC38\DATA\2022_02\11\02112203.D
3	3	2	0	I:\GC38\DATA\2022_02\11\02112204.D
4	4	5	0	I:\GC38\DATA\2022_02\11\02112205.D
5	5	19	0	I:\GC38\DATA\2022_02\11\02112206.D
6	б	20	0	I:\GC38\DATA\2022_02\11\02112207.D
7	7	100	0	I:\GC38\DATA\2022_02\11\02112208.D
8	8	98	0	I:\GC38\DATA\2022_02\11\02112209.D
9	9	100	0	I:\GC38\DATA\2022_02\11\02112210.D
10	10	100	0	I:\GC38\DATA\2022_02\11\02112211.D
11	11	-1	0	I:\GC38\DATA\2022_02\11\02112214.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Feb 11 13:30 2022	Feb 11 13:21 2022	11-Feb-2022, 08:51
2	2	Feb 11 13:30 2022	Feb 11 13:21 2022	11-Feb-2022, 09:11
3	3	Feb 11 13:30 2022	Feb 11 13:21 2022	11-Feb-2022, 09:28
4	4	Feb 11 13:30 2022	Feb 11 13:21 2022	11-Feb-2022, 09:45
5	5	Feb 11 13:30 2022	Feb 11 13:27 2022	11-Feb-2022, 11:22
6	б	Feb 11 13:31 2022	Feb 11 13:28 2022	11-Feb-2022, 11:56
7	7	Feb 11 13:31 2022	Feb 11 13:28 2022	11-Feb-2022, 12:11
8	8	Feb 11 13:31 2022	Feb 11 13:29 2022	11-Feb-2022, 12:32
9	9	Feb 11 13:31 2022	Feb 11 13:29 2022	11-Feb-2022, 12:46
10	10	Feb 11 13:55 2022	Feb 11 13:54 2022	11-Feb-2022, 13:37
11	11	Feb 21 10:59 2022	Feb 11 15:40 2022	11-Feb-2022, 15:01

C38021122.M Thu Jun 29 11:10:52 2023

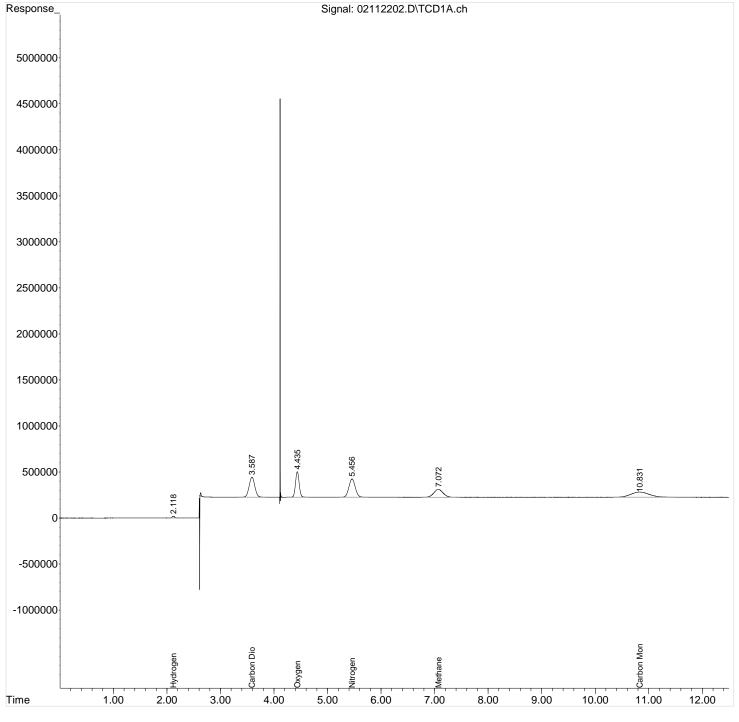
Data Fi Signal(s Acq On Operator	ta Path : I:\GC38\DATA\2022_02\11\ ta File : 02112202.D gnal(s) : TCD1A.ch q On : 11-Feb-2022, 08:51 erator : Chris Parnell mple : ICAL C38021122 Level 1 S32-01312201 sc : 0.5 injection w/.5 loop S Vial : 1 Sample Multiplier: 10000					
Quant T: Quant Me Quant T: QLast Up Response	tion File: epa3c.e ime: Feb 11 14:21:49 2022 ethod : I:\GC38\METHODS\C38 itle : EPA 3C, ASTM D 1946 pdate : Thu Feb 10 15:39:29 e via : Initial Calibration tor: ChemStation	5-90, VOA-EPA3 5 2022	°C			
	Inj. : 100ul Phase : CarboSieve Packed ( Info :	Column				
	Compound	R.T.	Response	Conc Units		
1) 2) 3) 4) 5)	Oxygen Nitrogen Carbon Monoxide	2.119 4.436 5.457 10.832 7.071 3.588	13134707 16324323 13425735 10279096	1079.513 ppi 1238.227 ppi 934.901 ppi	n n n	

(f)=RT Delta > 1/2 Window

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112202.D
Signal(s)	:	TCD1A.ch
		11-Feb-2022, 08:51
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 1 S32-01312201
Misc	:	0.5 injection w/.5 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Feb 11 14:21:49 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Feb 10 15:39:25 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



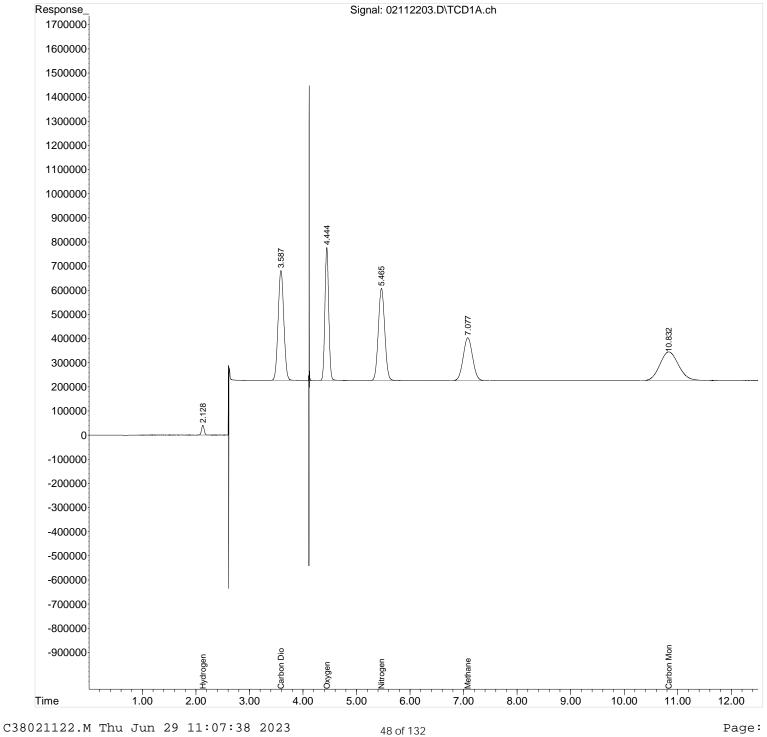
Data Path : I:\GC38\DATA\2022_02\11\ Data File : 02112203.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 09:11 Operator : Chris Parnell Sample : ICAL C38021122 Level 2 S32-01312201 Misc : 1.0 injection w/1 loop ALS Vial : 1 Sample Multiplier: 10000						
Integration File: epa3c.e Quant Time: Feb 11 14:21:52 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation						
Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :						
	Compound	R.T.		Conc Units		
1) 2) 3) 4) 5)	Compounds Hydrogen Oxygen Nitrogen Carbon Monoxide	2.129 4.444 5.466 10.833 7.079	1381980 27175857 31745981 28678422 21691822	2233.524 pp 2407.985 pp 1997.022 pp	m m m	

(f)=RT Delta > 1/2 Window

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112203.D
Signal(s)	:	TCD1A.ch
Acq On	:	11-Feb-2022, 09:11
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 2 S32-01312201
Misc	:	1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e Quant Time: Feb 11 14:21:52 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



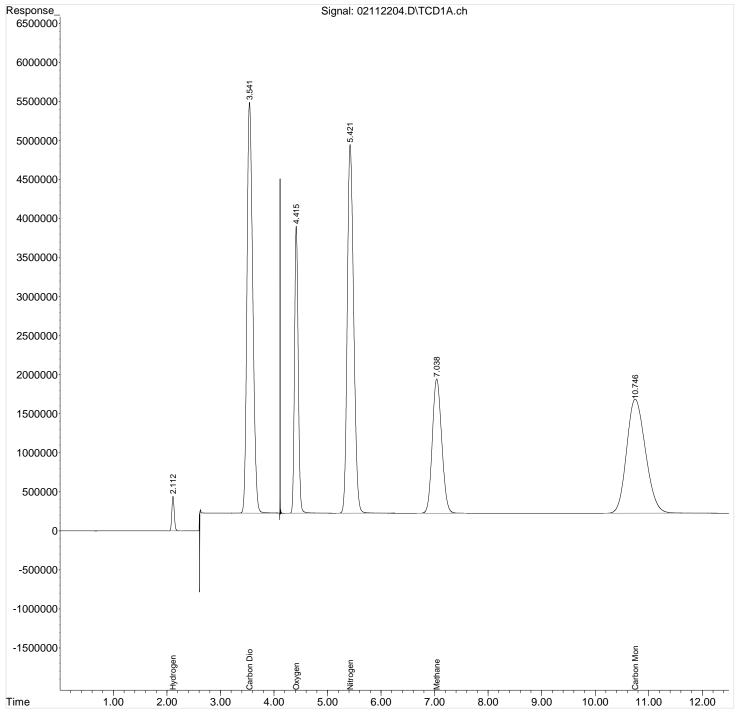
Data Path : I:\GC38\DATA\2022_02\11\ Data File : 02112204.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 09:28 Operator : Chris Parnell Sample : ICAL C38021122 Level 3 S32-01312205 Misc : 0.5 injection w/.5 loop ALS Vial : 1 Sample Multiplier: 10000							
<pre>Integration File: epa3c.e Quant Time: Feb 11 14:21:55 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation</pre>							
Signal Phase : CarboSieve Packed Column Signal Info :							
	Compound	R.T.	Response	Conc Units			
1) 2) 3) 4) 5)	Oxygen Nitrogen Carbon Monoxide Methane	4.416 5.422 10.747 7.039	174858879 391291236 356694512 209160596	19138.780 ppm 14371.269 ppm 29680.083 ppm 24838.427 ppm 20029.272 ppm 24027.684 ppm	1 1 1		

(f)=RT Delta > 1/2 Window

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112204.D
Signal(s)	:	TCD1A.ch
		11-Feb-2022, 09:28
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 3 S32-01312205
Misc		0.5 injection w/.5 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Feb 11 14:21:55 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Feb 10 15:39:25 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



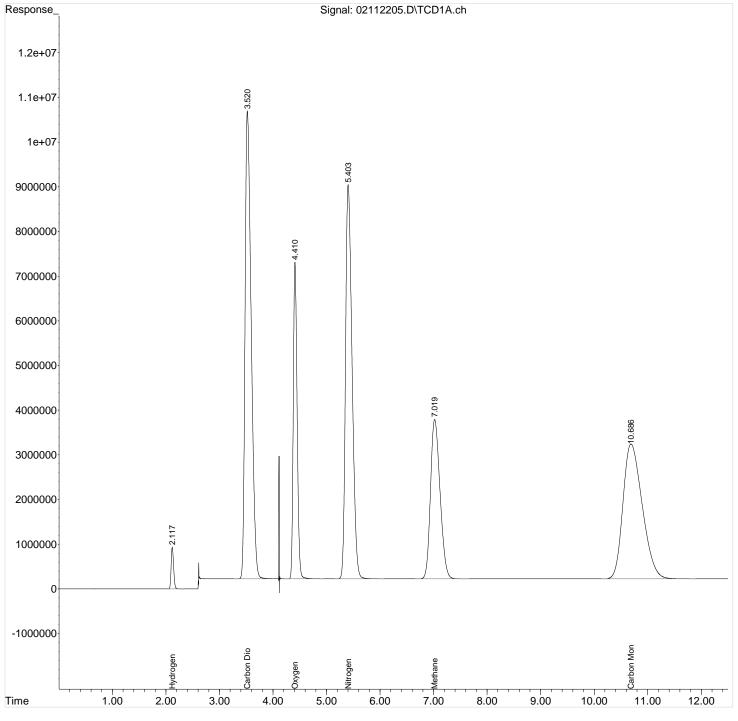
Data Path : I:\GC38\DATA\2022_02\11\ Data File : 02112205.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 09:45 Operator : Chris Parnell Sample : ICAL C38021122 Level 4 S32-01312205 Misc : 1.0 injection w/1 loop ALS Vial : 1 Sample Multiplier: 10000						
Integration File: epa3c.e Quant Time: Feb 11 14:21:58 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation						
Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :						
Compound	R.T.	Response	Conc Units			
Target Compounds 1) Hydrogen 2) Oxygen 3) Nitrogen 4) Carbon Monoxide 5) Methane 6) Carbon Dioxide	2.118 4.411 5.404 10.688 7.019	29898443 350553853 748173325 753331824 440673278	41548.347 ppm 28811.254 ppm 56750.176 ppm	1 1 1 1		

(f)=RT Delta > 1/2 Window

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112205.D
Signal(s)	:	TCD1A.ch
		11-Feb-2022, 09:45
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 4 S32-01312205
Misc	:	1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Feb 11 14:21:58 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Feb 10 15:39:25 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

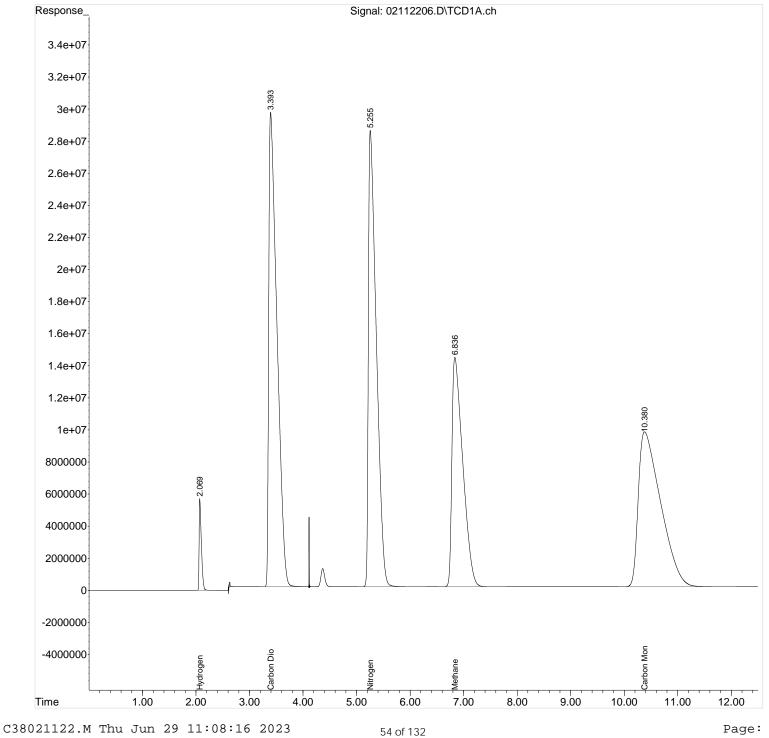


\11\ 5 S32-10262 op r: 10000	2101	/ / ugo
38021122.M 46-90, VOA-E 25 2022 on	EPA3C	
Column		
R.T.	Response	Conc Units
0.000 5.256 10.382	0 2926946484 2790323132	N.D. ppm d 222013.701 ppm 194304.184 ppm
	5 S32-10262 op r: 10000 38021122.M 46-90, VOA-E 25 2022 on Column R.T. 2.071 0.000 5.256 10.382	5 S32-10262101 op r: 10000 38021122.M 46-90, VOA-EPA3C 25 2022 on

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112206.D
Signal(s)	:	TCD1A.ch
Acq On	:	11-Feb-2022, 11:22
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 5 S32-10262101
Misc	:	1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e Quant Time: Feb 11 14:27:57 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



Signal Info :CompoundR.T.ResponseConc UnitsTarget Compounds	Data Fil Signal(s Acq On Operator Sample Misc ALS Vial Integrat Quant Ti Quant Ti Quant Ti QLast Up Response Integrat Volume I	<pre>ch : I:\GC38\DATA\2022_02\11 e : 02112207.D s) : TCDIA.ch : 11-Feb-2022, 11:56 c : Chris Parnell : ICAL C38021122 Level 6 : 1.0 injection w/1 loop : 1 Sample Multiplier: cion File: epa3c.e me: Feb 11 14:28:27 2022 ethod : I:\GC38\METHODS\C380 tle : EPA 3C, ASTM D 1946- odate : Thu Feb 10 15:39:25 e via : Initial Calibration cor: ChemStation cor: ChemStation</pre>	S32-101921( 10000 21122.M 90, VOA-EP2 2022			Att 12 Page
Target Compounds         1)       Hydrogen       0.000       0       N.D. ppm         2)       Oxygen       4.348       2583024173       212293.104 ppm         3)       Nitrogen       0.000       0       N.D. ppm       d         4)       Carbon Monoxide       0.000       0       N.D. ppm         5)       Methane       0.000       0       N.D. ppm	2		ът	Response	Conc Units	
	Target 1) 2) 3) 4) 5)	Compounds Hydrogen Oxygen Nitrogen Carbon Monoxide Methane	0.000 4.348 0.000 0.000 0.000	0 2583024173 0 0 0	N.D. ppm 212293.104 pp N.D. ppm N.D. ppm N.D. ppm N.D. ppm	om d

Data File	:	I:\GC38\DATA\2022_02\11\ 02112207.D
Signal(s)	:	TCD1A.ch
		11-Feb-2022, 11:56
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 6 S32-10192105
Misc		1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Feb 11 14:28:27 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Feb 10 15:39:25 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

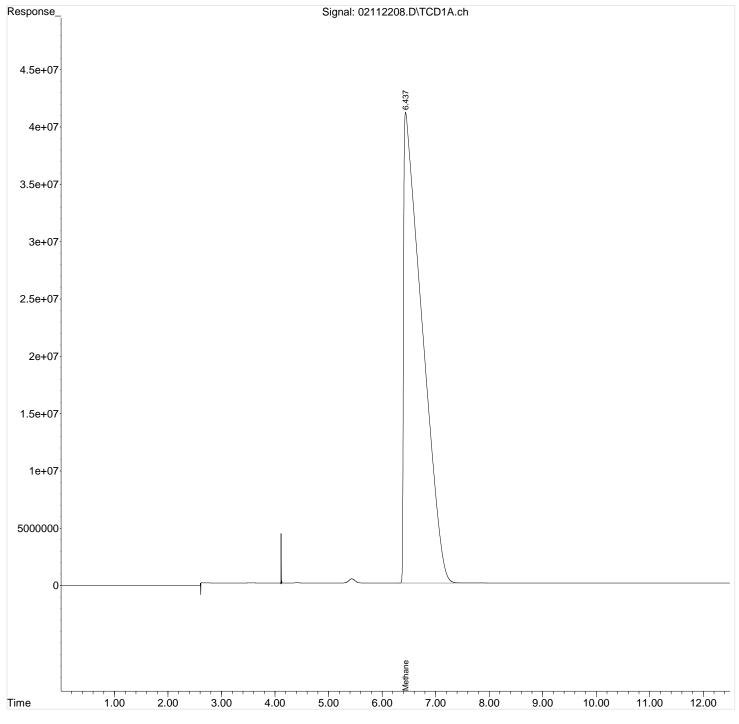
Response_ 4.6e+07	Signal: 02112207.D\TCD1A.ch
4.4e+07	
4.2e+07	
4e+07	4.346
3.8e+07	
3.6e+07	
3.4e+07	
3.2e+07	
3e+07	
2.8e+07	
2.6e+07	
2.4e+07	
2.2e+07	
2e+07	
1.8e+07	
1.6e+07	
1.4e+07	
1.2e+07	
1e+07	
8000000	
600000	
4000000	
2000000	
0	
-2000000	
-4000000	
	La construction de la constructi
ime	$\hat{\vec{k}}$ 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 12.00
	hu Jun 29 11:08:21 2023 56 of 132 Pag

Data Path : I:\GC38\DATA\2022_02\1 Data File : 02112208.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 12:11 Operator : Chris Parnell Sample : ICAL C38021122 Level 7 Misc : 1.0 injection w/1 loop ALS Vial : 1 Sample Multiplier:	S32-10202	101			/ 12 T ugo
Integration File: epa3c.e Quant Time: Feb 11 14:28:48 2022 Quant Method : I:\GC38\METHODS\C38 Quant Title : EPA 3C, ASTM D 1946 QLast Update : Thu Feb 10 15:39:25 Response via : Initial Calibration Integrator: ChemStation	-90, VOA-E 2022	PA3C			
Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :					
Compound	R.T.	Response	Conc	Units	
3) Nitrogen 4) Carbon Monoxide	0.000 6.439f	0 0	933658.	ppm ppm	d

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112208.D
Signal(s)	:	TCD1A.ch
		11-Feb-2022, 12:11
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 7 S32-10202101
Misc	:	1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Feb 11 14:28:48 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Feb 10 15:39:25 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

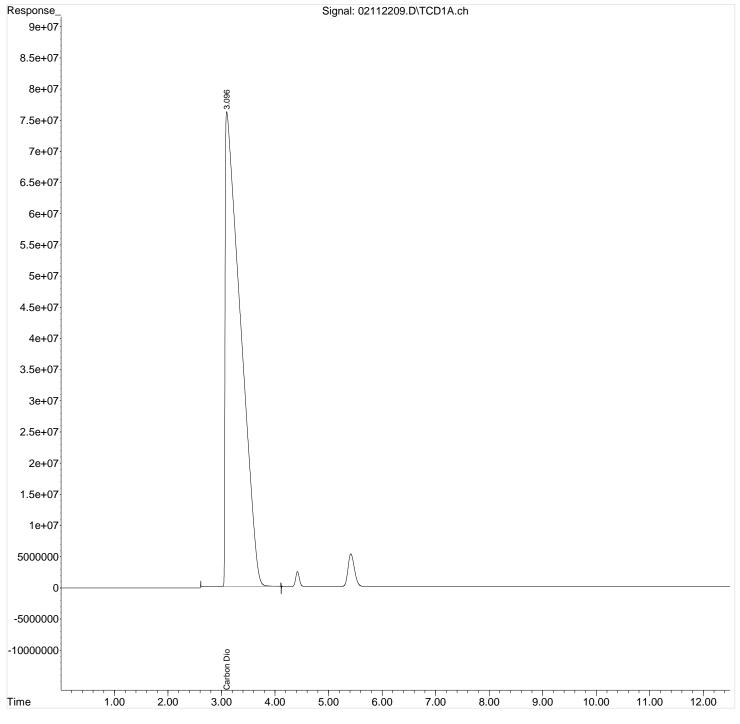


Integration File: epa3c.e Quant Time: Feb 11 14:29:06 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : Compound R.T. Response Conc Units Target Compounds 1) Hydrogen 0.000 0 N.D. ppm 2) Oxygen 0.000 0 N.D. ppm d 3) Nitrogen 0.000 0 N.D. ppm d	Data Fil Signal(s Acq On Operator Sample Misc	<pre>th : I:\GC38\DATA\2022_02\11 le : 02112209.D s) : TCD1A.ch         : 11-Feb-2022, 12:32 r : Chris Parnell         : ICAL C38021122 Level 8         : 1.0 injection w/1 loop l : 1 Sample Multiplier:</pre>	S32-09292	102		All 12 Fage
Signal Phase : CarboSieve Packed Column         Signal Info :         Compound       R.T.         Response       Conc Units         Target Compounds         1)       Hydrogen         0.000       0         N.D.       ppm         2)       Oxygen	Quant T: Quant Me Quant T: QLast Up Response	ime: Feb 11 14:29:06 2022 ethod : I:\GC38\METHODS\C380 itle : EPA 3C, ASTM D 1946- odate : Thu Feb 10 15:39:25 e via : Initial Calibration	-90, VOA-EI	PA3C		
Target Compounds1)Hydrogen0.0000N.D. ppm2)Oxygen0.0000N.D. ppm d	Signal H	Phase : CarboSieve Packed Co	olumn			
1)         Hydrogen         0.000         0         N.D.         ppm           2)         Oxygen         0.000         0         N.D.         ppm         d				Response	Conc Unit	S
4)       Carbon Monoxide       0.000       0       N.D. ppm         5)       Methane       0.000       0       N.D. ppm         6)       Carbon Dioxide       3.098       15048506984       916428.469       ppm	1) 2) 3) 4) 5)	Hydrogen Oxygen Nitrogen Carbon Monoxide	0.000 0.000	0 0 0	N.D. ppm N.D. ppm N.D. maga	nd nd

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112209.D
Signal(s)	:	TCD1A.ch
		11-Feb-2022, 12:32
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 Level 8 S32-09292102
Misc	:	1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Feb 11 14:29:06 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Feb 10 15:39:25 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

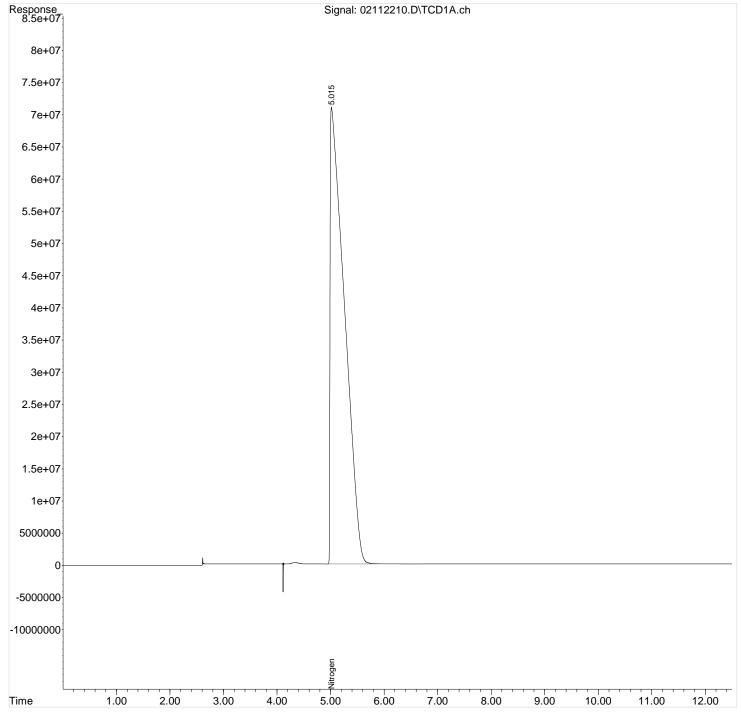


Data Path : I:\GC38\DATA\2022_02\12 Data File : 02112210.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 12:46 Operator : Chris Parnell Sample : ICAL C38021122 Level 9 Misc : 1.0 injection w/1 loop ALS Vial : 1 Sample Multiplier:	N2		Au 12 1 age
Integration File: epa3c.e Quant Time: Feb 11 14:29:29 2022 Quant Method : I:\GC38\METHODS\C38( Quant Title : EPA 3C, ASTM D 1946- QLast Update : Thu Feb 10 15:39:25 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Co	-90, VOA-1 2022	EPA3C	
Signal Info :			
Compound	R.T.	Response	Conc Units
<ol> <li>3) Nitrogen</li> <li>4) Carbon Monoxide</li> </ol>	5.022f	0 13129497105 0 0	995893.931 ppm

Data Path	:	I:\GC38\DATA\2022_02\11\	
Data File	:	02112210.D	
Signal(s)	:	TCD1A.ch	
Acq On	:	11-Feb-2022, 12:46	
Operator	:	Chris Parnell	
Sample	:	ICAL C38021122 Level 9 N2	
Misc	:	1.0 injection w/1 loop	
ALS Vial	:	1 Sample Multiplier: 10000	
Integratio	n	File: epa3c.e	

Quant Time: Feb 11 14:29:29 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Thu Feb 10 15:39:25 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



Data Path : I:\GC38\DATA\2022_0 Data File : 02112211.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 13:37 Operator : Chris Parnell Sample : ICAL C38021122 Leve Misc : 1.0 injection w/1 1 ALS Vial : 1 Sample Multipli Integration File: epa3c.e	l 10 02 oop er: 10000		Att	12 Page
Quant Time: Feb 11 14:54:39 202 Quant Method : I:\GC38\METHODS\ Quant Title : EPA 3C, ASTM D 1 QLast Update : Fri Feb 11 13:31 Response via : Initial Calibrat Integrator: ChemStation Volume Inj. : 100ul	C38021122.M 946-90, VOA-E :58 2022	EPA3C		
Signal Phase : CarboSieve Packe Signal Info :	d Column			
Compound	R.T.	Response	Conc Units	
Target Compounds 1) Hydrogen 2) Oxygen 3) Nitrogen 4) Carbon Monoxide 5) Methane 6) Carbon Dioxide	0.000 4.186f 0.000 0.000 0.000 0.000 0.000	0 0 0	N.D. ppm 1007844.084 ppm N.D. ppm d N.D. ppm N.D. ppm N.D. ppm d	

Data Path : I:\GC38\DATA\2022\_02\11\ Data File : 02112211.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 13:37 : Chris Parnell Operator : ICAL C38021122 Level 10 02 Sample Misc : 1.0 injection w/1 loop ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Feb 11 14:54:39 2022 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Fri Feb 11 13:31:58 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : Signal: 02112211.D\TCD1A.ch Response\_ 1.05e+08 1e+08 9.5e+07 ł.184 9e+07 8.5e+07 8e+07 7.5e+07 7e+07 6.5e+07 6e+07 5.5e+07 5e+07 4.5e+07 4e+07 3.5e+07 3e+07 2.5e+07 2e+07 1.5e+07 1e+07 5000000 0 -5000000 -10000000 Oxygen Time 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 12.00



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Data Path : I:\GC38\DATA\2022\_02\11\ Data File : 02112213.D Signal(s) : TCD1A.ch Acq On : 11-Feb-2022, 14:19 Operator : Chris Parnell Sample : ICAL C38021122 ICV S32-01312206 Misc : 1.0 injection w/1 loop ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Mar 08 13:39:40 2022 Ouant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Wed Mar 02 15:08:17 2022 Response via : Initial Calibration Integrator: ChemStation Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info : Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min Max. RRF Dev : 15% Max. Rel. Area : 150% Compound Amount Calc. %Dev Area% Dev(Min) \_\_\_\_\_ 4.1244.0491.8970.022.4902.574-3.4980.074.8405.131-6.0980.44#5.1515.1380.3972.56#3.9704.101-3.3970.284.7994.982-3.897-0.04 Hydrogen 1 2 Oxygen Nitrogen 3 Carbon Monoxide Methane 4 5 Carbon Dioxide 6 Evaluate Continuing Calibration Report - Not Founds \_\_\_\_\_ (#) = Out of Range SPCC's out = 0 CCC's out = 0

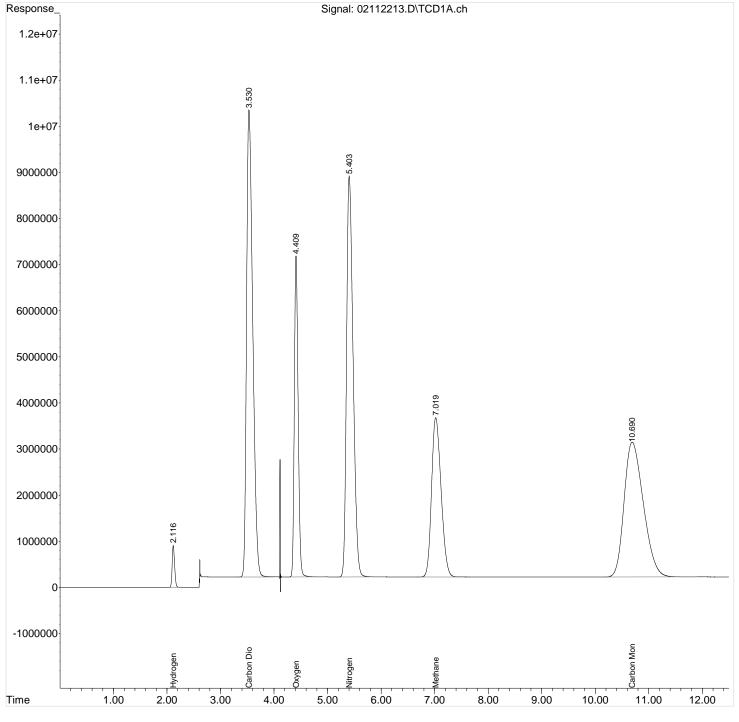
C38021122.M Thu Jun 29 11:21:47 2023

Operator Sample Misc	: TCD1A.ch : 11-Feb-2022, 14:19 : Chris Parnell : ICAL C38021122 ICV S : 1.0 injection w/1 loc : 1 Sample Multiplier	qc			
Quant Time Quant Metho Quant Title QLast Upda Response vi	n File: epa3c.e : Mar 08 13:39:40 2022 od : I:\GC38\METHODS\C e : EPA 3C, ASTM D 194 te : Wed Mar 02 15:08:1 ia : Initial Calibratic : ChemStation	46-90, VOA-EP 17 2022	PA3C		
Volume Inj Signal Phas Signal Info	se : CarboSieve Packed	Column			
Coi	npound	R.T.	Response	Conc Units	
Target Cot         1)       Hyc         2)       Oxi         3)       Ni         4)       Ca:         5)       Me <sup>+</sup> 6)       Ca:	mpounds drogen ygen trogen rbon Monoxide thane	2.117 4.410 5.404 10.691 7.020	736463885 728496749 426325304	40490.154 ppr 25739.435 ppr 51306.703 ppr 51383.343 ppr 41013.821 ppr 49818.970 ppr	n n n

Data Path	:	I:\GC38\DATA\2022_02\11\
Data File	:	02112213.D
Signal(s)	:	TCD1A.ch
Acq On	:	11-Feb-2022, 14:19
Operator	:	Chris Parnell
Sample	:	ICAL C38021122 ICV S32-01312206
		1.0 injection w/1 loop
ALS Vial	:	1 Sample Multiplier: 10000

Integration File: epa3c.e
Quant Time: Mar 08 13:39:40 2022
Quant Method : I:\GC38\METHODS\C38021122.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Mar 02 15:08:17 2022
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :



## Modified EPA Method 3C Daily QC Summary

Client : SQ Environmental, LLC Analyst : SR/BK Method Name : EPA 3C, ASTM D 1946-90, VOA-EPA3C Instrument : GC38 Date Analyzed : 7/17/2024

### **RT Summaries and QC Check (minutes)**

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon	Methane	Carbon	File ID	Time
-			-	Monoxide		Dioxide		_
ICAL Mean RT	2.121	4.409	5.343	10.218	6.996	3.582		
RT Windows (+/- min )	0.330	0.330	0.330	0.330	0.330	0.330		
STD S33-05222401	2.114	4.403	5.334	10.190	6.993	3.688	07172402.D	07:45
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass	Pass	Pass		
MB STD00251		4.439 Pass	5.395 Pass			3.758 Pass	07172403.D	08:00
Lab Air		4.269 Pass	4.991 Fail			3.743 Pass	07172404.D	08:16
LCS S33-07272202	2.113 Pass	4.404 Pass	5.336 Pass	10.192 Pass	6.992 Pass	3.678 Pass	07172405.D	08:34
LCSD S33-07272202	2.113 Pass	4.403 Pass	5.336 Pass	10.190 Pass	6.991 Pass	3.677 Pass	07172406.D	08:52
P2402855-001		4.337 Pass	5.084 Pass			3.685 Pass	07172408.D	09:22
P2402855-002		4.317 Pass	5.071 Pass			3.741 Pass	07172409.D	09:36
P2402855-002dup		4.317 Pass	5.071 Pass			3.741 Pass	07172410.D	09:49
STD S33-05222401	2.113 Pass	4.402 Pass	5.332 Pass	10.186 Pass	6.989 Pass	3.675 Pass	07172417.D	12:16

### Continuing Calibration Standards Summary (ppm)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
ACTUAL	40300.0	24900.0	49700.0	50400.0	40300.0	50400.0		
CCV Criteria (+/- %D)	15.0%	10.0%	10.0%	10.0%	10.0%	10.0%		
STD S33-05222401	43005.3 <sup>6.7%</sup>	25166.4 <sup>1.1%</sup>	49848.7 <sup>0.3%</sup>	50496.8 0.2%	39334.1 <sup>2.4%</sup>	51186.8 <sup>1.6%</sup>	07172402.D	07:45
STD S33-05222401	44601.7 <sup>10.7%</sup>	25591.2 <sup>2.8%</sup>	50673.6 <sup>2.0%</sup>	52052.1 <sup>3.3%</sup>	40754.2 <sup>1.1%</sup>	53845.6 <sup>6.8%</sup>	07172417.D	12:16

### Lab Dup Summary (ppm, without DF correction and nomalization)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
Duplicate Criteria % RPD	5%	5%	5%	5%	5%	5%		
P2402855-002		150940.3	546562.4			5597.8	07172409.D	09:36
P2402855-002dup		150426.5	545914.0			5463.0	07172410.D	09:49
Duplicate % RPD		0.3% Pass	0.1% Pass			2.4% Pass		

#### LCS / LCS Dup Summary (ppm, without DF correction)

Sample ID	Hydroge	n	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
LCS Actual Conc. (ppm)	39700.0		25100.0	49800.0	49600.0	40000.0	49600.0		
LCS Criteria (% Range)	96%-117%	6	92%-112%	89%-113%	96%-113%	95%-111%	93%-112%		
LCS S33-07272202	42864.0		23757.2	46960.7	49630.8	39104.0	53182.6	07172405.D	08:34
LCS % Recovery	108%	Pass	95% Pass	94% Pass	100% Pass	98% Pass	107% Pass		
LCSD S33-07272202	43558.0		24013.6	47488.0	50328.8	39670.7	54201.8	07172406.D	08:52
LCS % Recovery	110%	Pass	96% Pass	95% Pass	101% Pass	99% Pass	109% Pass		
Duplicate % RPD	1.6%		1.1%	1.1%	1.4%	1.4%	1.9%		
Duplicate Criteria % RPD	5%	Pass	<b>7%</b> Pass	<b>7%</b> Pass	5% Pass	5% Pass	6% Pass		

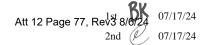
#### Lab Air QC Summary

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Lab Air Criteria Total (90%-110%)
Lab Air		220869.6	779031.5			556.6	100.0% Pass
Lab Air Normalized (%)		22.07%	77.86%			0.06%	100.0%

Att 12 Page 76, Revs 8/6/24 2nd 07/17/24 07/17/24

Data Fil Signal(s Acq On Operator Sample Misc	th : I:\GC38\DATA\2024_07\ le : 07172402.D s) : TCD1A.ch : 17-Jul-2024, 07:45:17 r : SR/BK : STD S33-05222401 : l : 1 Sample Multiplier		SR 07	7/17/24	Att 12 Page
Quant T: Quant Me Quant T: QLast Up Response Integrat	tion File: epa3c.e ime: Jul 17 07:59:07 2024 ethod : I:\GC38\METHODS\C3 itle : EPA 3C, ASTM D 194 odate : Tue Mar 08 12:45:4 e via : Initial Calibratio tor: ChemStation Inj. : 100ul Phase : CarboSieve Packed	6-90, VOA-E 1 2022 n	PA3C		
Signai -		R.T.	Response	Conc Units	
1) 2) 3) 4) 5)	Oxygen Nitrogen Carbon Monoxide Methane	4.403 5.334 10.190 6.993	336145731 715636629 715928249 408865333	43005.309 ppn 25166.402 ppn 49848.692 ppn 50496.844 ppn 39334.117 ppn 51186.795 ppn	n n n

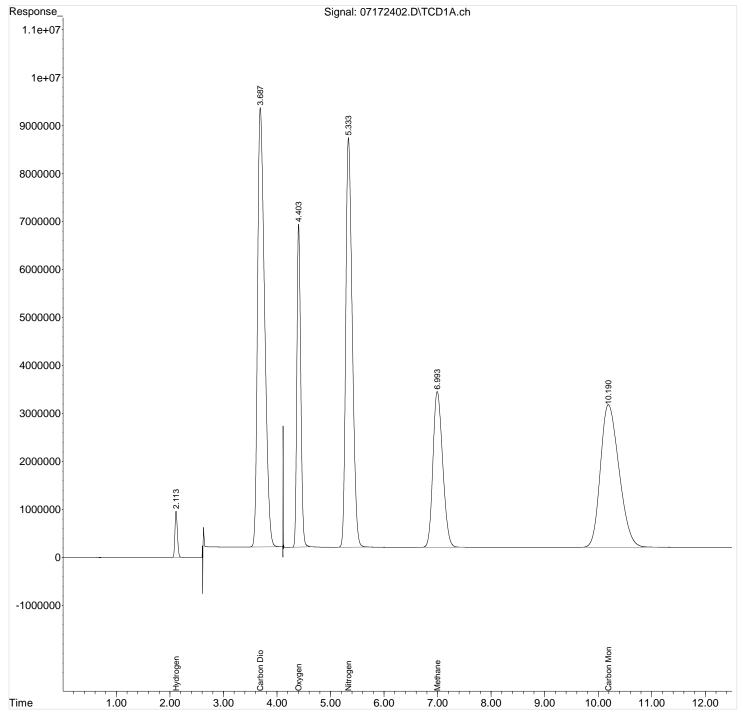
(f)=RT Delta > 1/2 Window



Data File : 07172402.D Signal(s) : TCD1A.ch Acq On : 17-Jul-2024, 07:45:17 Operator : SR/BK : STD S33-05222401 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 07:59:07 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

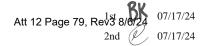
Data Path : I:\GC38\DATA\2024\_07\17\



Att 12 Page 78, Rev3 8/0724 2nd 07/17/24 07/17/24

Data Path : I:\GC38\DATA\2024_0 Data File : 07172417.D Signal(s) : TCD1A.ch Acq On : 17-Ju1-2024, 12:16: Operator : SR/BK Sample : STD S33-05222401 Misc : ALS Vial : 1 Sample Multipli	17	SR	07/17/24	Att 12 Page
Integration File: epa3c.e Quant Time: Jul 17 12:49:52 202 Quant Method : I:\GC38\METHODS\ Quant Title : EPA 3C, ASTM D 1 QLast Update : Tue Mar 08 12:45 Response via : Initial Calibrat Integrator: ChemStation Volume Inj. : 100ul	C38021122.M 946-90, VOA-E :41 2022 ion	PA3C		
Signal Phase : CarboSieve Packe Signal Info :	d Column			
Compound	R.T.	Response	Conc Units	
<ol> <li>Nitrogen</li> <li>Carbon Monoxide</li> </ol>	5.332 10.186	727420804 737977569	44601.725 ppm 25591.174 ppm 50673.591 ppm 52052.057 ppm 40754.219 ppm 53845.619 ppm	เ เ

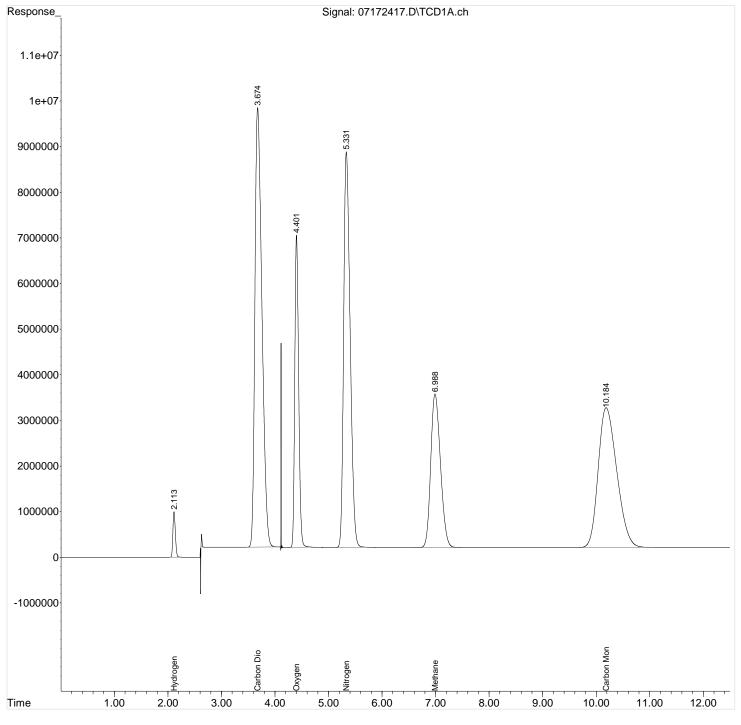
(f)=RT Delta > 1/2 Window



Data File : 07172417.D Signal(s) : TCD1A.ch Acq On : 17-Jul-2024, 12:16:17 : SR/BK Operator : STD S33-05222401 Sample Misc : ALS Vial : 1 Sample Multiplier: 10000 Integration File: epa3c.e Quant Time: Jul 17 12:49:52 2024 Quant Method : I:\GC38\METHODS\C38021122.M Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C QLast Update : Tue Mar 08 12:45:41 2022 Response via : Initial Calibration Integrator: ChemStation

Volume Inj. : 100ul Signal Phase : CarboSieve Packed Column Signal Info :

Data Path : I:\GC38\DATA\2024\_07\17\



# Injection Log

## Directory: I:\GC38\DATA\2022\_02\11\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	11-Feb-2022, 08:34	02112201.D	He Blank		Chris Parnell	EPA Method 3C.M	
2	11-Feb-2022, 08:51	02112202.D	ICAL C38021022 Level 1 S32-01312201		Chris Parnell	EPA Method 3C.M	Pass
3	11-Feb-2022, 09:11	02112203.D	ICAL C38021022 Level 2 S32-01312201		Chris Parnell	EPA Method 3C.M	Pass
4	11-Feb-2022, 09:28	02112204.D	ICAL C38021122 Level 3 S32-01312205		Chris Parnell	EPA Method 3C.M	Pass
5	11-Feb-2022, 09:45	02112205.D	ICAL C38021122 Level 4 S32-01312205		Chris Parnell	EPA Method 3C.M	Pass
6	11-Feb-2022, 11:22	02112206.D	ICAL C38021122 Level 5 S32-10262101		Chris Parnell	EPA Method 3C.M	Pass
7	11-Feb-2022, 11:56	02112207.D	ICAL C38021122 Level 6 S32-10192105		Chris Parnell	EPA Method 3C.M	Pass
8	11-Feb-2022, 12:11	02112208.D	ICAL C38021122 Level 7 S32-10202101		Chris Parnell	EPA Method 3C.M	Pass
9	11-Feb-2022, 12:32	02112209.D	ICAL C38021122 Level 8 S32-09292102		Chris Parnell	EPA Method 3C.M	Pass
10	11-Feb-2022, 12:46	02112210.D	ICAL C38021122 Level 9 N2		Chris Parnell	EPA Method 3C.M	Pass
11	11-Feb-2022, 13:37	02112211.D	ICAL C38021122 Level 10 O2		Chris Parnell	EPA Method 3C.M	Pass
12	11-Feb-2022, 14:00	02112212.D	xICAL C38021122 ICV S32-01312206		Chris Parnell	EPA Method 3C.M	Not Used
13	11-Feb-2022, 14:19	02112213.D	ICAL C38021122 ICV S32-01312206		Chris Parnell	EPA Method 3C.M	Pass
14	11-Feb-2022, 15:01	02112214.D	Lab Air		Chris Parnell	EPA Method 3C.M	

## **Injection** Log

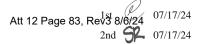
## Directory: I:\GC38\DATA\2024\_07\17\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	17-Jul-2024, 07:45:17	07172402.D	STD S33-05222401		SR/BK	EPA Method 3C.M	Pass
2	17-Jul-2024, 08:00:43	07172403.D	MB STD00251		SR/BK	EPA Method 3C.M	Pass
3	17-Jul-2024, 08:16:50	07172404.D	Lab Air		SR/BK	EPA Method 3C.M	Pass
4	17-Jul-2024, 08:34:39	07172405.D	LCS S33-07272202		SR/BK	EPA Method 3C.M	Pass
5	17-Jul-2024, 08:52:28	07172406.D	LCSD \$33-07272202		SR/BK	EPA Method 3C.M	Pass
6	17-Jul-2024, 09:08:47	07172407.D	P2402888-001		SR/BK	EPA Method 3C.M	
7	17-Jul-2024, 09:22:44	07172408.D	P2402855-001		SR/BK	EPA Method 3C.M	
8	17-Jul-2024, 09:36:53	07172409.D	P2402855-002		SR/BK	EPA Method 3C.M	
9	17-Jul-2024, 09:49:54	07172410.D	P2402855-002dup		SR/BK	EPA Method 3C.M	
10	17-Jul-2024, 10:05:07	07172411.D	P2402891-001		SR/BK	EPA Method 3C.M	
11	17-Jul-2024, 10:19:10	07172412.D	P2402857-001		SR/BK	EPA Method 3C.M	
12	17-Jul-2024, 11:04:44	07172413.D	P2402871-001		SR/BK	EPA Method 3C.M	
13	17-Jul-2024, 11:29:16	07172414.D	P2402871-002		SR/BK	EPA Method 3C.M	
14	17-Jul-2024, 11:44:54	07172415.D	P2402871-003		SR/BK	EPA Method 3C.M	
15	17-Jul-2024, 12:02:06	07172416.D	P2402878-001		SR/BK	EPA Method 3C.M	
16	17-Jul-2024, 12:16:17	07172417.D	STD S33-05222401		SR/BK	EPA Method 3C.M	Pass
17	17-Jul-2024, 12:55:20	07172418.D	P2402883-001		SR/BK	EPA Method 3C.M	
18	17-Jul-2024, 13:09:01	07172419.D	P2402883-002		SR/BK	EPA Method 3C.M	
19	17-Jul-2024, 13:21:51	07172420.D	P2402883-003		SR/BK	EPA Method 3C.M	
20	17-Jul-2024, 13:36:03	07172421.D	P2402883-004		SR/BK	EPA Method 3C.M	
21	17-Jul-2024, 13:49:34	07172422.D	P2402883-005		SR/BK	EPA Method 3C.M	
22	17-Jul-2024, 14:04:48	07172423.D	P2402883-006		SR/BK	EPA Method 3C.M	
23	17-Jul-2024, 14:18:15	07172424.D	P2402883-007		SR/BK	EPA Method 3C.M	
24	17-Jul-2024, 14:31:54	07172425.D	STD S33-05222401		SR/BK	EPA Method 3C.M	Pass

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Data Path : I:\GC13\DATA\SCD\2024 Data File : 07162407.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 9:42 Operator : GG Sample : P2402855-001 1.0ml Misc : ALS Vial : 1 Sample Multiplier Integration File: autoint1.e Quant Time: Jul 17 08:42:57 2024 Quant Method : I:\GC13\METHODS\GC Quant Title : ASTM D5504, VOA-S3 QLast Update : Fri Aug 07 13:29:1 Response via : Initial Calibration Integrator: ChemStation 6890 Sc.	: 1 13_080720.M 07M_SCD, VOZ 5 2020 n		eaks clipped	Att 12 Pa
Volume Inj. : Signal Phase : Signal Info :		5 -		
Compound	R.T.	Response	Conc Units	
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide</pre>	1.018 1.322 0.000 0.000 0.000 3.973 0.000 0	167234 141956 0 99669 0 0 0 0 0 0 0 0 0 0 0 0 0	3.492 pp 2.573 pp N.D. ppb N.D. ppb 1.101 pp N.D. ppb N.D. ppb	b m b m

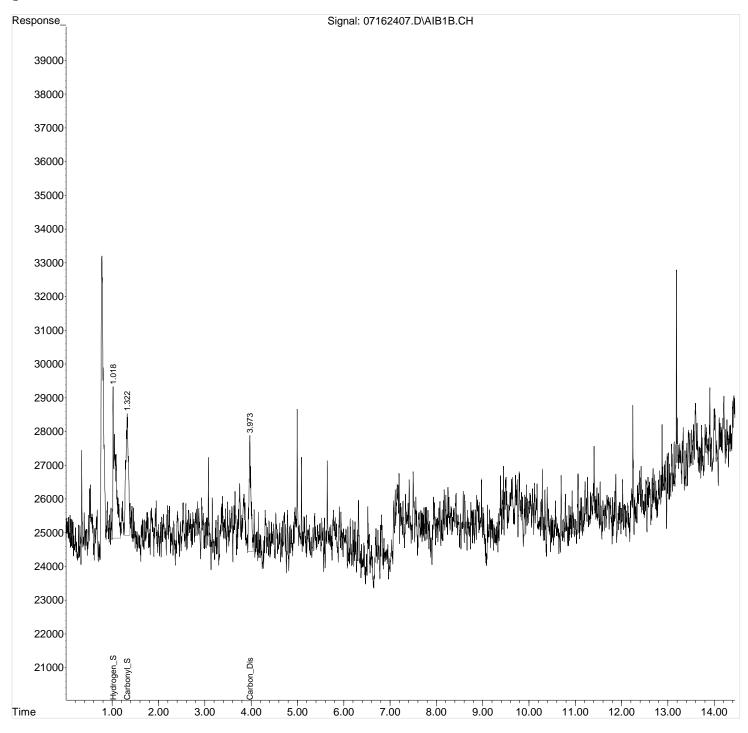
(f)=RT Delta > 1/2 Window

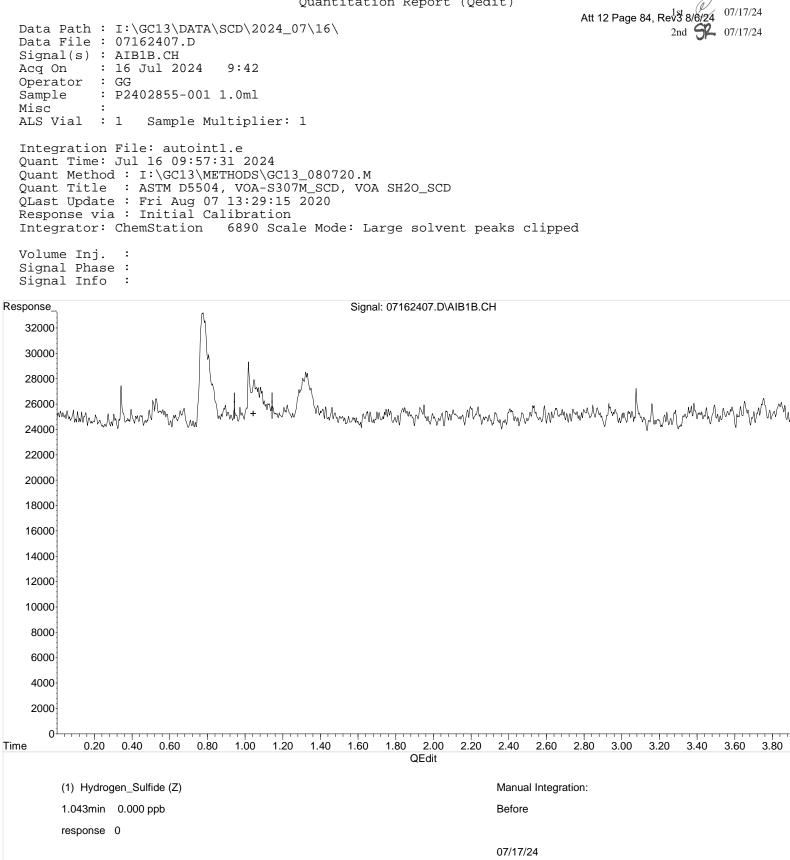


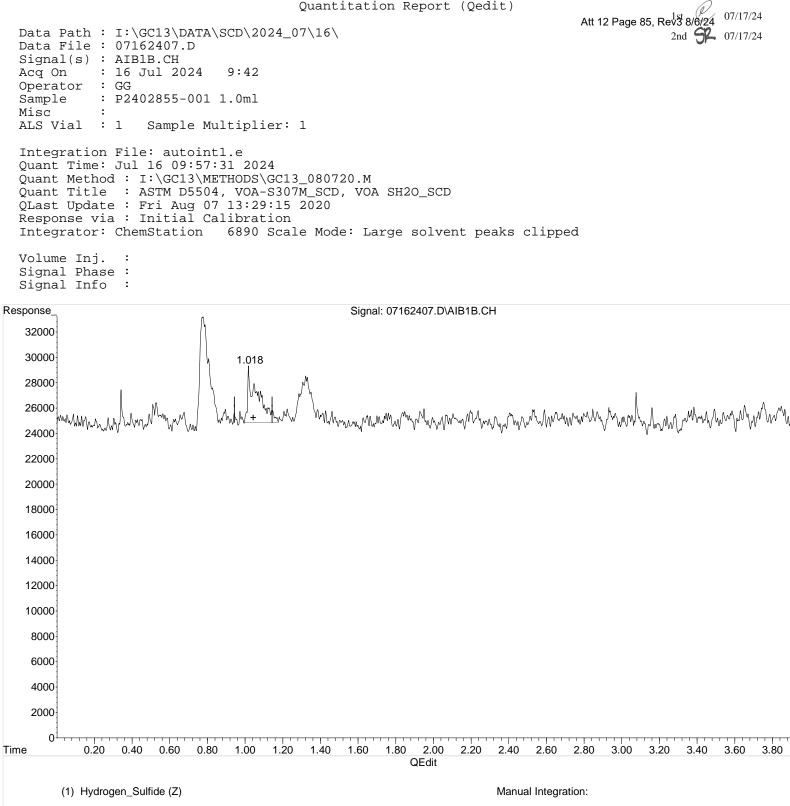
Data File : 07162407.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 9:42 : GG Operator : P2402855-001 1.0ml Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 17 08:42:57 2024 Quant Method : I:\GC13\METHODS\GC13 080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation

Volume Inj. : Signal Phase : Signal Info :

Data Path : I:\GC13\DATA\SCD\2024\_07\16\



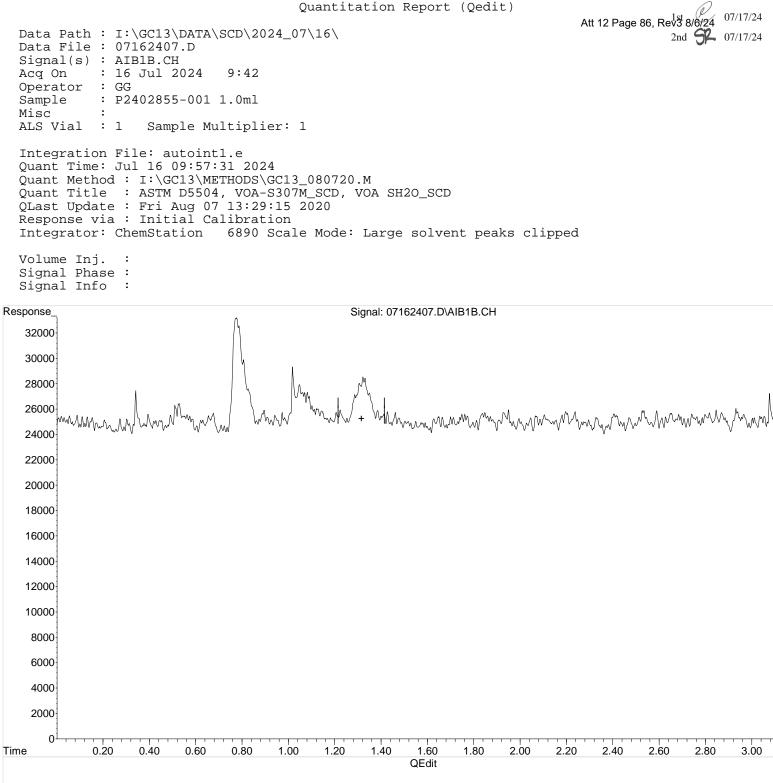




1.018min 3.492 ppb m response 167234

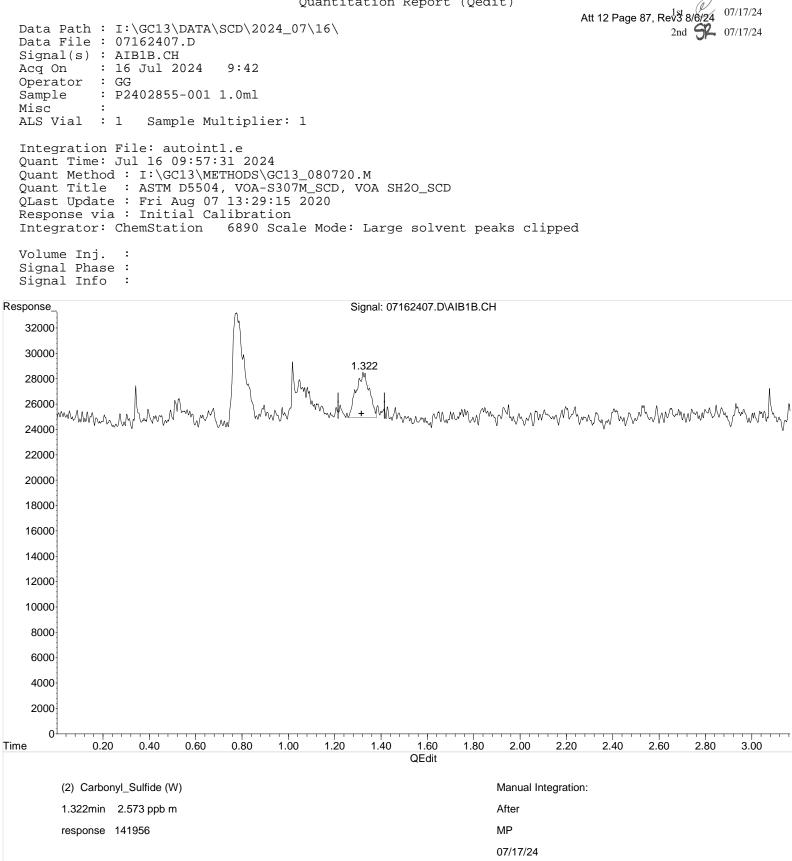
After MP

07/17/24

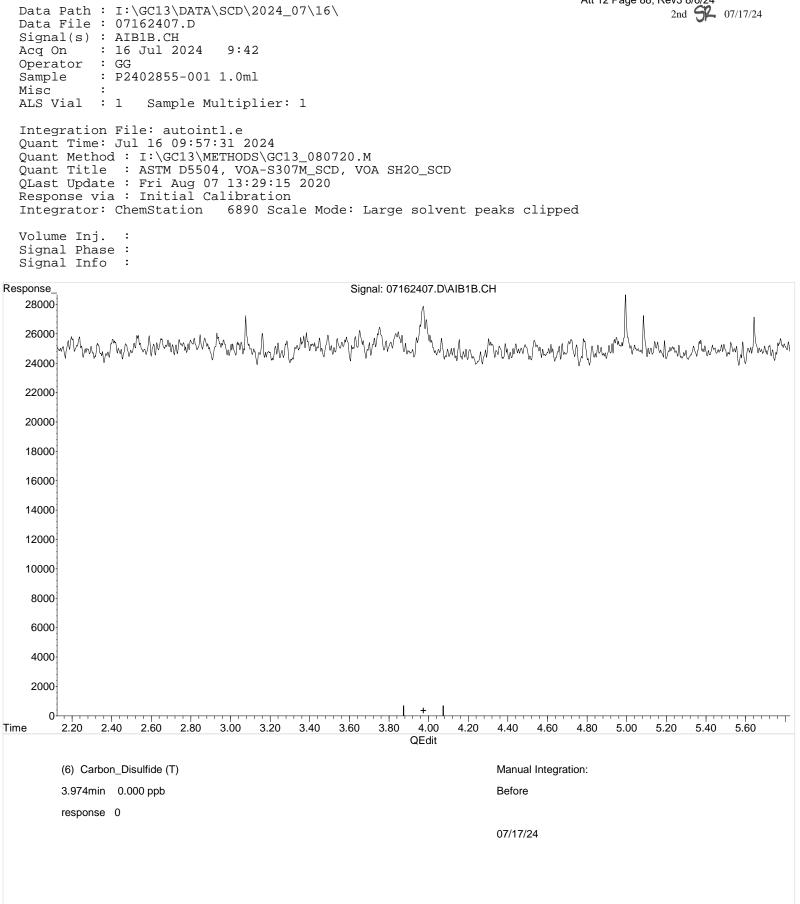


(2) Carbonyl_Sulfide (W)	Manual Integration:
1.315min 0.000 ppb	Before
response 0	
	07/17/24

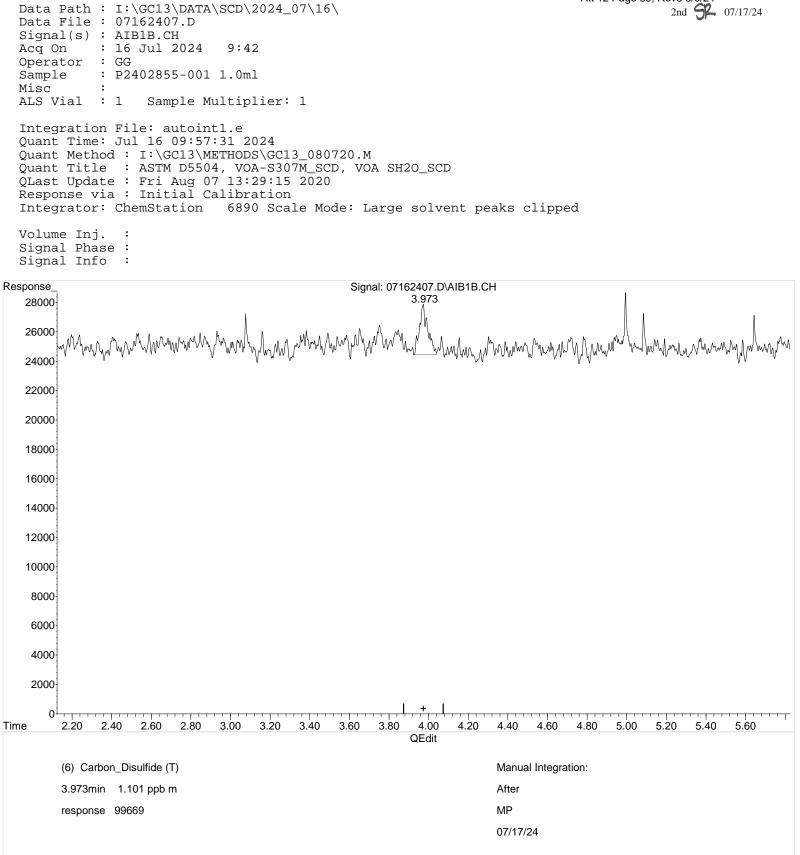
Time



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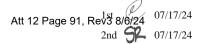


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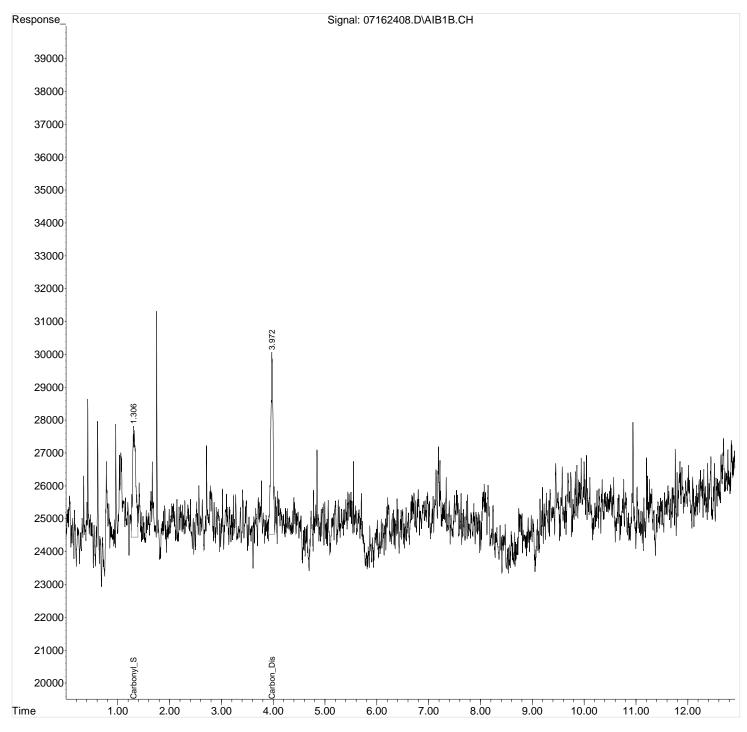
Data Path : I:\GC13\DATA\SCD\2024 Data File : 07162408.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 10:01 Operator : GG Sample : P2402855-002 1.0ml Misc : ALS Vial : 1 Sample Multiplier Integration File: autoint1.e Quant Time: Jul 17 09:11:38 2024 Quant Method : I:\GC13\METHODS\GC Quant Title : ASTM D5504, VOA-S30	: 1 13_080720.M	A SH2O SCD		Att 12 Pa
QLast Update : Fri Aug 07 13:29:11 Response via : Initial Calibration Integrator: ChemStation 6890 Sca	5 2020 n		eaks clipped	
Volume Inj. : Signal Phase : Signal Info :				
Compound	R.T.	Response	Conc Units	
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Thiophene 21) T Diethyl_Disulfide 22) T Methyltrisulfide</pre>	0.000 1.306 0.000 0.000 3.972 0.000 0	0 143921 0 0 172683 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	N.D. ppb 2.608 ppt N.D. ppb N.D. ppb 1.907 ppt N.D. ppb N.D. ppb	o m o m

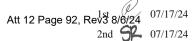


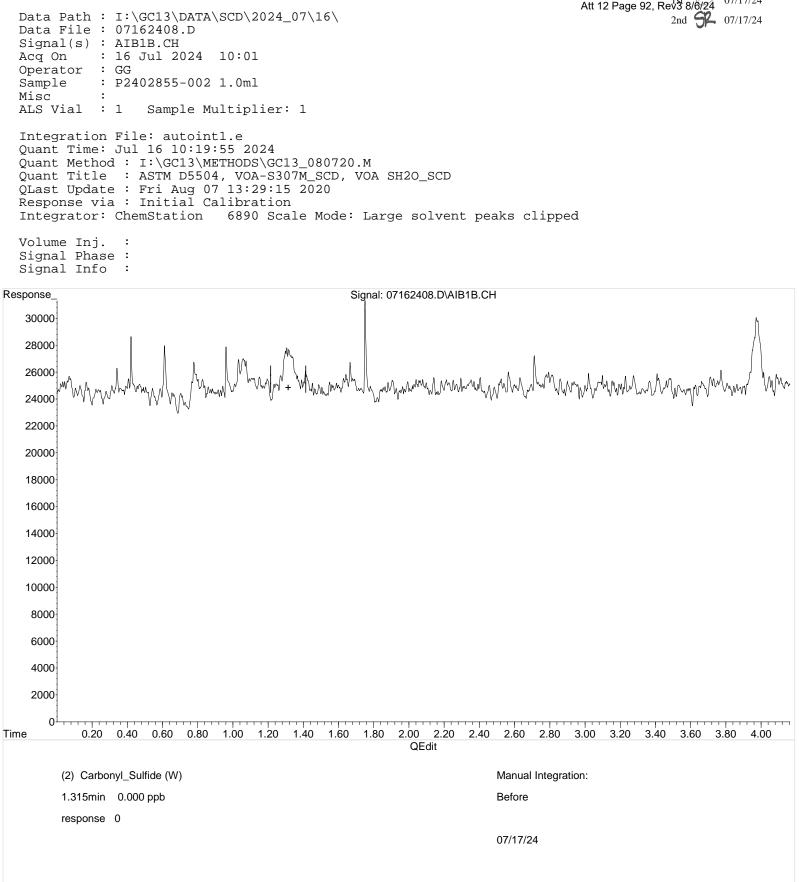
Data File : 07162408.D Signal(s) : AIB1B.CH 10:01 Acq On : 16 Jul 2024 : GG Operator : P2402855-002 1.0ml Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 17 09:11:38 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation

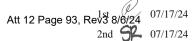
Volume Inj. : Signal Phase : Signal Info :

Data Path : I:\GC13\DATA\SCD\2024\_07\16\







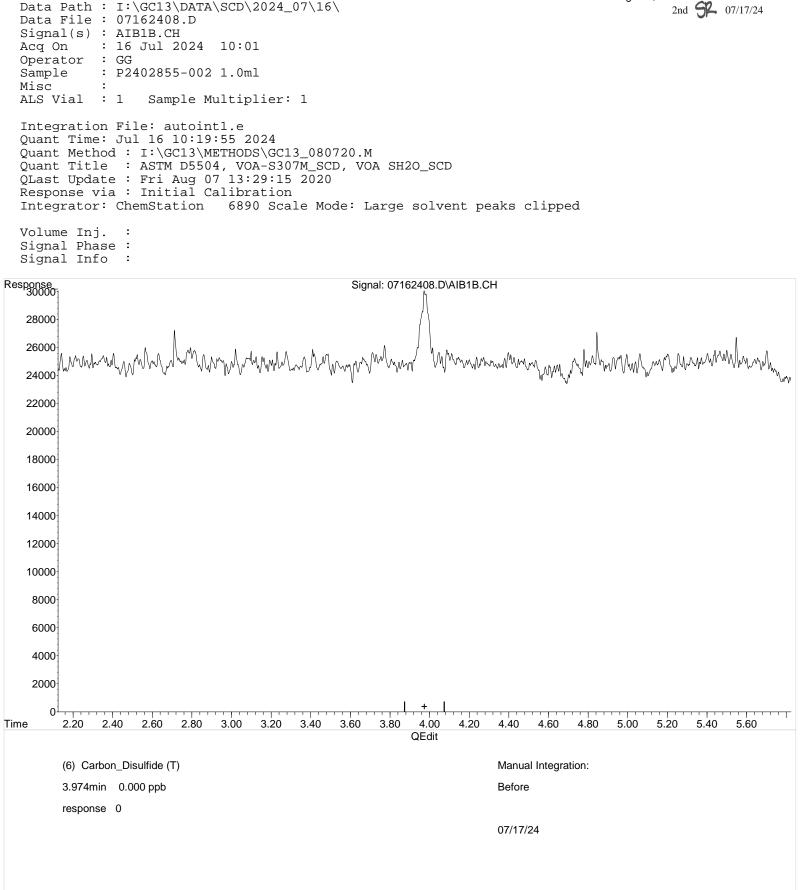


Data Path : I:\GC13\DATA\SCD\2024\_07\16\ Data File : 07162408.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 10:01 : GG Operator Sample : P2402855-002 1.0ml Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 16 10:19:55 2024 Ouant Method : I:\GC13\METHODS\GC13 080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation Volume Inj. : Signal Phase : Signal Info : Response\_ Signal: 07162408.D\AIB1B.CH 30000 1.306 28000 26000 24000 22000 20000 18000 16000 14000 12000 10000 8000 6000 4000 2000 0 Time 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80 3.00 3.20 3.40 3.60 3.80 4.00 QEdit (2) Carbonyl\_Sulfide (W) Manual Integration: 1.306min 2.608 ppb m After MP response 143921 07/17/24

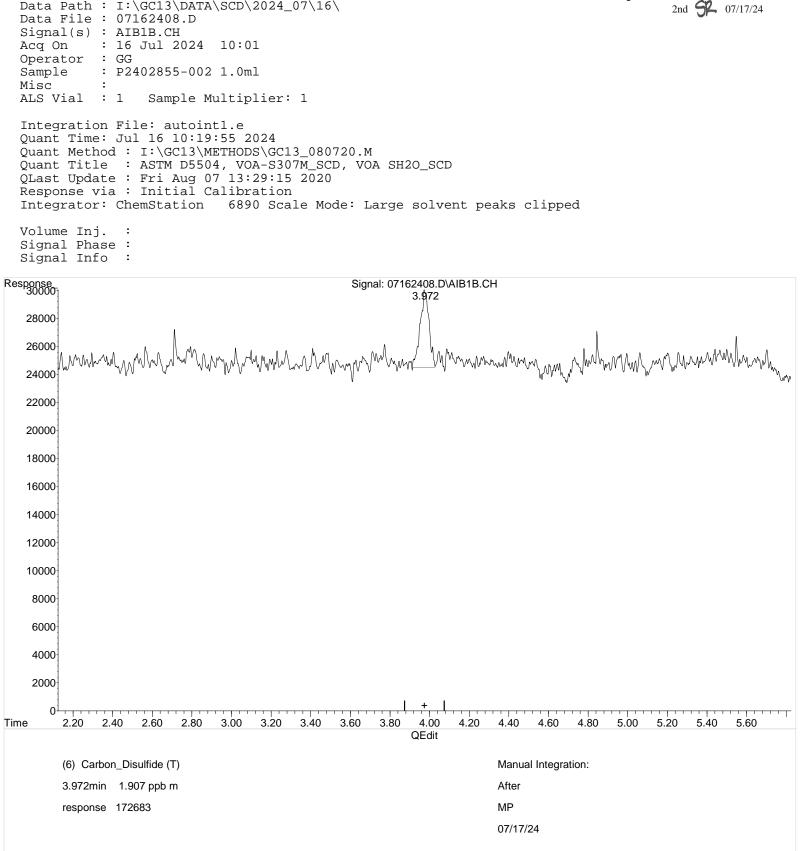
(+) = Expected Retention Time GC13\_080720.M Wed Jul 17 09:11:17 2024

Page: 1

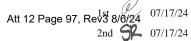
Att 12 Page 94, Rev 8 8/6/24 07/17/24 2nd **52** 07/17/24



Att 12 Page 95, Rev3 8/6/24 07/17/24 2nd **52** 07/17/24



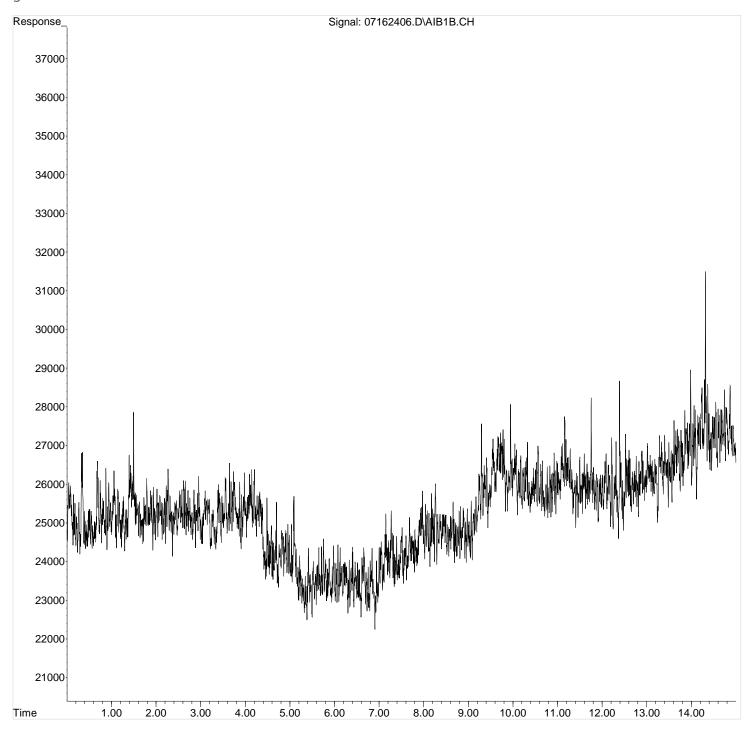
Data Path : I:\GC13\DATA\SCD\2024_ Data File : 07162406.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 9:14 Operator : GG Sample : MB 1.0ml Misc : ALS Vial : 1 Sample Multiplier:				Att 12 Pa
Integration File: autoint1.e Quant Time: Jul 16 09:38:38 2024 Quant Method : I:\GC13\METHODS\GC1 Quant Title : ASTM D5504, VOA-S30 QLast Update : Fri Aug 07 13:29:15 Response via : Initial Calibration Integrator: ChemStation 6890 Sca	07M_SCD, VOA 5 2020		eaks clipped	1
Volume Inj. : Signal Phase : Signal Info :				
Compound	R.T.	Response	Conc Units	3
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Mercaptan 20) T Diethyl_Disulfide 21) T Diethyl_Disulfide</pre>	0.000 0		N.D. ppb N.D. ppb	

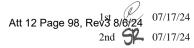


Data File : 07162406.D Signal(s) : AIB1B.CH 9:14 Acq On : 16 Jul 2024 : GG Operator Sample : MB 1.0ml Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 16 09:38:38 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation

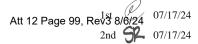
Volume Inj. : Signal Phase : Signal Info :

Data Path : I:\GC13\DATA\SCD\2024\_07\16\





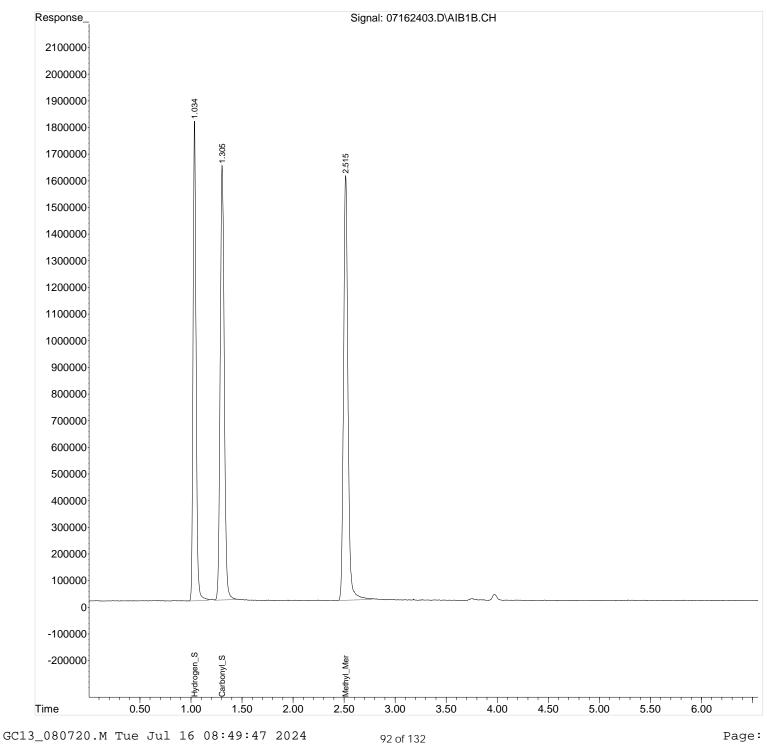
Data Fi Signal( Acq On Operato Sample Misc ALS Via Integra	<pre>th : I:\GC13\DATA\SCD\2024_ le : 07162403.D s) : AIB1B.CH         : 16 Jul 2024 8:30 or : GG         : LCS S33-06212402         : 1        : 1 Sample Multiplier: tion File: autoint1.e </pre>			Att 12 Pa
Quant M Quant T QLast U Respons	Time: Jul 16 08:38:54 2024 Method : I:\GC13\METHODS\GC1 Title : ASTM D5504, VOA-S30 Mpdate : Fri Aug 07 13:29:15 Se via : Initial Calibration Metor: ChemStation 6890 Sca	7M_SCD, VO 2020		eaks clipped
Signal	Inj. : Phase : Info :			
	Compound	R.T.	Response	Conc Units
1) Z 2) W 3) T 4) T 5) T 6) T 7) T 8) T 9) T 10) T 11) T 12) T 13) T 14) t 15) t 15) t	Ethyl_Mercaptan Dimethyl_Sulfide Carbon_Disulfide 2-Propyl_Mercaptan t-Butyl_Mercaptan Ethyl_Methyl_Sulfide Thiophene i-Butyl_Mercaptan Diethyl_Sulfide n-Butyl_Mercaptan Dimethyl Disulfide	0.000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000000		N.D. ppb N.D. ppb



Data File : 07162403.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 8:30 Operator : GG : LCS S33-06212402 Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 16 08:38:54 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : Signal Phase : Signal Info :

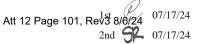
Data Path : I:\GC13\DATA\SCD\2024\_07\16\



Att 12 Page 100, Rev3 8/6/24 07/17/24 2nd **32** 07/17/24

Data Path : I:\GC13\DATA\SCD\2024_ Data File : 07162404.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 8:41 Operator : GG Sample : LCSD S33-06212402 Misc : ALS Vial : 1 Sample Multiplier: Integration File: autoint1.e Quant Time: Jul 16 08:49:38 2024 Quant Method : I:\GC13\METHODS\GC1 Quant Title : ASTM D5504, VOA-S30 QLast Update : Fri Aug 07 13:29:15 Response via : Initial Calibration Integrator: ChemStation 6890 Sca	1 3_080720.M 7M_SCD, VOA 2020		Att 12 Pag beaks clipped
Volume Inj. : Signal Phase : Signal Info :			
Compound	R.T.	Response	Conc Units
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Thiophene 21) T Diethyl_Disulfide 22) T Methyl_Disulfide</pre>	1.034 1.306 2.514 0.000 0	$ \begin{array}{c} 41003178\\ 46193730\\ 50848332\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	856.281 ppb 837.231 ppb 1123.148 ppb N.D. ppb N.D. ppb d N.D. ppb d N.D. ppb N.D. ppb

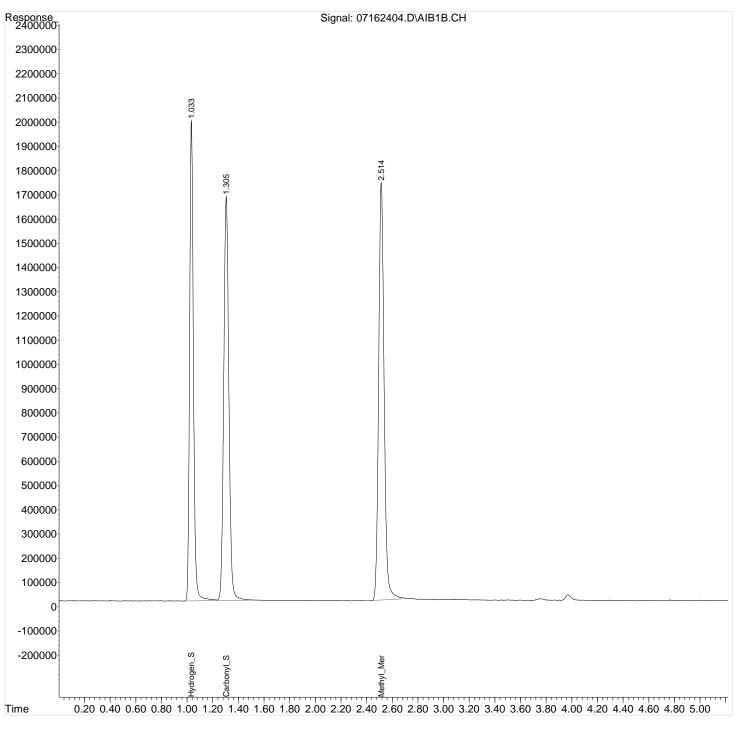
(f)=RT Delta > 1/2 Window



Data File : 07162404.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 8:41 Operator : GG : LCSD S33-06212402 Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 16 08:49:38 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : Signal Phase : Signal Info :

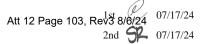
Data Path : I:\GC13\DATA\SCD\2024\_07\16\



Att 12 Page 102, Rev 8/6/24 07/17/24 2nd **92** 07/17/24

Data Path : I:\GC13\DATA\SCD\2024 Data File : 07162409.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 10:21 Operator : GG Sample : P2402855-002Dup 1.0ml Misc : ALS Vial : 1 Sample Multiplier			A	tt 12 Pag
Integration File: autoint1.e Quant Time: Jul 17 09:32:02 2024 Quant Method : I:\GC13\METHODS\GC Quant Title : ASTM D5504, VOA-S3 QLast Update : Fri Aug 07 13:29:1 Response via : Initial Calibration Integrator: ChemStation 6890 Sc	07M_SCD, VO# 5 2020 n		eaks clipped	
Volume Inj. : Signal Phase : Signal Info :				
Compound	R.T.	Response	Conc Units	
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide</pre>	0.000 1.324 0.000 0.000 3.976 0.000 0	$     \begin{array}{c}       0 \\       125080 \\       0 \\       0 \\       0 \\       124344 \\       0 \\     $	N.D. ppb 2.267 ppb N.D. ppb N.D. ppb 1.373 ppb N.D. ppb	m

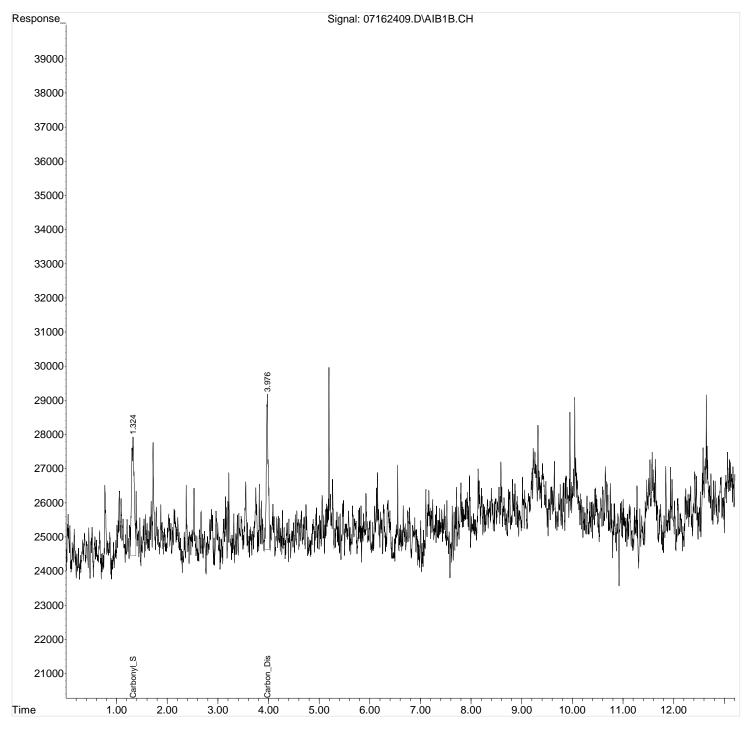
(f)=RT Delta > 1/2 Window



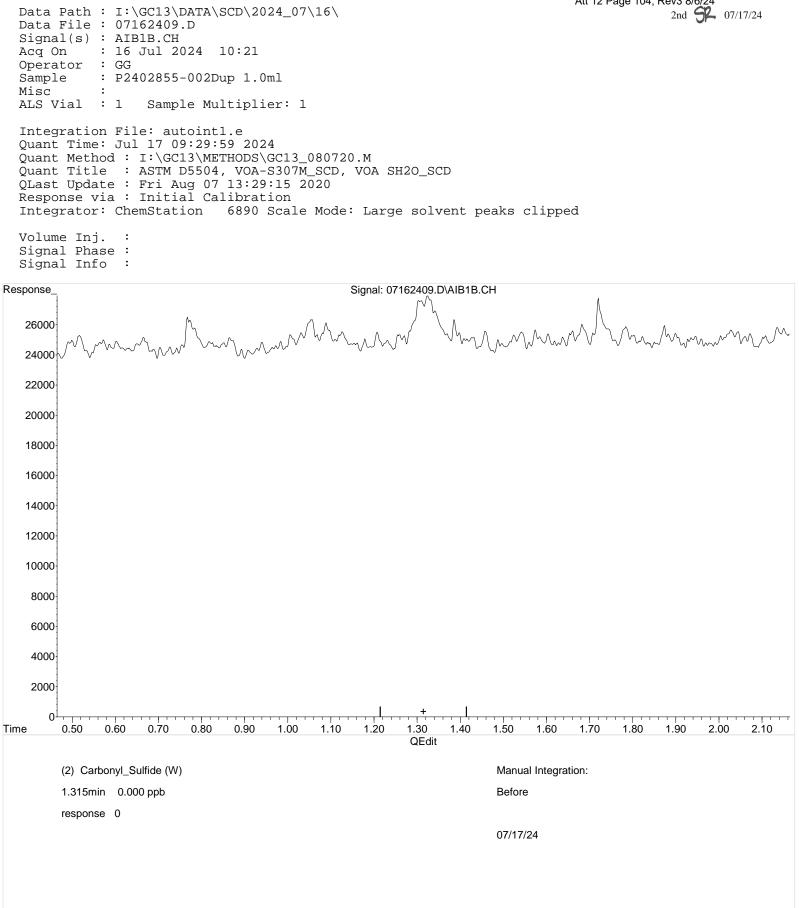
Data File : 07162409.D Signal(s) : AIB1B.CH 10:21 Acq On : 16 Jul 2024 : GG Operator : P2402855-002Dup 1.0ml Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 17 09:32:02 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation

Volume Inj. : Signal Phase : Signal Info :

Data Path : I:\GC13\DATA\SCD\2024\_07\16\



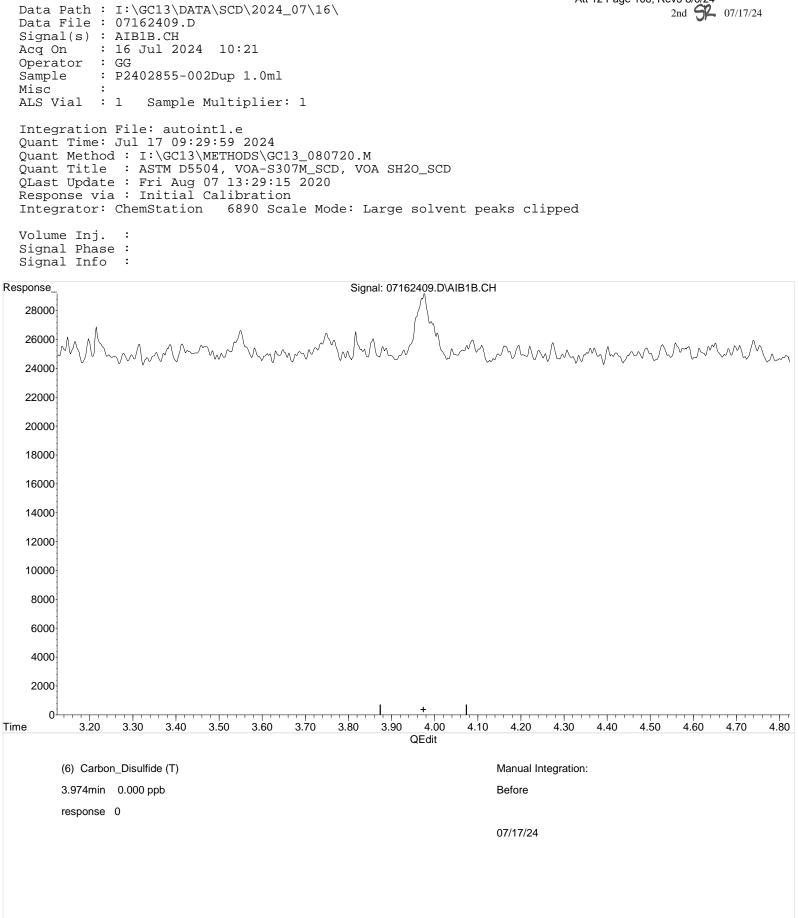
07/17/24 Att 12 Page 104, Rev3 8/6/24 **52** 07/17/24 2nd



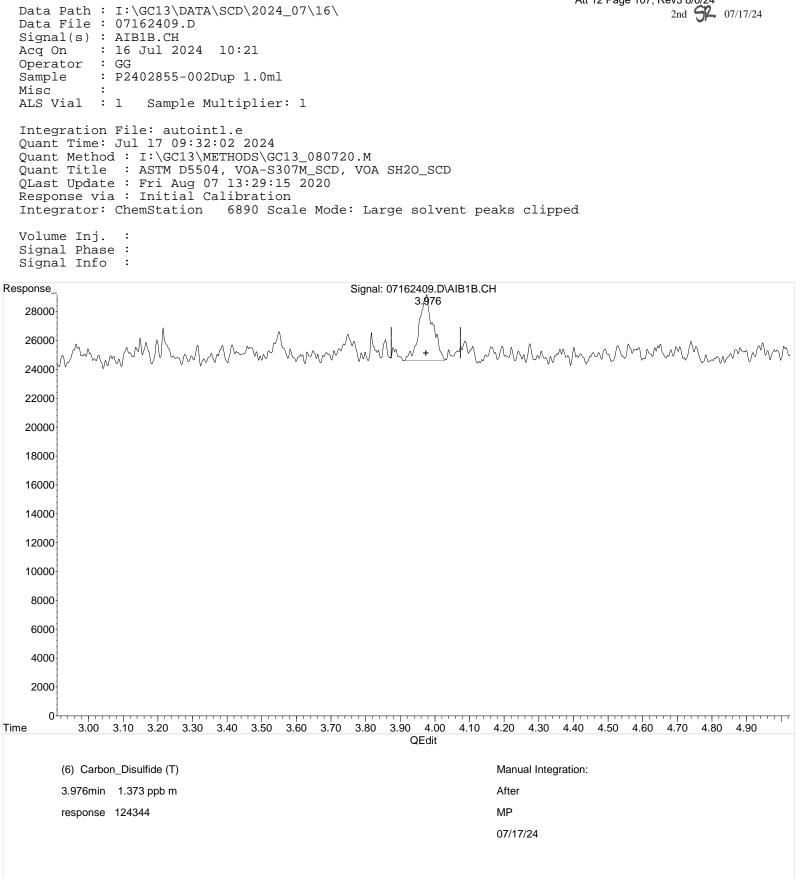
Att 12 Page 105, Rev 3 8/6/24 07/17/24 **57.** 07/17/24 2nd

Data Path : I:\GC13\DATA\SCD\2024\_07\16\ Data File : 07162409.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 10:21 : GG Operator Sample : P2402855-002Dup 1.0ml Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 17 09:32:02 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation Volume Inj. : Signal Phase : Signal Info : Signal: 07162409.D\AIB1B.CH Response\_ ∿\$¦24 26000 24000 22000 20000 18000 16000 14000 12000 10000 8000 6000 4000 2000 0+ 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 Time 0.30 QEdit (2) Carbonyl\_Sulfide (W) Manual Integration: 1.324min 2.267 ppb m After MP response 125080 07/17/24

Att 12 Page 106, Rev3 8/6/24 07/17/24 2nd **52** 07/17/24



Att 12 Page 107, Rev 8/6/24 07/17/24 **52** 07/17/24 2nd



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Method Path : J:\GC13\METHODS\ Method File : GC13\_080720.M Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD Last Update : Fri Aug 07 13:29:15 2020 Response Via : Initial Calibration

Calibi 5ppb	ration Files =08072014.D 20	=	080720:	15.D	100	=080	72016.1	D		
1000			080720:		10k	=080	72019.1	D		
	Compound	5ppb	20	100	1000	5000	10k	Avg		%RSD
1) Z 2) W 3) T 5) T 7) T 7) T 7) T 7) T 7) T 12) T 12) T 13) T 14) t 15) t 17) t 19) t	Hydrogen_Sulfide Carbonyl_Sulfide Methyl_Mercaptan Dimethyl_Sulfide Carbon_Disulfide Carbon_Disulfide 2-Propyl_Merca Propyl_Mercaptan Ethyl_Methyl Thiophene i~Butyl_Merca Diethyl_Sulfide n-Butyl_Merca Dimethyl_Disu 2-Methyl_Thio 3-Methyl_Thio 2,5-Dimethyl	5.773 4.196 4	5.970 3.965 3	5.144 3.729 3.729 3.729 0.746 3.729	5.055 4.447 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4.47 4	5.434 4.900	5.395 4.920 4	5.517 4.527	E4445444444444444444444444444444444444	6.43 13.90 13.90 13.90 13.90 13.90 13.90 13.90
20) T 21) T 22) T	2-Ethyl_Thiop Diethyl_Disul Methyltrisulfide	0.839	3.965 0.793 1.191	0.746	0.889	0.980	0.984	4.527 0.905 1.358	E5	13.90 13.90 13.88
(#) = 0	Out of Range ###		r of ca					ed form	nat	 ###

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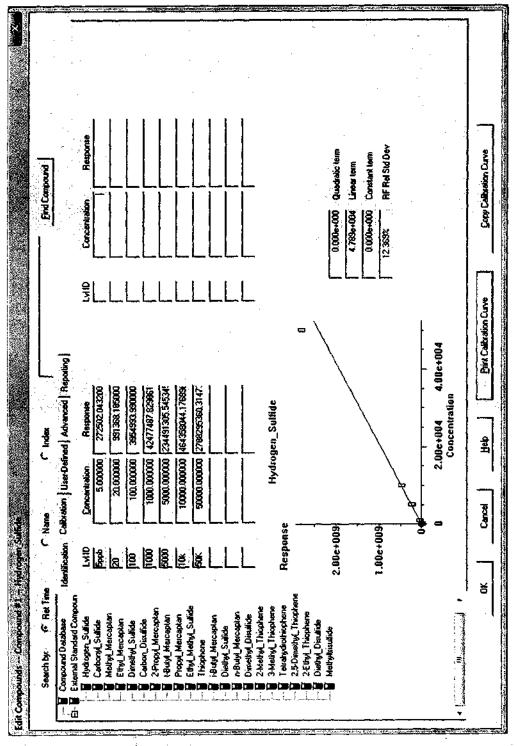
Method Path : J:\GC13\METHODS\ Method File : GC13_080720.M	
Title : ASTM D5504, VOA-S307M_SCD, VOA SH20_SCD	
Last Update : Fri Aug 07 13:29:15 2020	
Response Via : Initial Calibration	

#	ID	Conc	ISTD Conc	Path\File
1	5ppb	2	0	I:\GC13\DATA\SCD\2020_08\07\08072014.D
2	20	7	0	I:\GC13\DATA\SCD\2020_08\07\08072015.D
3	100	33	0	I:\GC13\DATA\SCD\2020_08\07\08072016.D
4	1000	333	0	I:\GC13\DATA\SCD\2020_08\07\08072017.D
5	5000	1667	0	I:\GC13\DATA\SCD\2020_08\07\08072018.D
6	10k	3333	0	I:\GC13\DATA\SCD\2020_08\07\08072019.D
7	50K	16667	0	I:\GC13\DATA\SCD\2020_08\07\08072020.D

#	ID	Update Time	Quant Time	Acquisition Time
1	5ppb	Aug 07 12:54 2020	Aug 07 12:53 2020	07 Aug 2020 10:43 am
2	20	Aug 07 12:55 2020	Aug 07 12:54 2020	07 Aug 2020 11:09 am
3	100	Aug 07 12:55 2020	Aug 07 12:55 2020	07 Aug 2020 11:34 am
4	1000	Aug 07 12:56 2020	Aug 07 12:56 2020	07 Aug 2020 11:50 am
5	5000	Aug 07 12:56 2020	Aug 07 12:56 2020	07 Aug 2020 12:12 pm
6	10k	Aug 07 12:57 2020	Aug 07 12:57 2020	07 Aug 2020 12:22 pm
7	50K	Aug 07 12:59 2020	Aug 07 12:59 2020	07 Aug 2020 12:38 pm

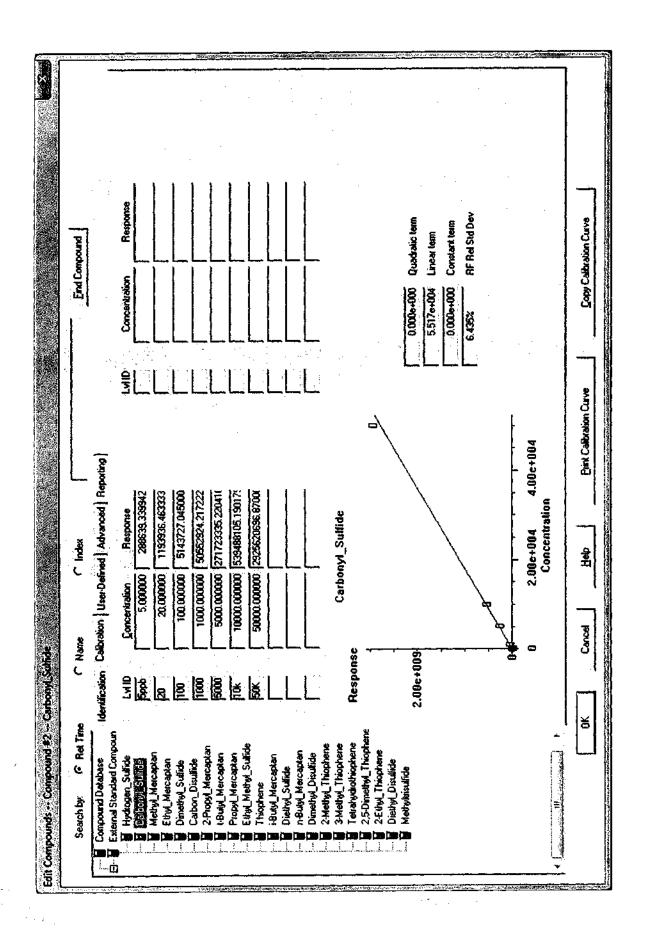
GC13\_080720.M Mon Aug 31 10:57:20 2020

-241

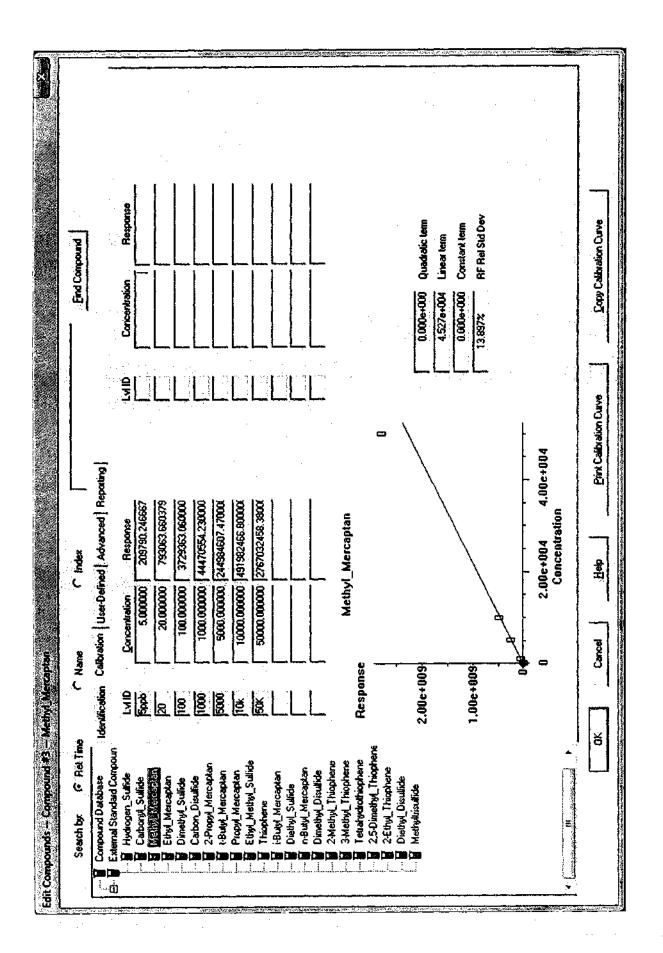


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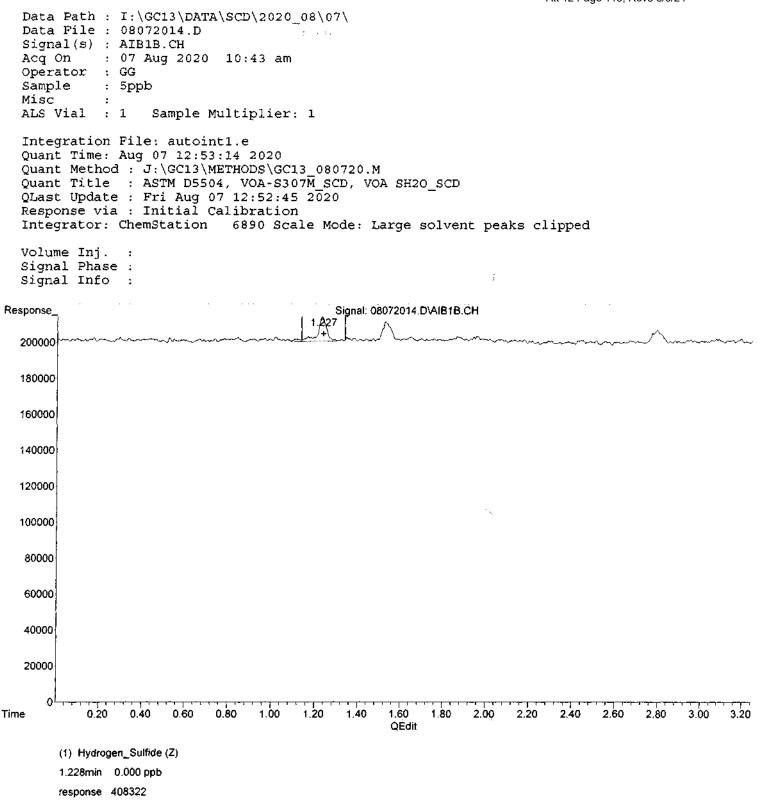


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Data File : Signal(s) : Acq On : Operator : Sample : Misc :	AIB1B.CH 07 Aug 2020 10:43 a GG	m	× · · ·		- -	raye II3,
Quant Time: Quant Method Quant Title QLast Update Response via	File: autoint1.e Aug 07 12:53:14 2020 1 : J:\GC13\METHODS\G : ASTM D5504, VOA-S e : Fri Aug 07 12:52: a : Initial Calibrati ChemStation 6890 S	C13_080720.M 307M_SCD, VOA 45 2020 on		beaks cl	lipped	
Volume Inj. Signal Phase Signal Info	÷ :					
Com	ound	R.T.	Response	Conc	Units	
2) W Cark 3) T Meth 4) T Ethy 5) T Dime 6) T Cark 7) T 2-Pr 8) T t-Bu 9) T Prop 10) T Ethy 11) T Thic 12) T i-Bu 13) T Diet 14) t n-Bu 15) t Dime 16) T 2-Me 17) t 3-Me 18) T Tetr 19) t 2,5- 20) T 2-Et 21) T Diet	rogen_Sulfide ponyl_Sulfide nyl_Mercaptan rl_Mercaptan ethyl_Sulfide pon_Disulfide ropyl_Mercaptan ntyl_Mercaptan rl_Methyl_Sulfide pphene ntyl_Mercaptan	$\begin{array}{c} 1.525\\ 2.791\\ 0.000\\ 0.$	272502 288639 209790 0 0 0 0 0 0 0	NoCal	pada pada pada pada pada pada pada pada	m

Data Path : J:\GC13\DATA\SCD\2020\_08\07\ Data File : 08072014.D Signal(s) : AIB1B.CH 07 Aug 2020 19:43 am Acq On Ξ et i ser Operator : GG Sample 5ppb : Misc 50ul of S32-08072001 : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Aug 07 12:53:14 2020 Quant Method : J:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 12:52:45 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. : Signal Phase : Signal Info : Signal: 08072014.D\AlB1B.CH Response\_ 255000 250000 245000 240000 235000 230000 225000 220000 215000 210000 205000 WWW 200000 1.60 2.20 2.60 2.80 3.00 Time 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.80 2.00 2.40 GC13\_080720.M Mon Aug 31 11:49:03 2020 Page: 2



(+) = Expected Retention Time GC13\_080720.M Fri Aug 07 12:53:34 2020

Data Path : I:\GC13\DATA\SCD\2020 08\07\ Data File : 08072014.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 10:43 am Operator : GG Sample : 5ppb Misc : Sample Multiplier: 1 ALS Vial : 1 Integration File: autointl.e Quant Time: Aug 07 12:53:14 2020 Quant Method : J:\GC13\METHODS\GC13 080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 12:52:45 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. : Signal Phase : Signal Info : Signal: 08072014.D\AIB1B.CH Response\_ 1.227 200000 180000 160000 140000 120000 100000 80000 60000 40000 20000 0 Time 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2,40 2.60 2.80 3.00 3,20 QEdit (1) Hydrogen\_Sulfide (Z) 1.227min 0.000 ppb m response 272502 Wr 1/10/20

(+) = Expected Retention Time GC13 080720.M Fri Aug 07 12:53:53 2020

Data File : 08072015.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 11:09 am Operator : GG Sample : 20ppb Misc : 200ul of S32-08072001 ALS Vial : 1 Sample Multiplier				
Integration File: autointl.e Quant Time: Aug 07 12:54:56 2020 Quant Method : J:\GC13\METHODS\GC Quant Title : ASTM D5504, VOA-S3 QLast Update : Fri Aug 07 12:52:4 Response via : Initial Calibration Integrator: ChemStation 6890 Sc	07M_SCD, VO 5 2020 n	A SH2O_SCD	peaks clipped	
Volume Inj. : Signal Phase : Signal Info :				
Compound	R.T.	Response	Conc Units	<b>-</b> + <b></b> +
<b>7</b>				
Target Compounds	1 234	991368	18.190 ppb	
2) W Carbonyl Sulfide	1.434	1193936	20.682 ppb	
3) T Methyl Mercantan	2 782	793064	18.901 ppb	
4) T Ethyl Mercantan	0.000	199004 0	N.D. ppb	
5) T Dimethyl Sulfide	0.000	ŏ	N.D. ppb	
6) T Carbon Disulfide	0.000	õ	N.D. ppb	
7) T 2-Propyl Mercaptan	0.000	0	N.D. ppb	
8) T t-Butyl Mercaptan	0.000	0	N.D. ppb	
9) T Propyl_Mercaptan	0.000	0	N.D. ppb	
10) T Ethyl_Methyl_Sulfide	0.000	0	N.D. ppb	
11) T Thiophene	0.000	0	N.D. ppb	
12) T i-Butyl_Mercaptan	0.000	0	N.D. ppb	
13) T Diethyl_Sulfide	0.000	0	N.D. ppb	
14) t n-Butyl_Mercaptan	0.000	0	N.D. ppb	
15) t Dimethyl_Disulfide	0.000	0	N.D. ppb	
16) T 2-Methyl_Thiophene	0.000	U	N.D. ppb	
17) t 3-Methyl_Thiophene	0.000	0	N.D. ppb	
18) T Tetrahydrothiophene 19) t 2,5-Dimethyl_Thiophene	0.000	0	N.D. ppb	
20 T $2.5$ -Dimensional microphene $20$ T $2$ -Fthyl Thiophene	0.000	U C	N.D. ppb N.D. ppb	
21) The Diethyl Digulfide	0.000	ő	N.D. ppb	
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Thiophene 21) T Diethyl_Disulfide 22) T Methyltrisulfide</pre>	0.000	õ	N.D. ppb	

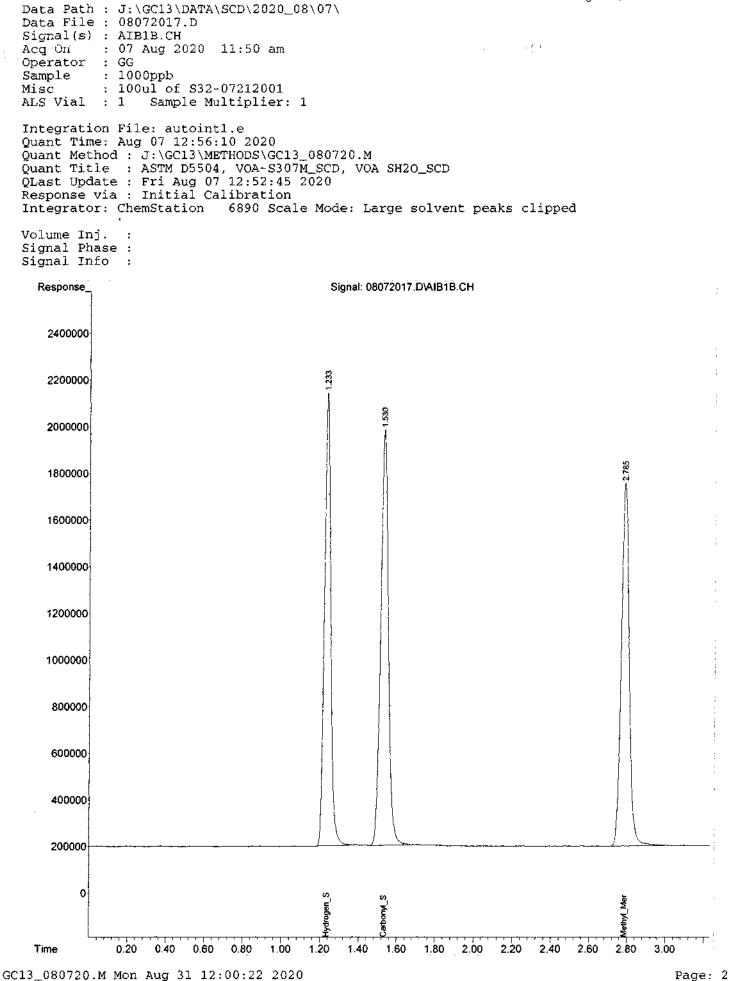
Data Path : J:\GC13\DATA\SCD\2020\_08\07\ Data File : 08072015.D Signal(s) : AIB1B.CH : 07 Aug 2020 11:09 am Acg On Operator : GG Sample : 20ppb Misc : 200ul of S32-08072001 ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Aug 07 12:54:56 2020 Quant Method : J:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 12:52:45 2020 Response via : Initial Calibration 6890 Scale Mode: Large solvent peaks clipped Integrator: ChemStation Volume Inj. : Signal Phase : Signal Info : Response Signal: 08072015.DVAIB1B.CH 285000 280000 275000 270000 265000 260000 255000 250000 245000 ŝ 240000 33 235000 2.78 230000 225000 220000 215000 210000 205000 200000 195000 rogen\_S tbonyl\_S 190000 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80 3.00 3.20 3.40 3.60 3.80 4.00 4.20 4.40 Time

Data File Signal(s) Acg On	<pre>h : J:\GC13\DATA\SCD\2020_ 2 : 08072016.D 2 : AIB1B.CH 3 : 07 Aug 2020 11:34 am 3 : GG 3 : 100ppb 4 : 1ml of \$32-08072001 5 : 1 Sample Multiplier:</pre>			Att 12 Page 119
Quant Tim Quant Met Quant Tit QLast Upd Response	on File: autoint1.e me: Aug 07 12:55:32 2020 hod : J:\GC13\METHODS\GC1 le : ASTM D5504, VOA-S30 date : Fri Aug 07 12:52:45 via : Initial Calibration or: ChemStation 6890 Sca	7M_SCD, VOA 2020		eaks clipped
Volume In Signal Ph Signal In	lase :		·	
C	Compound	R.T.	Response	Conc Units
Target C 1) Z H 2) W C 3) T M 4) T E 5) T D 6) T C 7) T 2 8) T t 9) T P 10) T E 11) T T 12) T i 13) T D 14) t n 15) t D 16) T 2 17) t 3 18) T T 19) t 2 20) T 2 21) T D	Compounds Mydrogen_Sulfide Mydrogen_Sulfide Mydrogen_Sulfide Mydrogen_Sulfide Mydroaptan Dimethyl_Sulfide 'arbon_Disulfide -Propyl_Mercaptan Propyl_Mercaptan Propyl_Mercaptan Mydroaptan	$1.236 \\ 1.538 \\ 2.790 \\ 0.00$	$3954994 \\ 5143727 \\ 3729363 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ $	76.007 ppb 87.609 ppb 91.393 ppb N.D. ppb

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Data Path : J:\GC13\DATA\SCD\2020\_08\07\ Data File : 08072016.D Signal(s) : AIB1B.CH : 07 Aug 2020 11:34 am Acg On Operator . GG Sample : 100ppb Misc : 1ml of S32-08072001 ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Aug 07 12:55:32 2020 Quant Method : J:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 12:52:45 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. : Signal Phase : Signal Info 4 Response Signal: 08072016.DVAIB1B.CH 390000 380000 370000 360000 350000 340000 2.790 5 330000 320000 235 310000 300000 290000 280000 270000 260000 250000 240000 230000 220000 210000 200000 190000 drogen S rbonyl S ethyl\_Mer 180000 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80 3.00 3.20 3.40 3.60 Time 0.20 0.40 0.60 0.80 1.00 1.20 GC13\_080720.M Mon Aug 31 11:59:27 2020 Page: 2

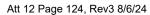
Data Fi Signal( Acq On Operato Sample Misc	th : J:\GC13\DATA\SCD\2020 le : 08072017.D s) : AIB1B.CH : 07 Aug 2020 11:50 am r : GG : 1000ppb : 100ul of S32-07212001 l : 1 Sample Multiplier	· · · · · · · · · · · · · · · · · · ·	N.,A		
Quant T Quant M Quant T QLast U Respons	tion File: autoint1.e Fime: Aug 07 12:56:10 2020 Tethod : J:\GC13\METHODS\GC Fitle : ASTM D5504, VOA-S3 pdate : Fri Aug 07 12:52:4 e via : Initial Calibratio tor: ChemStation 6890 Sc	07M_SCD, VO# 5 2020 n		peaks clipped	
'Volume Signal Signal	Phase :				
	Compound	R.T.	Response	Conc Units	
1) Z 2) W T T T T T T T T T T T T T T T T T T	Methyl_Mercaptan Ethyl_Mercaptan Dimethyl_Sulfide Carbon_Disulfide 2-Propyl_Mercaptan t-Butyl_Mercaptan Propyl_Mercaptan Ethyl_Merchyl_Sulfide	1.531 2.786 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	$\begin{array}{c} 42477488\\ 50552924\\ 44470554& 1\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	122.003 ppb N.D. ppb	

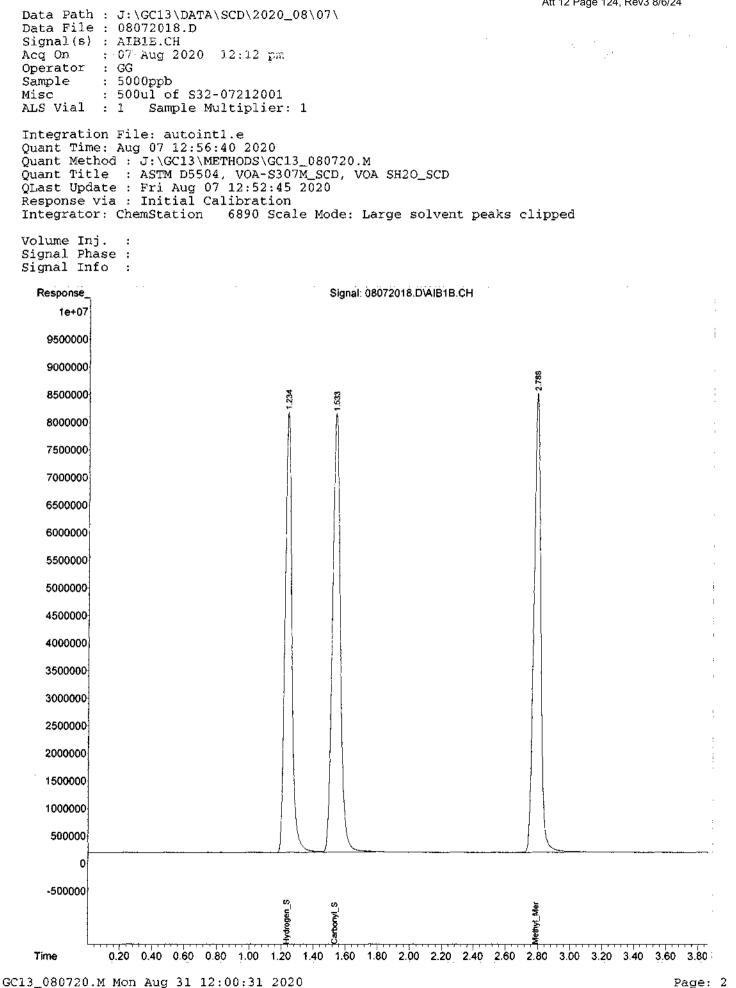


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Data Path : J:\GC13\DATA\SCD\2020_08\07\ Data File : 08072018.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 12:12 pm Operator : GG Sample : 5000ppb Misc : 500ul of S32-07212001 ALS Vial : 1 Sample Multiplier: 1								
Integration File: autoint1.e Quant Time: Aug 07 12:56:40 2020 Quant Method : J:\GC13\METHODS\GC13_080720.M Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH20_SCD QLast Update : Fri Aug 07 12:52:45 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped								
Signal	Inj. : Phase : Info :							
	Compound	R.T.	Response	Conc U	nits			
Target 1) Z 2) W 3) T 4) T 5) T 6) T 7) T 9) T 10) T 12) T 13) T 14) t 15) t 16) T 13) t 16) T 12) T 13) t 12) T 20) T 20) T 21) T 22) T	Compounds Hydrogen_Sulfide Carbonyl_Sulfide Methyl_Mercaptan Ethyl_Mercaptan Dimethyl_Sulfide Carbon_Disulfide 2-Propyl_Mercaptan t-Butyl_Mercaptan Propyl_Mercaptan Ethyl_Methyl_Sulfide Thiophene i-Butyl_Mercaptan Diethyl_Sulfide n-Butyl_Mercaptan Dimethyl_Disulfide 2-Methyl_Thiophene 3-Methyl_Thiophene 2.5-Dimethyl_Thiophene 2-Ethyl_Thiophene Diethyl_Disulfide	1.235 1.534 2.789 0.000 0	234491306 271723335 244984607 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5040.216 4953.599 5998.078 N.D. N.D. N.D. N.D. N.D. N.D. N.D. N.D	ppb ppb ppb ppb ppb ppb ppb ppb ppb ppb			

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				Att 12 Page 125, R
Data Path : J:\GC13\DATA\SCD\2020 Data File : 08072019.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 12:22 pm Operator : GG Sample : 10000ppb Misc : 1ml of S32-07212001 ALS Vial : 1 Sample Multiplier	_			
Integration File: autoint1.e Quant Time: Aug 07 12:57:10 2020 Quant Method : J:\GC13\METHODS\GC2 Quant Title : ASTM D5504, VOA-S3 QLast Update : Fri Aug 07 12:52:41 Response via : Initial Calibration Integrator: ChemStation 6890 Sca	07M_SCD, VO 5 2020 1	A SH2O_SCD	peaks clip	ped
Volume Inj. : Signal Phase : Signal Info :				
Compound	R.T,	Response	Conc Un	its
<pre>Target Compounds 1) 2 Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Thiophene 21) T Diethyl_Disulfide 22) T MethylTrisulfide</pre>	0.000 0.000 0.000	0	N.D. pr N.D. pr N.D. pr	ob ob ob

(f)=RT Delta > 1/2 Window

(m)=manual int.

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Data Path : J:\GC13\DATA\SCD\2020\_08\07\ Data File : 08072019.D Signal(s) : AIB1B.CH : 07 Aug 2020 12:22 pm Acq On Operator : GG Sample : 10000ppb Misc : 1ml of S32-07212001 ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Aug 07 12:57:10 2020 Quant Method : J:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 12:52:45 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. : Signal Phase : Signal Info : Response Signal: 08072019.DVAIB1B.CH 1.9e+07 1.8e+07 1.7e+07 6 1.6e+07 1.5e+07 1.4e+07 3 1.3e+07 233 1.2e+07 1.1e+07 1e+07 9000000 8000000 7000000 6000000 5000000 4000000 3000000 2000000 1000000 0 -1000000 0.50 1.00 2.00 2.50 3.50 4.00 5.00 6.00 Time 1.50 3.00 4.50 5.50 GC13\_080720.M Mon Aug 31 12:00:50 2020 Page: 2

Data Path : J:\GC13\DATA\SCD\2020\_08\07\ Data File : 08072020.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 12:38 pm Operator : GG Sample : 50000ppb Misc : 50ul of S32-10161804 ALS Vial : 1 Sample Multiplier: 1 Integration File: autointl.e Quant Time: Aug 07 12:58:51 2020 Quant Method : J:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 12:58:37 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. : Signal Phase : Signal Info : R.T. Response Conc Units Compound \_\_\_\_\_\* 

 Target Compounds

 1) Z Hydrogen\_Sulfide
 1.233
 2788295360
 59871.000 ppb

 2) W Carbonyl\_Sulfide
 1.530
 2925620697
 53565.078 ppb

 3) T Methyl\_Mercaptan
 2.787
 2767032458
 63471.184 ppb

 4) T Ethyl\_Mercaptan
 0.000
 0
 N.D. ppb

 5) T Dimethyl\_Sulfide
 0.000
 0
 N.D. ppb

 6) T Carbon\_Disulfide
 0.000
 0
 N.D. ppb

 7) T 2-Propyl\_Mercaptan
 0.000
 0
 N.D. ppb

 8) T t-Butyl\_Mercaptan
 0.000
 0
 N.D. ppb

 9) T Propyl\_Mercaptan
 0.000
 0
 N.D. ppb

 10) T Ethyl\_Methyl\_Sulfide
 0.000
 0
 N.D. ppb

 11) T Thiophene
 0.000
 0
 N.D. ppb

 12) T i-Butyl\_Mercaptan
 0.000
 0
 N.D. ppb

 13) T Diethyl\_Sulfide
 0.000
 0
 N.D. ppb

 14) t n-Butyl\_Mercaptan
 0.000
 0
 N.D. ppb

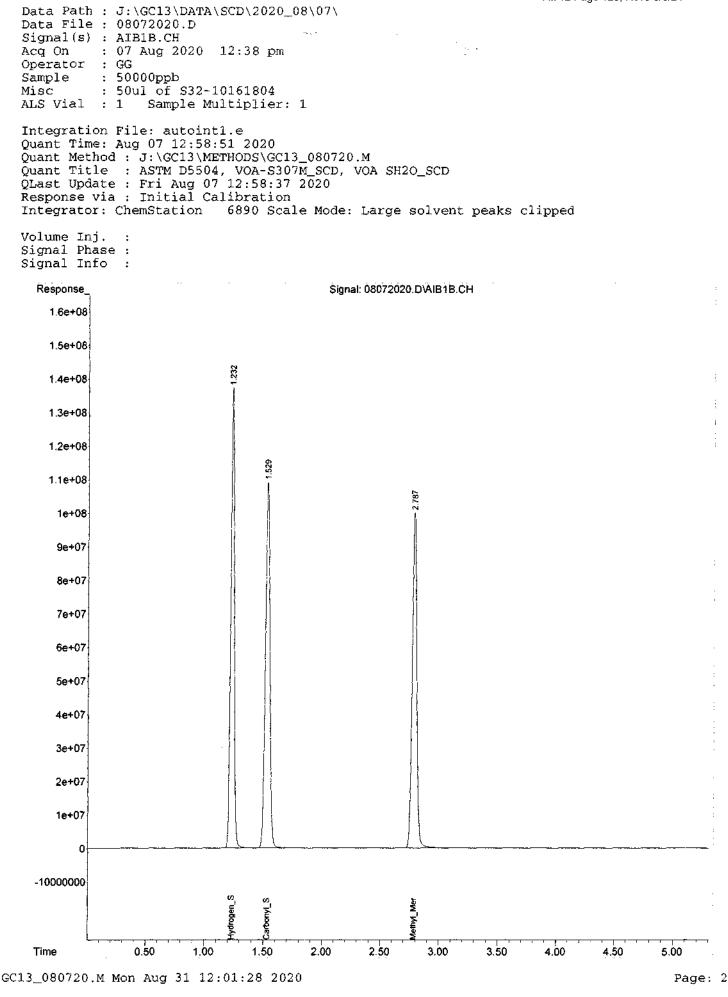
 15) t Dimethyl\_Sulfide
 0.000
 0
 N.D. ppb

 16) T 2-Methyl\_Thiophene
 0.000
 0
 N.D. ppb

 17) t 3-Methyl\_Thiophene< Target Compounds 0 N.D. ppb d d \_\_\_\_\_

(f) = RT Delta > 1/2 Window

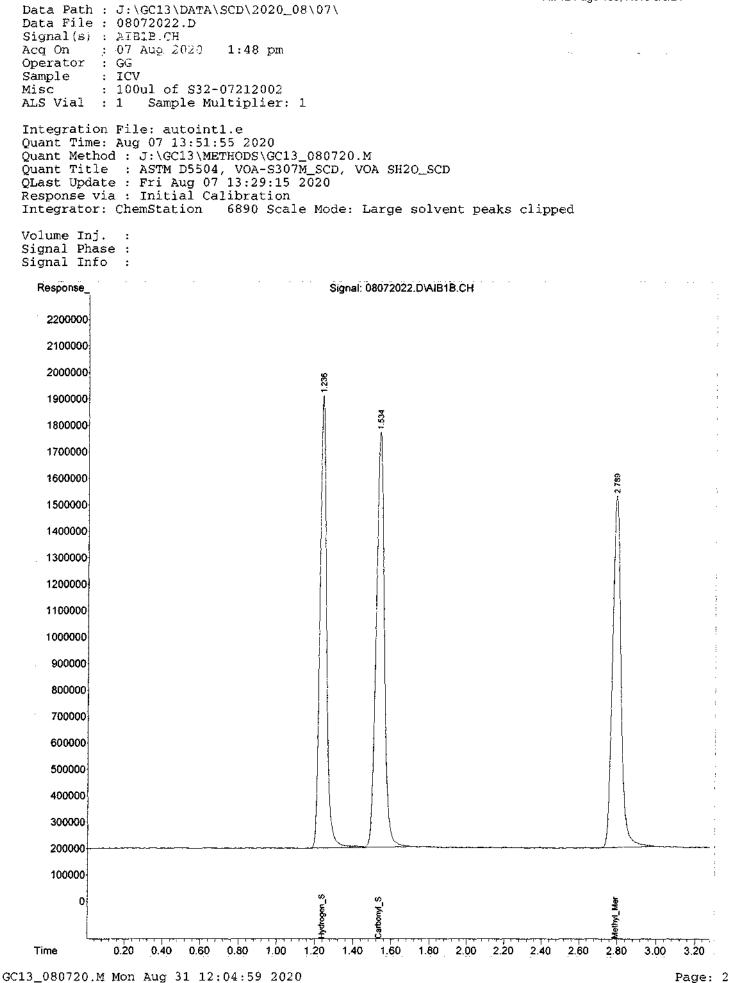
: -



				Att 1	2 Page 129, Rev3	8/6/24
	: J:\GC13\DATA\SCD\2020_ . 08072022 D	08\07\				
Data File : 08072022.D Signal(s) : AIB1B.CH						
Acq On	: 07 Aug 2020 1:48 pm					
Operator :						
Sample						
Misc :	: 100ul of S32-07212002					
ALS Vial :	: 1 Sample Multiplier:	1				
Tubeconstics	Dile, exterintly					
	1 File: autoint1.e : Aug 07 13:51:55 2020					
	d : J:\GC13\METHODS\GC13	8 080720 M				
	e : ASTM D5504, VOA-S30		SH20 SCD			
QLast Updat	te : Fri Aug 07 13:29:15	2020				
Response vi	ia : Initial Calibration					
Integrator:	ChemStation 6890 Scal	le Mode: Larg	ge solvent	peaks clipped	i	
Volume Inj.						
Signal Phas Signal Info						
signal into					Art	9 Connel
Con	nound	R. ጥ.	Response	Conc Units	Actual	6 ( E 200
	npound					
						<b>A</b> .
Target Com	npounds				619	88.07 97. 81.75 92 86.59 92
1) Z Hyd	mpounds drogen_Sulfide bonyl_Sulfide byl_Mercaptan nyl_Mercaptan hethyl_Sulfide bon_Disulfide Propyl_Mercaptan Butyl_Mercaptan ayl_Methyl_Sulfide ophene Butyl_Mercaptan	1.237	41694734	870.723 ppb	301	81.75 02
2) W Car	bony1_Sulfide	1.534	47374904	858.639 ppb	1050	- ( 55 57
3) T Met 4) T Eth	uyl_Mercaptan	2.790	41162699 A	909.210 ppp	105.	80111 (0
-4) T ECL 5) T Din	nyi_mercaptan nothul Sulfide	0.000	0	N.D. ppb		
6) T Car	bon Disulfide	0.000	0 0	N D ppb		
7) T 2-F	Propyl Mercaptan	0.000	Ő	N.D. ppb		
8) T t-E	Butvl Mercaptan	0,000	ō	N.D. ppb		
9) T Pro	pyl_Mercaptan	0.000	0	N.D. ppb		
10) T Eth	yl_Methyl_Sulfide	0.000	0	N.D. ppb		
11) T Thi	ophene	0.000	0	N.D. ppb		
	act - mer cap can	01000	v			
13) T Die	ethyl_Sulfide	0.000	0	N.D. ppb		
14) t n-E	Suty1_Mercaptan	0.000	0	N.D. ppb		
15) t Dim	ethyl_Sulfide Butyl_Mercaptan Methyl_Disulfide Methyl_Thiophene Methyl_Thiophene	0.000	0	N.D. ppb		
16) T 2-M 17) t 3-M	Methyl_Thiophene	0.000	0 0	N.D. ppb N.D. ppb		
18) T Tet	rabydrotbiophene	0.000	0	N.D. ppb		
10, 1 100 19) t 2,5	-Dimethyl Thiophene	0.000	ŏ	N.D. ppb		
20) T 2-E	thyl_Thiophene	0.000	ŏ	N.D. ppb		
21) T Die	thyl_Disulfide	0.000	Ō	N.D. ppb		
22) T Met	Activity I_Informere Rethyl_Thiophene rahydrothiophene -Dimethyl_Thiophene Rthyl_Thiophene thyl_Disulfide hyltrisulfide	0.000	0	N.D. ppb		

Wishila





Data Path : I:\GC13\DATA\SCD\2020 08\07\ Data File : 08072023.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 2:06 pm Operator : GG Sample : MB 1.0ml Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Aug 07 17:36:39 2020 Quant Method : J:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. Signal Phase : Signal Info : R.T. Response Conc Units Compound ------Target Compounds Hydrogen\_Sulfide0.000Carbonyl\_Sulfide0.000Methyl\_Mercaptan0.000Ethyl\_Mercaptan0.000Dimethyl\_Sulfide0.000Carbon\_Disulfide0.0002-Propyl\_Mercaptan0.000t-Butyl\_Mercaptan0.000Propyl\_Mercaptan0.000Ethyl\_Mercaptan0.000Disulfide0.000t-Butyl\_Mercaptan0.000Disulfide0.000Disulfide0.000 0 N.D. ppb 1) Z 2) W 3) T Methyl Mercaptan 4) T Ethyl Mercaptan 5) T Dimethyl Sulfide 6) T Carbon\_Disulfide 7) T 2-Propyl\_Mercaptan 8) T t-Butyl\_Mercaptan 9) T Propyl\_Mercaptan 10) T Ftbyl\_Mercaptan 7) T2-Propyl Mercaptan0.0000N.D.ppb8) Tt-Butyl Mercaptan0.0000N.D.ppb9) TPropyl Mercaptan0.0000N.D.ppb10) TEthyl Methyl Sulfide0.0000N.D.ppb11) TThiophene0.0000N.D.ppb12) Ti-Butyl Mercaptan0.0000N.D.ppb13) TDiethyl Sulfide0.0000N.D.ppb14) tn-Butyl Mercaptan0.0000N.D.ppb15) tDimethyl Disulfide0.0000N.D.ppb16) T2-Methyl Thiophene0.0000N.D.ppb17) t3-Methyl Thiophene0.0000N.D.ppb19) t2,5-Dimethyl Thiophene0.0000N.D.ppb20) T2-Ethyl Thiophene0.0000N.D.ppb21) TDiethyl Disulfide0.0000N.D.ppb22) TMethyl Thiophene0.0000N.D.ppb22) TMethyl Trisulfide0.0000N.D.ppb

(f) = RT Delta > 1/2 Window

(m)=manual int.

Data Path : I:\GC13\DATA\SCD\2020\_08\07\ Data File : 08072023.D Signal(s) : AIB1B.CH Acq On : 07 Aug 2020 2:06 pm Operator : GG : MB 1.0ml Sample Misc : : 1 ALS Vial Sample Multiplier: 1 Integration File: autointl.e Quant Time: Aug 07 17:36:39 2020 Quant Method : J:\GC13\METHODS\GC13 080720.M Quant Title : ASTM D5504, VOA-S307M SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped Volume Inj. Signal Phase : Signal Info ; Response Signal: 08072023.D\AIB1B.CH 255000 250000 245000 240000 235000 230000 225000 220000 215000 Kunal when with a state of the second for the first the second seco 210000 205000 200000 195000 7.00 1.00 2.00 3.00 4.00 5.00 6.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00 Time Page: 2 GC13\_080720.M Mon Aug 10 07:12:01 2020

# ALS Environmental

**REPORT SUMMARY** 

Method : GC13SCD2.M Client : SQ Environmental, LLC Analyst : GG

<u>Compounds</u>	MDL	RL	MB Q	C	Dry \	Wall QC	Lab Dup					(	Continuin	g Calibr	ation Sta	andards	Summa	ry (ppbv	)			
<u>compounds</u>			MB				dup	<u>%RSD</u>	ppbv	<u>% Diff</u>	ppbv	<u>% Diff</u>	<u>ppbv</u>	<u>% Diff</u>	ppbv	<u>% Diff</u>	ppbv	<u>% Diff</u>	ppbv	<u>% Diff</u>	ppbv	<u>% Diff</u>
Sample Information :	ppb	ppb	MB 1.0ml						STD S33- 06212401		STD S33- 06212401											
lnj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0			0.10		0.10		0.10		0.10		0.10		0.10		0.10	
Dilution	1.0	1.0	1.00		1.0	1.0																
Pi:	1.0	1.0	1.0		1.0	1.0																
Pi:	1.0	1.0	1.0		1.0	1.0																
PiPf DF:	1.0	1.0	1.0		1.0	1.0																
Hydrogen_Sulfide	1.900	5.000	ND	Р					949.80	5.1%	996.622	0.4%										
Carbonyl_Sulfide	1.700	5.000	ND	Р					1074.83	5.1%	1119.052	9.4%										
Methyl_Mercaptan	1.200	5.000	ND	Р					1051.57	4.0%	1075.403	6.4%										
Ethyl_Mercaptan	1.200	5.000	ND	Р																		
Dimethyl_Sulfide	1.200	5.000	ND	Р					8:17	AM	1:42	PM		-						-		
Carbon_Disulfide	0.600	2.500	ND	Р					071624	102.D	071624	17.D										
2-Propyl_Mercaptan	1.200	5.000	ND	Р																		
t-Butyl_Mercaptan	1.200	5.000	ND	Р									ļ		CS Dup S	Summary	/ (ppbv)					
Propyl_Mercaptan	1.200	5.000	ND	Р																		
Ethyl_Methyl_Sulfide	1.200	5.000	ND	Р									ppbv	<u>%R</u>			ppbv	<u>% R</u>	%RPD		Actual	
Thiophene	1.200	5.000	ND	Р					Hydrogen_	Sulfide			770.99	77.1%			856.28	85.6%	10.48%		1000.00	
i-Butyl_Mercaptan	1.200	5.000	ND	Р					Carbonyl_				820.18	82.0%			837.23	83.7%	2.06%		1000.00	
Diethyl_Sulfide	1.200	5.000	ND	Р					Methyl_Me				1054.81				1123.15		6.28%		1000.00	
n-Butyl_Mercaptan	1.200	5.000	ND	Р					Acqisitio				8:30				8:41					
Dimethyl_Disulfide	0.600	2.500	ND	Р					Data	File			071624	103.D			07162	404.D				
2-Methylthiophene	1.200	5.000	ND	Р																		
3-Methylthiophene	1.200	5.000	ND	Р																		
Tetrahydrothiophene	1.200	5.000	ND	Р																		
2,5-Dimethylthiophene	1.200	5.000	ND	Р																		
2-Ethylthiophene	1.200	5.000	ND	Р																		
Diethyl_Disulfide	0.600	2.500	ND	Р																		
Methyltrisulfide	0.600		ND	P																		
Acqisition Time			9:14 AM				<u> </u>	Ī					<u></u>	1							. <u> </u>	
DataFile			07162406.D																			

EnviroQuan

I:\Excel\Report\SCD\2024\P2402855\_SQ Environmental, LLC\_TX Star, Euless \_ 1098.015.003\_ASTM5504\_2407170936\_GG

Att 12 Page 133, Rev 8/6/24 07/17/24 2nd **92** 07/17/24

Service Request : P2402855 GC13 Instrument : Date Acquired : 7/16/24

Att 12 Page 134, Rev 8/6/24 07/17/24 2nd **92** 07/17/24

Data Path : I:\GC13\DATA\SCD\2024 Data File : 07162402.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 8:17 Operator : GG Sample : STD S33-06212401 Misc : ALS Vial : 1 Sample Multiplier: Integration File: autoint1.e Quant Time: Jul 16 08:27:11 2024 Quant Time: Jul 16 08:27:11 2024 Quant Method : I:\GC13\METHODS\GCC Quant Title : ASTM D5504, VOA-S30 QLast Update : Fri Aug 07 13:29:19 Response via : Initial Calibration Integrator: ChemStation 6890 Sca	: 1 L3_080720.M )7M_SCD, VOA 5 2020		Att 12 Pago beaks clipped
Volume Inj. : Signal Phase : Signal Info :			
Compound	R.T.	Response	Conc Units
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Mercaptan 10) T Ethyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Thiophene 21) T Diethyl_Disulfide</pre>	1.038 1.310 2.518 0.000 0	45481366 59303073 47607714 0 0 0 0 0 0 0 0 0 0 0 0 0	949.801 ppb 1074.830 ppb 1051.569 ppb N.D. ppb

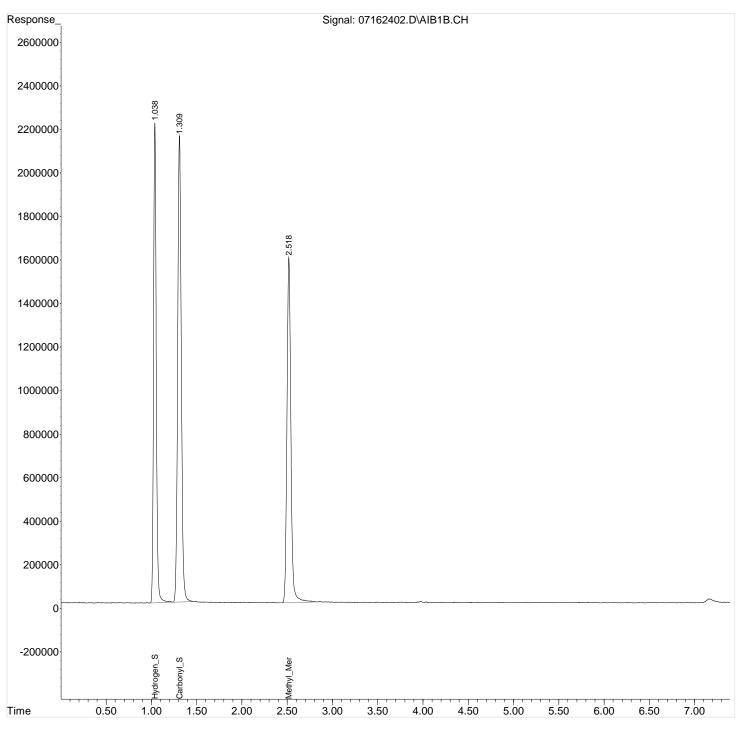
(f)=RT Delta > 1/2 Window

(m)=manual int.

Data File : 07162402.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 8:17 Operator : GG : STD S33-06212401 Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 16 08:27:11 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

```
Volume Inj. :
Signal Phase :
Signal Info :
```

Data Path : I:\GC13\DATA\SCD\2024\_07\16\



Att 12 Page 136, Rev3 8/6/24 07/17/24 2nd **9** 07/17/24

Data Path : I:\GC13\DATA\SCD\2024_ Data File : 07162417.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 13:42 Operator : GG Sample : STD S33-06212401 Misc : ALS Vial : 1 Sample Multiplier: Integration File: autoint1.e Quant Time: Jul 16 14:01:48 2024 Quant Method : I:\GC13\METHODS\GC1 Quant Title : ASTM D5504, VOA-S30 QLast Update : Fri Aug 07 13:29:15 Response via : Initial Calibration Integrator: ChemStation 6890 Sca Volume Inj. :	1 _3_080720.M 07M_SCD, VOA 5 2020		Att 12 Pag
Signal Phase : Signal Info :			
Compound	R.T.	Response	Conc Units
<pre>Target Compounds 1) Z Hydrogen_Sulfide 2) W Carbonyl_Sulfide 3) T Methyl_Mercaptan 4) T Ethyl_Mercaptan 5) T Dimethyl_Sulfide 6) T Carbon_Disulfide 7) T 2-Propyl_Mercaptan 8) T t-Butyl_Mercaptan 9) T Propyl_Mercaptan 10) T Ethyl_Methyl_Sulfide 11) T Thiophene 12) T i-Butyl_Mercaptan 13) T Diethyl_Sulfide 14) t n-Butyl_Mercaptan 15) t Dimethyl_Disulfide 16) T 2-Methyl_Thiophene 17) t 3-Methyl_Thiophene 19) t 2,5-Dimethyl_Thiophene 20) T 2-Ethyl_Thiophene 21) T Diethyl_Disulfide 22) T MethylTrisulfide</pre>	1.037 1.309 2.516 0.000 0	$ \begin{array}{c} 47723406\\ 61743042\\ 48686743\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	996.622 ppb 1119.052 ppb 1075.403 ppb N.D. ppb

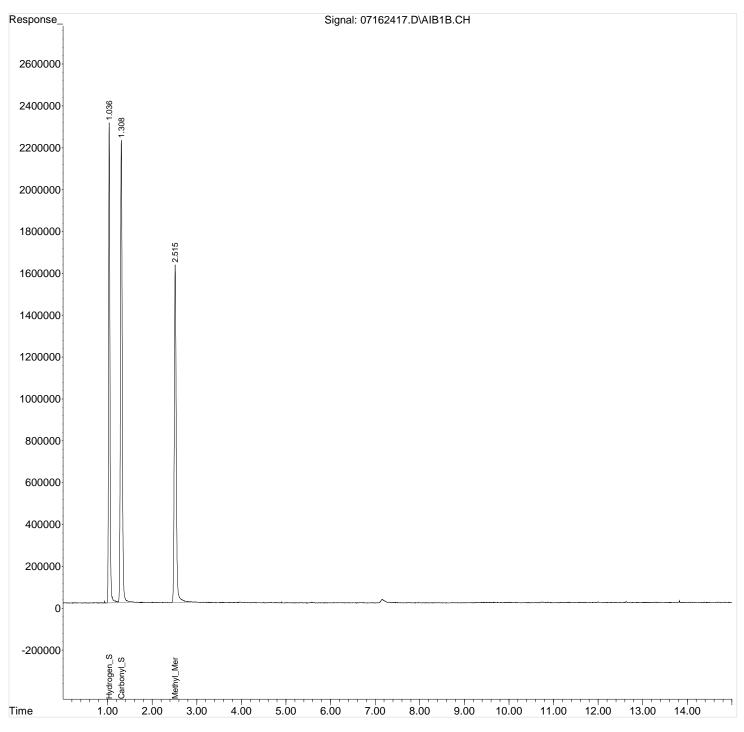
(f)=RT Delta > 1/2 Window

(m)=manual int.

Data File : 07162417.D Signal(s) : AIB1B.CH Acq On : 16 Jul 2024 13:42 Operator : GG : STD S33-06212401 Sample Misc : ALS Vial : 1 Sample Multiplier: 1 Integration File: autoint1.e Quant Time: Jul 16 14:01:48 2024 Quant Method : I:\GC13\METHODS\GC13\_080720.M Quant Title : ASTM D5504, VOA-S307M\_SCD, VOA SH20\_SCD QLast Update : Fri Aug 07 13:29:15 2020 Response via : Initial Calibration Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : Signal Phase : Signal Info :

Data Path : I:\GC13\DATA\SCD\2024\_07\16\



### Injection Log

# Directory: J:\GC13\DATA\SCD\2020\_08\07

Line	Vial	FileName	Muttiolier	SampleName	Misc Info	injected
1 2 3 4 5 6 7 8 9	1 1 1 1 1 1 1 1	08072001.d 08072002.d 08072003.d 08072004.d 08072005.d 08072006.d 08072007.d 08072008.d 08072009.d	1. 1. 1. 1. 1. 1.	IB MB 100000ppb 50000ppb RT HL RT ML RT IB MB		07 Aug 2020 05:52 07 Aug 2020 06:12 07 Aug 2020 06:36 07 Aug 2020 07:00 07 Aug 2020 07:25 07 Aug 2020 07:44 07 Aug 2020 08:03 07 Aug 2020 08:29 07 Aug 2020 08:49
10 11 12 13 14 15 16 17 18 19 20	1 1 1 1 1 1 1 1 1	08072010.d 08072012.d 08072013.d 08072013.d 08072014.d 08072015.d 08072016.d 08072017.d 08072018.d 08072019.d 08072020.d	1. 1. 1. 1. 1. 1. 1. 1. 1.	IB 1000ppb 5ppb 5ppb 20ppb 100ppb 1000ppb 5000ppb 50000ppb 50000ppb	50ul of S32-08072001 200ul of S32-0807 1mi of S32-08072001 100ul of S32-0721 500ul of S32-0721 1mi of S32-07212001 50ul of S32-10161804	07 Aug 2020 09:42 07 Aug 2020 10:12 07 Aug 2020 10:25 07 Aug 2020 10:30 07 Aug 2020 10:43 07 Aug 2020 11:09 07 Aug 2020 11:34 07 Aug 2020 11:50 07 Aug 2020 12:12 07 Aug 2020 12:38
21 22 23	1 1 1	08072021.d 08072022.d 08072023.d	1, 1. 1,	ICV ICV MB 1.0ml	100ul of S32-0721	07 Aug 2020 13:41 07 Aug 2020 13:48 07 Aug 2020 14:06

31 Aug 2020 12:05

4

131 of 132

# Injection Log

# Directory: I:\GC13\DATA\SCD\2024\_07\16\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	7/16/24 7:57	07162401.D	IB		GG	GC13SCD2.M	
2	7/16/24 8:17	07162402.D	STD S33-06212401		GG	GC13SCD2.M	Pass
3	7/16/24 8:30	07162403.D	LCS S33-06212402		GG	GC13SCD2.M	Pass
4	7/16/24 8:41	07162404.D	LCSD \$33-06212402		GG	GC13SCD2.M	Pass
5	7/16/24 8:51	07162405.D	RT		GG	GC13SCD2.M	Pass
6	7/16/24 9:14	07162406.D	MB 1.0ml		GG	GC13SCD2.M	Pass
7	7/16/24 9:42	07162407.D	P2402855-001 1.0ml		GG	GC13SCD2.M	
8	7/16/24 10:01	07162408.D	P2402855-002 1.0ml		GG	GC13SCD2.M	
9	7/16/24 10:21	07162409.D	P2402855-003 1.0ml		GG	GC13SCD2.M	
10	7/16/24 10:39	07162410.D	P2402857-001 1.0ml		GG	GC13SCD2.M	
11	7/16/24 11:00	07162411.D	P2402859-001 1.0ml		GG	GC13SCD2.M	
12	7/16/24 11:18	07162412.D	P2402877-001 1.0ml		GG	GC13SCD2.M	
13	7/16/24 11:36	07162413.D	P2402877-002 1.0ml		GG	GC13SCD2.M	
14	7/16/24 12:40	07162414.D	P2402859-002 1.0ml		GG	GC13SCD2.M	
15	7/16/24 13:01	07162415.D	P2402859-003 1.0ml		GG	GC13SCD2.M	
16	7/16/24 13:21	07162416.D	P2402859-004 1.0ml		GG	GC13SCD2.M	
17	7/16/24 13:42	07162417.D	STD S33-06212401		GG	GC13SCD2.M	Pass



# ANALYTICAL REPORT

Report Date: July 16, 2024

Phone: (512) 656-9445

E-mail:

Workorder: **34-2419717** 

Client Project ID: TX Star, Enless Purchase Order: NA Project Manager: Lisa Reid

#### **Analytical Results**

Sam Enis

P.O. Box 1991

Austin, TX 78767

SQ Environmental, LLC

Sample ID: SV-10R (1756703 Lab ID: 2419717001		_ocation: TX Star, En	less	Collected: 0 Received: 0	
Method: NIOSH 6015 Mod.	Мес	lia: SKC 226-10-06, Sil (Sulfuric acid) (100		Instrument: WET01	
Dilution: 1	Sampling Paramet	ter: Àir Volume 12 L	0,	Analyzed: 07/15/2	024 (319186)
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)	
Ammonia	2.6	0.22	0.31	1.2	

Sample ID: SV-11R (1756703 Lab ID: 2419717002		_ocation: TX Star, En	less	Collected: 07/12/2 Received: 07/15/2	-
Method: NIOSH 6015 Mod.	Med	dia: SKC 226-10-06, Sil (Sulfuric acid) (100,		Instrument: WET01	
Dilution: 1	Sampling Parame	ter: Air Volume 12 L		Analyzed: 07/15/2024 (3	19186)
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)	
Ammonia	1.4	0.11	0.16	1.2	

Sample ID: <b>2364200117</b> Lab ID: 2419717003	Sampling I	_ocation: TX Star, En	less	Collected: 07/12 Received: 07/15	
Method: NIOSH 6015 Mod.	Мес	dia: SKC 226-10-06, Sil (Sulfuric acid) (100/		Instrument: WET01	
Dilution: 1	Sampling Parame	ter: Air Volume Not Pro		Analyzed: 07/15/2024	(319186)
Analyte	Result (ug/sample)	Result (mg/m³)	Result (ppm)	RL (ug/sample)	
Ammonia	1.2	NA	NA	1.2	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method (Analysis Batch)	Analyst	Peer Review
NIOCH COLE Mad. (24040C)	/S/ Brian S. Stites	/S/ Kristie F. Bitner
NIOSH 6015 Mod. (319186)	07/15/2024 22:11	07/16/2024 08:51

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992 | WEB http://www.alsglobal.com/slt ALS GROUP USA, CORP. An ALS Limited Company

Environmental 🐊

www.alsglobal.com

**RIGHT SOLUTIONS** RIGHT PARTNER

Tue, 07/16/24 8:55 AM

# ANALYTICAL REPORT

Workorder: 34-2419717

Client Project ID: TX Star, Enless Purchase Order: NA Project Manager: Lisa Reid

#### Laboratory Contact Information

ALS Environmental 960 W Levoy Drive Salt Lake City, Utah 84123 Phone: (801) 266-7700 Email: Web: www.alsglobal.com/slt

#### General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable condition unless otherwise noted. The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter. Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results. Samples have not been blank corrected unless otherwise noted. This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L24-29	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Lab oratory-Accreditation

#### Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

\*\* No result could be reported, see sample comments for details.

< Means this testing result is less than the numerical value.

() This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

REV3 20240806

# **20 OTHER PLANS**

Grading and drainage plans are provided as **Attachment 20**. There are no irrigation plans for the property.

REV3 20240806

# ATTACHMENT 20 OTHER PLANS

# Project Texas Star Multifamily Fort Worth, Texas Stonehawk Capital Partners Project Number SCPn003 Drawn By CC, JJ Checked By CC, JJ ssue Date 05-29-2024 Revisions PERMIT 2024-05-29 Sheet Title

Landprint.

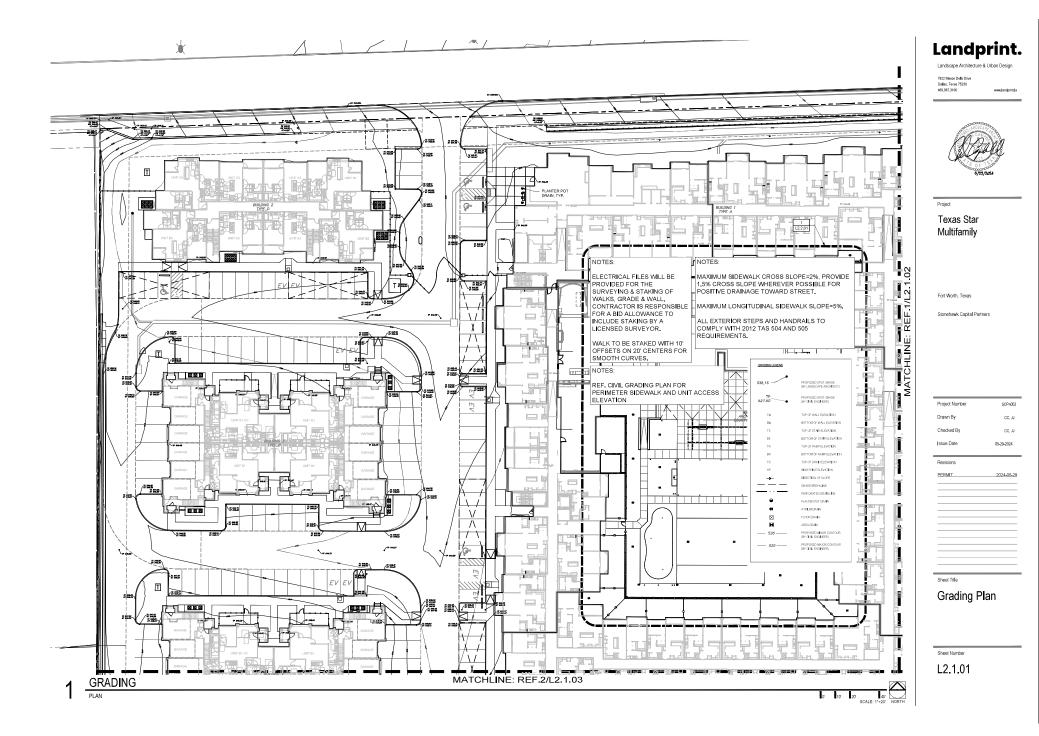
www.dandprint.la

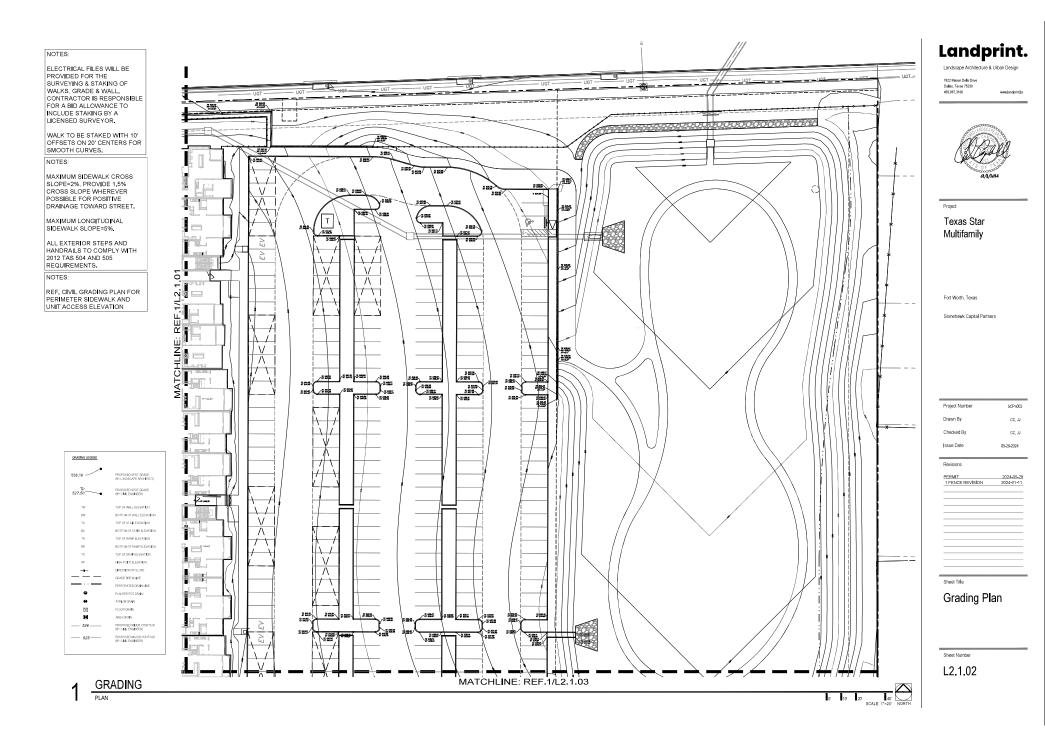
7822 Mason Dells Drive Dallas, Texas 75230 469,967.3100

KEY	DECRIPTION/MODEL#	COLOR	FINISH	CONTACT	REMARK
DRA	iN	1.00114.01	NULL CONTRACTOR		
D.1	4" ATRIUM DRAIN GRATE MODEL #78	BLACK	STANDARD	NDS 800.726.1964	REF. LANDSCAPE GRADING PLANS. REF. CIVIL PLANS FOR PIPE LAYOUT AND SIZING TO STORM
D.2	5" AREA DRAIN W/BRASS GRATE NDS #918B WITH SPEEDY BASIN	BRASS	SATIN	NDS 800,726,1995	LOCATE PER PLAN, GRATES TO BE CENTERED ON SCORE JOINTS WHERE APPLICABLE AND CAST IN CONCRETE COLLAR
D.3	4" NDS EZ FLOW	BLACK	STANDARD	NDS 800.726.1995	LOCATE PER PLAN, GRATES TO BE CENTERED ON SCORE JOINTS WHERE APPLICABLE AND CAST IN CONCRETE COLLAR
D.4	12" NDS CATCH BASIN AREA DRAIN WITH GREEN GRATE	GREEN	STANDARD	NDS 800.726.1996	LOCATE PER PLAN, GRATES TO BE CENTERED ON SCORE JOINTS WHERE APPLICABLE AND CAST IN CONCRETE COLLAR

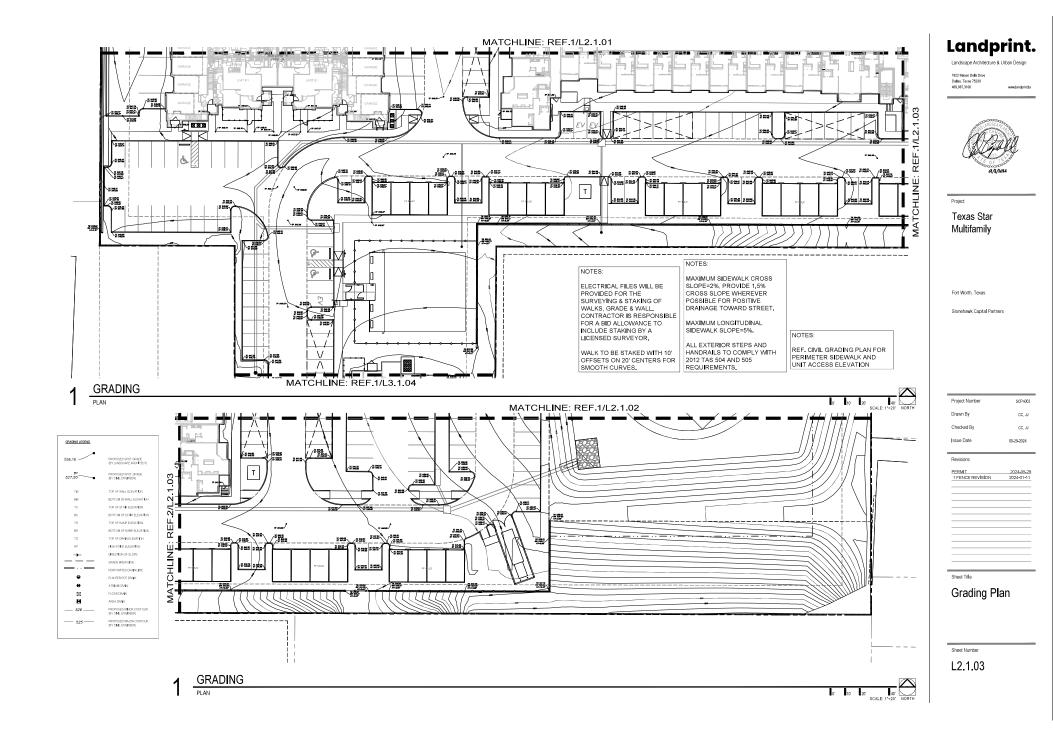
Drainage Schedule

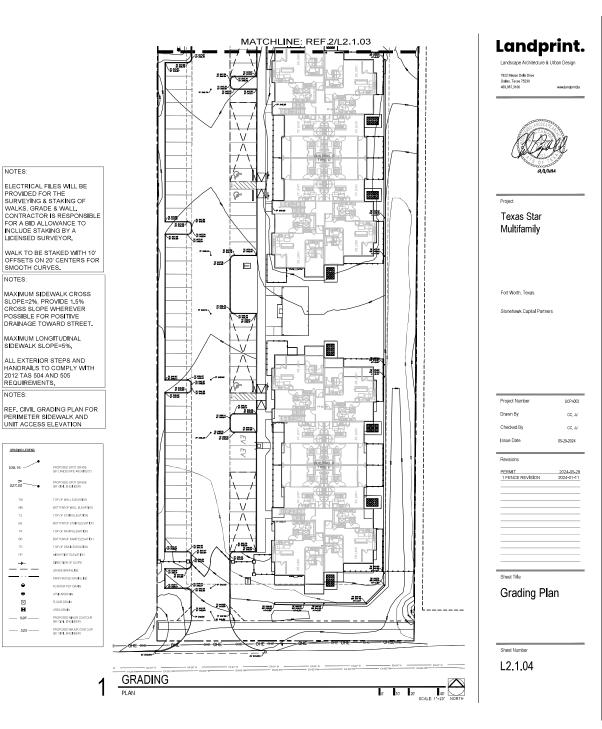
Sheet Number

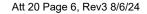


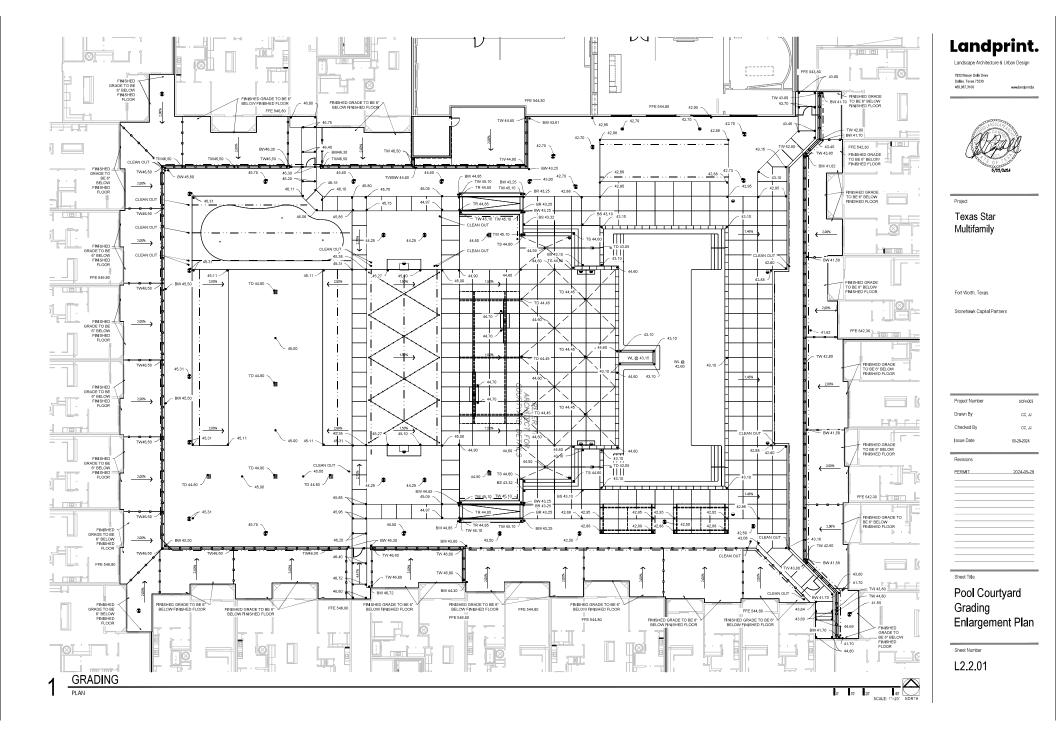


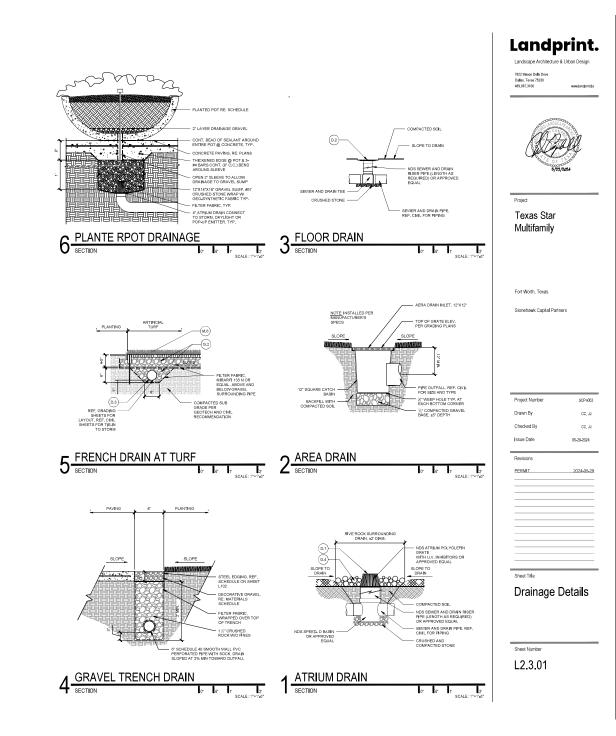
3











# Landprint.

#### Landscape Architecture & Urban Design 7822 Meson Dells Dive Dellas, Teras 75230 468,987,3100 www.dendprintLa



Project Texas Star Multifamily

Fort Worth, Texas

Stonehawk Capital Partners

Project Number	SCPn003
Drawn By	CC, JJ
Checked By	CC, JJ
ssue Date	05-29-2024
Revisions	
PERMIT	2024-05-29
Sheet Title	
Sitework	
Materials	
Schedule	

Sheet Number

		Ha	rdscape Material Sch	edule			
		KEY	DECRIPTION/MODEL #	COLOR	FINISH	CONTACT	REMARK
			STANDARD GREY CONCRETE 1	GREY	LIGHT BROOM	CONTRACTOR'S CHOICE	CONTRACTOR TO PROVIDE EXE MOCK-UP FOR LANDSCAFE ARCHITECT APPROVAL PRIOR TO CONSTRUCTION, SAW CUT JOINTS ONLY
		C.2	STANDARD GREY CONCRETE 2	GREY	MEDIUM SANDBLAST	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS SHEET L3.3.01 CONTRACTOR TO PROVIDE \$X5 MOCK-UP FOR LANDSCAPE ARCHTECT APPROVAL PRIOR TO CONSTRUCTION, SAW CUT JOINTS ONLY
		C.3	CAST-IN-PLACE CONCRETE WALL	GREY	RUBBED CONCRETE	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS SHEET L2.3.01 SHOWN FOR DESIGN INTENT ONLY, MATERIALS AND DETAILS OF ALL RETAINING/PLANTER WALLS TO BE VERIFIED BY OWNER AND STRUCTURAL ENGINEER
		-	BURNISHED BLOCK WALL, WARIOUS SIZES AND SHAPES, STACKED BOND PATTERN	COMAL	STANDARD	TEXASBULDINGPRODUCTS.C	CONTRACTOR TO PROVIDE SUBMITTAL LANDSCAPE ARCHITECT APPROVAL PROR TO CONSTRUCTION, RE DETAILS SHEET L3 3.07 & L3 3.09
		EDG	NG				
-		E1	3/16" X 4" STEEL EDGING	BLACK	POWERCOATED	JD RUSSELL CO 800.888.6672	LOCATED PER PLAN, TYPICALLY AT ALL AREAS SEPERATING SCID FROM PLANTING BEDS AND GRAVEL BEDS
	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FULL	FEN	E & GATE				Service -
SU	COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO SUBWIT SAMPLE TO LA, FOR APPROVAL CONTRACTOR TO PROVIDE QUANTITY TO INSURE FULL	F.1	POOL FENCE 48" HEIGHT	BRONZE OR BLACK (TO MATCH ARCHITECTURE)	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET L3.3.04
	COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBWIT SAMPLE TO L.A. FOR APPROVAL	F.2		ERONZE OR BLACK (TO MATCH ARCHITECTURE)	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET L3.3.08
	CONTRACTOR TO PROVIDE QUANTITIN TO INSURE FULL COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO	F.3	PERIMETER FEXCE 72" HEIGHT	ERONZE OR BLACK (TO MATCH ARCH(TECTURE)	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET 13.3.08
	SUBMIT SAMPLE TO LA FOR APPROVAL EXPOSED ACOREGATE POOL FINISH	F.4	PROPOERTY LINE - 72" HEIGHT, HORIZONTAL BOARD-CN-BOARD,	BENJAMIN MOORE CORDOVAN BROWN	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET L3.3.08
	ONTRACTOR TO PROVIDE SAMPLES OF COLOR TO ANDSCAPE ARCHITEC FOR APPROVAL PRIOR TO		STAINED CEDAR				
			GRAVEL				
	PURCHASING CONTRACTOR TO PROVIDE QUANTITIY TO INSURE FULL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBMIT SAMPLE TO LA FOR APPROVAL	G.1	DECOMPOSED GRANITE	NATURAL	NATURAL	CONTRACTOR'S CHOICE	COMPACTED AND WATERED IN, 4" DEPT MINIMUM CONTRACTOR TO SUBMITSAMPLES FOR APPROVAL B LANDSCAFE ARCHITECT
	OR APPRIVED EQUAL, INSTALL PER MANUFACTUER'S SPECIFICATIONS, CONTRACTOR TO PROVIDE SUBMITTAL FOR APPROVAL BY OWNER AND LANDSCAPE ARCHITECT	G.2	#57 STONE, 1 34" AGGREGATE WASHED, GENERAL DRIANGE GRAVEL	NATURAL	NATURAL	CONTRACTOR'S CHOICE	FOR GENERAL DRAINAGE AND COMPACTED FILL
	REF. PLANS FOR LAYOUT REF. DETAILS ON SHEET	G.3	MEDIUM LAVA ROCK FIRE PIT ROCK	STANDARD	NATURAL	WOODLAND DIRECT 844.278.0343	CONTRACTOR TO SUBMIT SAMPLES TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION
_	13.302	G.4	TEXAS BLACK STAR, 2" TO 3" DAM.	NATURAL	NATURAL	OUTDOOR WAREHOUSE 972,423,4001	OR APPRIVED EQUAL, CONTRACTOR TO SUBMIT SAMPLES TO LANDSCAPE ARCHITECT FOR APPROVAL PROR TO INSTALLATION
	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S	14107	ELLANEOUS				
	SPECIFICATIONS SURFACE DOUNTED LOCATE PER PLAN, INSTALL PER MANUFACTUER'S SPECIFICATIONS LOCATE PER PLAN, INSTALL PER MANUFACTUER'S SPECIFICATIONS			STAINLESS STEEL	STAINLESS STEEL	AEI CORPORTION LORI HEMIGHAUS 949:474-3070	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3.3.00
	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS	M2	OUTDOOR GRILL AELCORPORATION DOUBLE DOOR CABINET	STAINLESS STEEL	STAINLESS STEEL	AELCORPORTION LORI HEM GHAUS 949 474 3071	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3 3.69
	LOCATE PER PLAN. INSTALL PER MANUFACTURE'S SPECIFICATIONS	M.3		STANDARD	STANDARD	WOOBLAND DIRECT 844.279.0343	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3:3.07
6	OR APPROVED EQUAL, LOCATE PER PLAN, INSTALL PER MANUFACTUER'S SPECIFICATIONS OR APPROVED EQUAL, LOCATE PER PLAN	M.5	BIG ASS FAN IS BLACK 60° DIN	ELACK	POWERCOATED	BIG ASS FANS 877.244.3287	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3 3.06
	OR APPROVED EQUAL, LOCATE PER PLAN. REF. TO DETAIL ON SHEET L3.3.01	M.6		STANDARD	STANDARD	SYNTHETIC GRASS PROS MARCO GORTANA 214.577.3080	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3:3.0*
		M.7	GAME ELITE	STANDARD	STANDARD	SYNTHETIC GRASS PROS MARCO GORTANA 214 577 30804	INSTALL PER MANUFACTUER'S SPECIFICATIONS, REF. DETAILS ON SHEET L3:3.0
	LIMESTONE BLOCK, LOCATE PER PLAN. PROVIDE PHOTOS OF ACTUAL SLABS FOR APPROVAL PRIOR TO	M.8		BRONZE OR BLACK (TO MATCH ARCHITECTURE)		CONTRACTOR'S CHOICE	INSTALL PER MANUFACTUER'S SPECFICATIONS, REF. DETAILS ON SHEET L3:3.07
	PURCHASING, EXPOSED WEDGE HOLES ON PERIMETER EDGES	M.9	WOOF FIBER ENGINEERED WOOD FIBER MULCH	NATURAL	NATURAL	DOG-ON-IT-PARKS.COM	OR APPRIVED EQUAL, INSTALL PER MANUFACTUER'S SPECIFICATIONS

PL.1	WOSA 2042YZV PORCELAIN SIZE: 2X24	MID WARM GRET	STANDARD	DONNA MOLENDON 214,761,5659	COVERACION TO PROVIDE GUAN THE TO NSCHE FUL COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO SUBMIT SAMPLE TO LA, FOR APPROVAL
PL.2	WATERLINE DEPTH MARKERS CUSTOM MOGAIC 1X1 BERIEB: FRESH	FIELD COLOR: WHITE GLOSSY 1X1 SCRIPT COLOR: BLACK GLOSSY	STANDARD	KNOX TILE DONNA MCLENDON 214.761.5670	CONTRACTOR TO PROVIDE QUANTITY TO INSURE FUL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBWIT SAMPLE TO L.A. FOR APPROVAL
PL3	SELINEARTOR/ BENCH LINE RESH BLACK SIZE: 1X1	BLACK	ANTI-SLIP	KNOX TILE DONNA MCLENDON 214.761.5671	CONTRACTOR TO PROVIDE QUANTITIN TO INSURE FULL COVERAGE AS SHOWN ON PLANS, CONTRACTOR TO SUBMIT SAMPLE TO LIA FOR APPROVAL
PL4	SWWOND BRITE EXPOSED AGGREGATE POOL FINISH	FRENCH GREAY	STANDARD	SGM 809.641.9247	EXPOSED AGGREGATE POOL FINISH
PL.5	JUEDERS UMESTONE POOL COPING, 2"THICK	CHARCOAL	SAINN TOP & BCTTON & 4 SIDES	CONTRACORS CHOICE	CONTRACTOR TO PROVIDE SAMPLES OF COLOR TO LANDSCAPE ARCHITEC FOR APPROVAL PRIOR TO PURCHASING
PL.6	POOL HANDRAIL, 1 1/2" DIA.	STAINLESS STEEL	BRUSHED #4	CONTRACTOR'S CHOICE	CONTRACTOR TO PROVIDE QUANTITIY TO INSURE FULL COVERAGE AS SHOWN ON PLANS. CONTRACTOR TO SUBMIT SAMPLE TO LA. FOR APPROVAL.
PL.8	2 DIAMETER CANNON SCUPPER, ROUND ESCUTCHEON PLATE	STAINLESS STEEL	POLISHED	BCBE WATER & FIRE FEATURE, BCBEWATER NDFIRE CDM	OR APPRIVED EQUAL INSTALL PER MANUFACTUR'S SPECIFICATIONS, CONTRACTOR TO PROVIDE SUBMITT FOR APPROVAL BY OWNER AND LANDSCAPE ARCHITEC
RAIL	ING		100 No. 10	and the second second second	
R.1	STEPS HANDRAIL 11/2" DIA	TO MATCH ARCHITECTURAL RAILING	PAINTED	CONTRACTOR'S CHOICE	REF. PLANS FOR LAYOUT, REF. DETAILS ON SHEET 13302
SITE	FURNITURE				
	TRASH RECEPTACLE, DUMOR WODEL# 272-32-SO	TEXTURED CHARCOAL		DLMOR 800.558.4018	LOCATE PER PLAN, INSTALL PER MANUFACTUER'S SPECIFICATIONS
SF.2	SKE RACK DUMOR MODEL # 290-00/S-1	TEXTURED CHARCOAL	POWERCOATED	DLMOR 80(598.4019	SURFACED MOUNTED LOCATE PER PLAN, INSTALL PE MANUFACTUER'S SPECIFICATIONS
SF.3	PET STATION MODEL# 1003-L	GREEN	POWERCOATED	DCGIPOT PRODCUTS 80/364/7861	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS
SF.4	TABLE 299-60H\$ FREESTANDING 2 NENCHES	TEXTURED CHARCOAL	POWERCOATED	DLMOR 801.598.4019	LOCATE PER PLAN. INSTALL PER MANUFACTUR'S SPECIFICATIONS
SF.6	CONCRETE CORN HOLE BOARDS	GREY	SMOOTH	STONE AGE CONCRETE TABLE TENNIS 541.671.6318	LOCATE PER PLAN. INSTALL PER MANUFACTUER'S SPECIFICATIONS
SF.6	DOG WATERING STATION	SATIN FINISH	STAINLESS STEEL	DOG-ON-IT-PARKS.COM	OR APPROVED EQUAL LOCATE PER PLAN. INSTALL PE MANUFACTUER'S SPECIFICATIONS
SF.7	WOOD ARC HAMMOCK STAND - SIBERIAN LARCH	WOOD	STANDARD	CARIBBEANHAMMOCKS.COM	OR APPROVED EQUAL, LOCATE PER PLAN
SF.8	12"L X 18"W X 24"H METAL BOX PLANTER: 85_5721824	F&F DARK BRONZE MATTE	POWDERCOATED	FORMAND FIBER COM	OR APPROVED EQUAL, LOCATE PER PLAN, REF. TO DETAIL ON SHEET L3.3.01
STOP	VE				
S.1	LEUDER LINESTONE COUNTER TOP 114" MIN, THICKNESS	CHARCOAL	SAMN WITH EASED EDGES ON ALL SIDES	CONTRACTOR'S CHOICE	
5.2	EUDER LINESTONE BLOCK 90° X 18° X 14°	CHARCOAL	REF. DETAIL ON SHEET 13.3.01	CONTRACTOR'S CHOICE	LIMESTONE BLOCK, LOCATE PER PLAN, PROVIDE PHOTOS OF ACTUAL SLABS FOR APPROVAL PRIOR TO PURCHASING, EXPOSED WEDGE HOLES ON PERIMETE EDGES

KNOK TILE

MID WARM GREY STANDARD

POOL PL.1 WATERLINE TILE

# 9 FOUNDATION PLANS

A VMS designed in accordance with 30 TAC 330.957(m) will be installed during development and construction of the four buildings on the subject property. The VMS includes an impermeable barrier installed below the concrete slab of the structures, followed by a 12-inch-thick permeable aggregate bed and a geotextile filter fabric, with vent risers located adjacent to the buildings. This system will allow any vapors (methane or other) that migrate though the soil to the area beneath the structures to be vented outside of the structure. The second component is a monitoring system within the VMS piping network beneath the buildings and within the buildings that will include controller units and remote sensors that can detect methane and other explosive gases. This system will have audible and visual alarms. Sample ports for field monitoring will be installed for the aggregate layer. The foundation plan and VMS design plan are included as **Attachment 9**. Geotechnical soil investigation reports are provided as **Attachments 10A** and **10B**. The Methane Monitoring Plan is discussed in **Section 12**. A Liner Quality Control Plan for the pool is provided below.

# LINER QUALITY CONTROL PLAN

This Liner Quality Control Plan (LQCP) was developed for the Texas Star Property to describe the inspection and construction control and testing requirements in support of the application. This Plan was prepared in general accordance with *Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill*, TCEQ Regulatory Guidance RG-534 dated September 2017 and is intended to fulfil requirements of 30 Texas Administrative Code 330.

# **A General Requirements**

This LQCP provides the basis for the type and rate of quality control performance testing. A copy will be maintained on site during construction or available for electronic download in the event an inspection is performed. For ease in this document preparation, any components that are not specifically addressed in this document will default to the requirements of *Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill*, TCEQ Regulatory Guidance RG-534.

# **B** Overview of Project

As discussed in this Application, the swimming pool will be located in the courtyard of Building 1. The maximum disturbance depth at the subject property will be no deeper than 10 ft, and likely no deeper than 7 ft. The excavation of the pool will be lined with a high-density polyethylene (HDPE) 60-mil sealed geomembrane liner over 2 ft of compacted, clay-rich soil with a permeability not greater than 1 x  $10^{-7}$  cm/s. A protective cover of topsoil 12-inches thick will overlay the liner. A cross-section of the liner is provided on the figure included as **Attachment 9**.

# **C** Soil Material Requirements

#### C.1 **Protective Topsoil Requirements**

Protective cover is required to be placed above the liner system as shown on the cross sections. Topsoil will be free of deleterious materials and not previously mixed with any onsite soils that were previously mixed with garbage, rubbish, or other solid waste materials. Permeability must be greater than  $1 \times 10^{-4}$ 

cm/s. The thickness must be greater than or equal to 12 inches. Compaction is not necessary for installation and density controls are not needed; however, the contractor should place the protective topsoil as soon as possible after installation of the liner and compacted clay-rich soil.

Protective topsoil shall be placed over the HPDE liner during the coolest part of the 8-hour workday. Soil shall be deployed along the surface of the liner to control the amount of slack and minimize any damage to the liner. The liner shall be continuously monitored during installation and any damage to the liner immediately repaired. Only light equipment will be used during construction and a minimum of 12 inches of protective material must be placed on top of the liner before light construction equipment can access the area.

Protective topsoil will not have any rocks greater than 0.375 inches in diameter. The Contractor will keep the protective topsoil layer wet during dry periods to prevent cracking.

#### C.2 Clay-Rich Soil Requirements

Clay-rich soil will meet the following requirements. One sample from each source must be collected before any material is brought onsite. Test methods will generally follow Standard ASTM Test Methods as outlined in Table B-1 of RG-534 and will include field density, gradation analysis, Atterberg limits, and permeability.

Soil Property	Value	
Plasticity Index (PI)	≥ 15	
Liquid Limit (LL)	≥ 30	
Percent Passing No. 200 Mesh Sieve	≥ 30%	
Percent Passing One-Inch Sieve	= 100%	
Permeability	≤ 1 x 10 <sup>-7</sup> cm/sec	

In-situ soils will not be used for clay-rich soil. The clay-rich soil will be sampled every 1,000 cubic yards for total petroleum hydrocarbons (TPH) by Texas Method 1005 and metals SW-846 Methods to ensure the materials are suitable for use.

Clay-rich soils will be placed in three 8-inch lifts (a total of 3 lifts). Compaction testing will be performed at a frequency of every 1 acre and one per lift (minimum of three locations). The clay-rich soil will be compacted to at least 95% of standard proctor.

#### C.3 HDPE Liner Requirements

The HDPE Liner must have a minimum of 60 mil thickness. Recycled or reclaimed HDPE materials are not acceptable. HDPE material and required welding rods shall contain between 2 and 3% carbon black and may contain no more than 1% additives.

The liner will be inspected upon delivery for any damage and defects. The liner must be free from any pinholes, surface blemishes, scratches, or other defects that could affect the integrity of the liner. The liner will be stored at a clean and dry location onsite and protected from any objects that could damage the liner.

All manufacturer's recommendations for the installation of the liner will be followed. In addition, general installation requirements outlined in Table 3-1 of RG-534 must be followed.

 The liner will be placed above the compacted clay-rich soil that will be free of stones and rocks and other debris greater than 3/8-inch. The compacted clay-rich soil will be finished by rolling with flat

wheel roller until smooth uniform surface is achieved. The subgrade areas will be inspected for any desiccation, cracks, erosion, or ponding prior to installation and repaired before liner is placed. If necessary, regular watering and proof rolling will be performed.

- Prohibit construction equipment from traveling directly on the liner.
- Do not place during inclement weather.
- Limit vehicular traffic on the liner to low-ground pressure supporting equipment only. Any damaged areas must be repaired and inspected.
- Only unroll liner sheets that are to be placed and seamed in the same day. Position liner with overlap recommended by manufacturer but not less than 3 inches. Typical overlaps are 3 to 6 inches. There should be no loose flap on the top side of the liner. Overlap distance must be sufficient so that all seam tests can be performed as described below.
- Folds, wrinkles, and fish mouths are not acceptable. Cut, overlap, and weld the material where wrinkles or folds occur. A fish mouth is defined as an area in the seam where one liner panel is first folded over on itself, and a second liner panel is placed and welded over this fold. Where fish mouths occur, the liner must be cut, overlapped, and covered with a patch.
- Use only heat-only tack welds, when necessary. No double-sided tape or glue may be used.
- Fusion or extrusion welding may be used for field seaming and repairs.
- Seaming is permitted only when ambient air conditions are below 104°F.
- At the end of each workday, all unseamed edges will be anchored with sandbags or other approved devices. No penetrating anchors are accepted (stables, U-rods).

#### C.4 HDPE Liner Testing Requirements

#### Verification of HDPE Liner Testing Requirements

Manufacturer information will be reviewed to ensure that QA/QC testing, conformance testing, and seam testing requirements of Table 3-2 of RF-534 are met.

#### Welds, Repair Welds, and Patches

Shear Strength – the seam, when stressed perpendicular to the direction of the weld should not under any condition fail before stretching and breaking of the liner panel adjacent to the weld. The numerical value of the shear strength of any sample should not be less than 90% of the sheet tensile strength according to manufacturer-provided information.

#### Trial Seam Testing

Each day, prior to commencing field seaming, each individual employee performing seaming will conduct a trial seam. Each trial seam will be 3 ft long by 1 ft wide. Trial seam criteria is outlined in Table 3-3 of RG 534.

#### Destructive Testing

Destructive test samples of field seams will be performed at a minimum of one stratified location for every 500 linear feet or major fraction thereof or at the direction of the Engineer. Destructive test requirements will conform with Table 3-4 of RG-534.

#### Non-Destructive Testing

Non-destructive tests should be performed by the Contractor or engineer on all field seams, patches, and repair welds. Accepted non-destructive test methods include vacuum box testing for extrusion welds and air-pressure testing for dual-tract fusion welds. Specific procedures for these tests is included on Table 3-5 of RG-534.

### **D** Documentation

Following installation, the following documentation will be compiled and kept onsite in the facility records. This will include the following elements:

- All field and laboratory test documentation.
- All test documentation.
- Liner certification information and results of manufacturer independent testing.
- Field documentation of field testing, repairs, etc.
- Photographs and field notes.
- A survey of the final liner area.