TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the application.

APPLICANT: New Braunfels Utilities

PERMIT NUMBER: WQ0000010232004

Indicate if each of the following items is included in your application.

	Y	N		Y	N
Administrative Report 1.0	☒	☐	Original USGS Map	☒	☐
Administrative Report 1.1	☐	☒	Affected Landowners Map	☐	☒
SPIF	☒	☐	Landowner Disk or Labels	☐	☒
Core Data Form	☒	☐	Buffer Zone Map	☐	☒
Technical Report 1.0	☒	☐	Flow Diagram	☒	☐
Technical Report 1.1	☐	☒	Site Drawing	☒	☐
Worksheet 2.0	☒	☐	Original Photographs	☐	☒
Worksheet 2.1	☐	☒	Design Calculations	☒	☐
Worksheet 3.0	☐	☒	Solids Management Plan	☐	☒
Worksheet 3.1	☐	☒	Water Balance	☐	☒
Worksheet 3.2	☐	☒			
Worksheet 3.3	☐	☒			
Worksheet 4.0	☒	☐			
Worksheet 5.0	☒	☐			
Worksheet 6.0	☒	☐			
Worksheet 7.0	☐	☒			

For TCEQ Use Only

Segment Number _____County _____
Expiration Date _____Region _____
Permit Number _____

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

APPLICATION FOR A DOMESTIC WASTEWATER PERMIT ADMINISTRATIVE REPORT 1.0

If you have questions about completing this form please contact the Applications Review and Processing Team at 512-239-4671.

Section 1. Application Fees (Instructions Page 29)

Indicate the amount submitted for the application fee (check only one).

Flow	New/Major Amendment	Renewal
<0.05 MGD	$350.00 ☐	$315.00 ☐
≥0.05 but <0.10 MGD	$550.00 ☐	$515.00 ☐
≥0.10 but <0.25 MGD	$850.00 ☐	$815.00 ☐
≥0.25 but <0.50 MGD	$1,250.00 ☐	$1,215.00 ☐
≥0.50 but <1.0 MGD	$1,650.00 ☐	$1,615.00 ☐
≥1.0 MGD	$2,050.00 ☐	$2,015.00 ☒

Minor Amendment (for any flow) $150.00 ☐

Payment Information:

Mailed Check/Money Order Number: Click here to enter text

Check/Money Order Amount: Click here to enter text

Name Printed on Check: Click here to enter text

EPAY Voucher Number: Click here to enter text

Copy of Payment Voucher enclosed? Yes ☐

Section 2. Type of Application (Instructions Page 29)

☐ New TPDES

☐ Major Amendment *with* Renewal

☐ Major Amendment *without* Renewal

☒ Renewal without changes

☐ New TLAP

☐ Minor Amendment *with* Renewal

☐ Minor Amendment *without* Renewal

☐ Minor Modification of permit

For amendments or modifications, describe the proposed changes: Click here to enter text.

For existing permits:

Permit Number: WQ0010232004

EPA I.D. (TPDES only): TX0133248

Expiration Date: 2/1/2022

Section 3. Facility Owner (Applicant) and Co-Applicant Information (Instructions Page 29)

A. The owner of the facility must apply for the permit.

What is the Legal Name of the entity (applicant) applying for this permit?

New Braunfels Utilities

(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal documents forming the entity.)

If the applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at http://www15.tceq.texas.gov/crpub/

CN: 600522957

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in *30 TAC § 305.44*.

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Ryan Kelso

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: COO, New Braunfels Utilities

B. Co-applicant information. Complete this section only if another person or entity is required to apply as a co-permittee.

What is the Legal Name of the co-applicant applying for this permit?

N/A

(The legal name must be spelled exactly as filed with the TX SOS, with the County, or in the legal documents forming the entity.)

If the co-applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at: http://www15.tceq.texas.gov/crpub/

CN: N/A

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in *30 TAC § 305.44*.

Prefix (Mr., Ms., Miss): N/A

First and Last Name: N/A

Credential (P.E, P.G., Ph.D., etc.): N/A

Title: N/A

Provide a brief description of the need for a co-permittee: N/A

C. Core Data Form

Complete the Core Data Form for each customer and include as an attachment. If the customer type selected on the Core Data Form is **Individual**, complete **Attachment 1** of Administrative Report 1.0.

Attachment: Attachment A

Section 4. Application Contact Information (Instructions Page 30)

This is the person(s) TCEQ will contact if additional information is needed about this application. Provide a contact for administrative questions and technical questions.

A. Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Jonathan Nguyen

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text

Title: Permit Specialist

Organization Name: JonesCarter

Mailing Address: 3100 Alvin Devane Blvd, Suite 150

City, State, Zip Code: Austin, TX 78741

Phone No.: 512-685-5156 Ext.: Click here to enter text Fax No.: Click here to enter text

E-mail Address: jnguyen@jonescarter.com

Check one or both: ☒ Administrative Contact ☒ Technical Contact

B. Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Brent Lundmark

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text

Title: Water Treatment & Compliance Manager

Organization Name: New Braunfels Utilities

Mailing Address: P.O. Box 310289

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-608-8900 Ext.: Click here to enter text Fax No.: Click here to enter text

E-mail Address: blundmark@nbutexas.com

Check one or both: ☒ Administrative Contact ☐ Technical Contact

Section 5. Permit Contact Information (Instructions Page 30)

Provide two names of individuals that can be contacted throughout the permit term.

A. Prefix (Mr., Ms., Miss): Mr.

First and Last Name: John Harrell

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: President

Organization Name: New Braunfels Utilities

Mailing Address: 263 Main Plaza

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-608-8900 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: jharrell@nbutexas.com

B. Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Ryan Kelso

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: COO

Organization Name: New Braunfels Utilities

Mailing Address: 263 Main Plaza

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-608-8900 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: rkelso@nbutexas.com

Section 6. Billing Information (Instructions Page 30)

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits ***in effect on September 1 of each year***. The TCEQ will send a bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed (using form TCEQ-20029).

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Brent Lundmark

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: Water Treatment & Compliance Manager

Organization Name: New Braunfels Utilities

Mailing Address: P.O. Box 310289

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-608-8900 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: blundmark@nbutexas.com

Section 7. DMR/MER Contact Information (Instructions Page 31)

Provide the name and complete mailing address of the person delegated to receive and submit Discharge Monitoring Reports (EPA 3320-1) or maintain Monthly Effluent Reports.

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Brent Lundmark

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: Water Treatment & Compliance Manager

Organization Name: New Braunfels Utilities

Mailing Address: P.O. Box 310289

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-608-8900 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: blundmark@nbutexas.com

DMR data is required to be submitted electronically. Create an account at: https://www.tceq.texas.gov/permitting/netdmr/netdmr.html.

Section 8. Public Notice Information (Instructions Page 31)

A. Individual Publishing the Notices

Prefix (Mr., Ms., Miss): Ms.

First and Last Name: Pam Quidley

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: Communications & Marketing Manager

Organization Name: New Braunfels Utilities

Mailing Address: 263 Main Plaza

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-312-7940 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: pquidley@nbutexas.com

B. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package

Indicate by a check mark the preferred method for receiving the first notice and instructions:

☒ E-mail Address

☐ Fax

☐ Regular Mail

C. Contact person to be listed in the Notices

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Brent Lundmark

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: Water Treatment & Compliance Manager

Organization Name: New Braunfels Utilities

Phone No.: 830-608-8900 Ext.: Click here to enter text.

E-mail: blundmark@nbutexas.com

D. Public Viewing Information

If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.

Public building name: www.nbutexas.com/planning

Location within the building: Click here to enter text.

Physical Address of Building: Click here to enter text.

City: Click here to enter text. County: Click here to enter text.

Contact Name: Click here to enter text.

Phone No.: Click here to enter text. Ext.: Click here to enter text.

E. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, and renewal applications**. It is not required for minor amendment or minor modification applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☒ Yes ☐ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☒ Yes ☐ No

3. Do the students at these schools attend a bilingual education program at another location?

   ☐ Yes ☒ No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

   ☐ Yes ☒ No

5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? Spanish

Section 9. Regulated Entity and Permitted Site Information (Instructions Page 33)

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. **RN**106228422

Search the TCEQ's Central Registry at http://www15.tceq.texas.gov/crpub/ to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Sam C. McKenzie, Jr. Water Reclamation Facility

C. Owner of treatment facility: New Braunfels Utilities

Ownership of Facility: ☒ Public ☐ Private ☐ Both ☐ Federal

D. Owner of land where treatment facility is or will be:

Prefix (Mr., Ms., Miss): Click here to enter text

First and Last Name: New Braunfels Utilities

Mailing Address: 263 Main Plaza

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-629-8416 E-mail Address: rkelso@nbutexas.com

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: N/A

E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss): N/A

First and Last Name: Click here to enter text

Mailing Address: Click here to enter text

City, State, Zip Code: Click here to enter text

Phone No.: Click here to enter text E-mail Address: Click here to enter text

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: N/A

F. Owner of sewage sludge disposal site (if authorization is requested for sludge disposal on property owned or controlled by the applicant):

Prefix (Mr., Ms., Miss): N/A

First and Last Name: Click here to enter text.

Mailing Address: Click here to enter text.

City, State, Zip Code: Click here to enter text.

Phone No.: Click here to enter text. E-mail Address: Click here to enter text.

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: N/A

Section 10. TPDES Discharge Information (Instructions Page 34)

A. Is the wastewater treatment facility location in the existing permit accurate?

☒ Yes ☐ No

If **no**, **or a new permit application**, please give an accurate description:

Click here to enter text.

B. Are the point(s) of discharge and the discharge route(s) in the existing permit correct?

☒ Yes ☐ No

If **no**, **or a new or amendment permit application**, provide an accurate description of the point of discharge and the discharge route to the nearest classified segment as defined in 30 TAC Chapter 307:

Click here to enter text.

City nearest the outfall(s): New Braunfels

County in which the outfalls(s) is/are located: Guadalupe

Outfall Latitude: (001) 29.6514, (002) 29.6506 Longitude: (001) -98.0572, (002) -98.0578

C. Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

☐ Yes ☒ No

If **yes**, indicate by a check mark if:

☐ Authorization granted ☐ Authorization pending

For **new and amendment** applications, provide copies of letters that show proof of contact and the approval letter upon receipt.

Attachment: N/A

D. For all applications involving an average daily discharge of 5 MGD or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge.

Guadalupe, Gonzalez, Dewitt, Victoria

Section 11. TLAP Disposal Information (Instructions Page 36)

A. For TLAPs, is the location of the effluent disposal site in the existing permit accurate?

☐ Yes ☐ No

If **no, or a new or amendment permit application**, provide an accurate description of the disposal site location:

N/A

B. City nearest the disposal site: N/A

C. County in which the disposal site is located: N/A

D. Disposal Site Latitude: N/A Longitude: N/A

E. For **TLAPs**, describe the routing of effluent from the treatment facility to the disposal site:

Click here to enter text.

F. For **TLAPs**, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained:

Click here to enter text.

Section 12. Miscellaneous Information (Instructions Page 37)

A. Is the facility located on or does the treated effluent cross American Indian Land?

☐ Yes ☒ No

B. If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?

☐ Yes ☐ No ☒ Not Applicable

If No, or if a new onsite sludge disposal authorization is being requested in this permit

application, provide an accurate location description of the sewage sludge disposal site.

N/A

C. Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?

☐ Yes ☒ No

If yes, list each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application:

N/A

D. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following information:

Account number: Click here to enter text Amount past due: Click here to enter text

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, please provide the following information:

Enforcement order number: Click here to enter text Amount past due: Click here to enter text

Section 13. Attachments (Instructions Page 38)

Indicate which attachments are included with the Administrative Report. Check all that apply:

☐ Lease agreement or deed recorded easement, if the land where the treatment facility is located or the effluent disposal site are not owned by the applicant or co-applicant.

☒ Original full-size USGS Topographic Map with the following information:

- Applicant's property boundary
- Treatment facility boundary
- Labeled point of discharge for each discharge point (TPDES only)
- Highlighted discharge route for each discharge point (TPDES only)
- Onsite sewage sludge disposal site (if applicable)
- Effluent disposal site boundaries (TLAP only)
- New and future construction (if applicable)
- 1 mile radius information

- 3 miles downstream information (TPDES only)
- All ponds.

☐ Attachment 1 for Individuals as co-applicants

☐ Other Attachments. Please specify: Click here to enter text.

Section 14. Signature Page (Instructions Page 39)

If co-applicants are necessary, each entity must submit an original, separate signature page.

Permit Number: WQ0010232004

Applicant: New Braunfels Utilities

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.

I further certify that I am authorized under 30 Texas Administrative Code § 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): Ryan Kelso

Signatory title: COO, New Braunfels Utilities

Signature:_____Date:_____

(Use blue ink)

Subscribed and Sworn to before me by the said_____

on this_____day of_____, 20_____.

My commission expires on the_____day of_____, 20_____.

_____

Notary Public *[SEAL]*

_____

County, Texas

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING DOMESTIC TPDES WASTEWATER PERMIT APPLICATIONS

TCEQ USE ONLY:

Application type: _____Renewal _____Major Amendment ____Minor Amendment _____New

County: _____ Segment Number: _____

Admin Complete Date: _____

Agency Receiving SPIF:

_____ Texas Historical Commission _____ U.S. Fish and Wildlife

_____ Texas Parks and Wildlife Department _____ U.S. Army Corps of Engineers

This form applies to TPDES permit applications only. (Instructions, Page 53)

The SPIF must be completed as a separate document. The TCEQ will mail a copy of the SPIF to each agency as required by the TCEQ agreement with EPA. If any of the items are not completely addressed or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed.

Do not refer to a response of any item in the permit application form. Each attachment must be provided with this form separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments.

The following applies to all applications:

1. Permittee: New Braunfels Utilities

   Permit No. WQ00 10232004 EPA ID No. TX 0133248

   Address of the project (or a location description that includes street/highway, city/vicinity, and county):

   Approximately 4.0 miles southeast of the City of New Braunfels, 0.7 miles southwest of the intersection of State Highway 46 and Elley Lane, and 0.6 mile downstream from the Lake Dunlap Dam on the Guadalupe River, in Guadalupe County, 78130

Provide the name, address, phone and fax number of an individual that can be contacted to answer specific questions about the property.

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Brent Lundmark

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text.

Title: Water Treatment & Compliance Manager

Mailing Address: P.O. Box 310289

City, State, Zip Code: New Braunfels, TX 78130

Phone No.: 830-608-8900 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: blundmark@nbutexas.com

2. List the county in which the facility is located: Guadalupe
3. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property.

Property owner is permittee, New Braunfels Utilities

4. Provide a description of the effluent discharge route. The discharge route must follow the flow of effluent from the point of discharge to the nearest major watercourse (from the point of discharge to a classified segment as defined in 30 TAC Chapter 307). If known, please identify the classified segment number.

Via outfall 001 to the Lake Dunlop Hydroelectric Plant Canal, thence to the Guadalupe River Below Comal River; and via outfall 002 directly to Guadalupe River Below Comal River in Segment No. 1804 of the Guadalupe River Basin

5. Please provide a separate 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required in addition to the map in the administrative report).

Provide original photographs of any structures 50 years or older on the property.

Does your project involve any of the following? Check all that apply.

- ☒ Proposed access roads, utility lines, construction easements
- ☐ Visual effects that could damage or detract from a historic property's integrity
- ☒ Vibration effects during construction or as a result of project design
- ☒ Additional phases of development that are planned for the future
- ☐ Sealing caves, fractures, sinkholes, other karst features

☐ Disturbance of vegetation or wetlands

6. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features):

No caves or karst features will be impacted.

7. Describe existing disturbances, vegetation, and land use:

Existing land use is for the water reclamation facility.

THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS

8. List construction dates of all buildings and structures on the property:

N/A - Renewal

9. Provide a brief history of the property, and name of the architect/builder, if known.

N/A - Renewal

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION

DOMESTIC TECHNICAL REPORT 1.0

The Following Is Required For All Applications

Renewal, New, And Amendment

Section 1. Permitted or Proposed Flows (Instructions Page 51)

A. Existing/Interim I Phase

Design Flow (MGD): 2.5

2-Hr Peak Flow (MGD): 10

Estimated construction start date: Click here to enter text.

Estimated waste disposal start date: January 2017

B. Interim II Phase

Design Flow (MGD): 4.9/7.5

2-Hr Peak Flow (MGD): 19.6/30

Estimated construction start date: 2/2023; 2/2028

Estimated waste disposal start date: 1/2024; 1/2029

C. Final Phase

Design Flow (MGD): 9.9

2-Hr Peak Flow (MGD): 39.6

Estimated construction start date: 2/2034

Estimated waste disposal start date: 1/2035

D. Current operating phase: Interim I

Provide the startup date of the facility: January 2017

Section 2. Treatment Process (Instructions Page 51)

A. Treatment process description

Provide a detailed description of the treatment process. **Include the type of**

treatment plant, mode of operation, and all treatment units. Start with the plant's head works and finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed in the permit, a description of *each phase* must be provided**. Process description:

See Attachment C – Supplemental Technical Report

Port or pipe diameter at the discharge point, in inches: Click here to enter text

B. Treatment Units

In Table 1.0(1), provide the treatment unit type, the number of units, and dimensions (length, width, depth) **of each treatment unit, accounting for *all* phases of operation**.

Table 1.0(1) – Treatment Units

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
See Attachment C		

C. Process flow diagrams

Provide flow diagrams for the existing facilities and **each** proposed phase of construction.

Attachment: Attachment D

Section 3. Site Drawing (Instructions Page 52)

Provide a site drawing for the facility that shows the following:

- The boundaries of the treatment facility;
- The boundaries of the area served by the treatment facility;
- If land disposal of effluent, the boundaries of the disposal site and all storage/holding ponds; and
- If sludge disposal is authorized in the permit, the boundaries of the land application or disposal site.

Attachment: Attachment E

Provide the name and a description of the area served by the treatment facility.

Eastern portions of New Braunfels.

Section 4. Unbuilt Phases (Instructions Page 52)

Is the application for a renewal of a permit that contains an unbuilt phase or phases?

Yes ☒ No ☐

If yes, does the existing permit contain a phase that has not been constructed within five years of being authorized by the TCEQ?

Yes ☒ No ☐

If yes, provide a detailed discussion regarding the continued need for the unbuilt phase. Failure to provide sufficient justification may result in the Executive Director recommending denial of the unbuilt phase or phases.

See Attachment F - Justification

Section 5. Closure Plans (Instructions Page 53)

Have any treatment units been taken out of service permanently, or will any units be taken out of service in the next five years?

Yes ☐ No ☒

If yes, was a closure plan submitted to the TCEQ?

Yes ☐ No ☐

If yes, provide a brief description of the closure and the date of plan approval.

N/A

Section 6. Permit Specific Requirements (Instructions Page 53)

For applicants with an existing permit, check the *Other Requirements* or *Special Provisions* of the permit.

A. Summary transmittal

Have plans and specifications been approved for the existing facilities and each proposed phase?

Yes ☒ No ☐

If yes, provide the date(s) of approval for each phase: 2/25/13

Provide information, including dates, on any actions taken to meet a requirement or provision pertaining to the submission of a summary transmittal letter. Provide a copy of an approval letter from the TCEQ, if applicable.

Click here to enter text.

B. Buffer zones

Have the buffer zone requirements been met?

Yes ☒ No ☐

Provide information below, including dates, on any actions taken to meet the conditions of the buffer zone. If available, provide any new documentation relevant to maintaining the buffer zones.

Other Requirement No. 4 – restrictive easements submitted

C. Other actions required by the current permit

Does the *Other Requirements* or *Special Provisions* section in the existing permit require submission of any other information or other required actions? Examples include Notification of Completion, progress reports, soil monitoring data, etc.

Yes ☒ No ☐

If yes, provide information below on the status of any actions taken to meet the conditions of an *Other Requirement* or *Special Provision*.

Other Requirement No. 8 – Plans and Specs, O.R. No. 10 – Notice of Completion for future phases

D. Grit and grease treatment

1. Acceptance of grit and grease waste

Does the facility have a grit and/or grease processing facility onsite that treats and decants or accepts transported loads of grit and grease waste that are discharged directly to the wastewater treatment plant prior to any treatment?

Yes ☐ No ☒

If No, stop here and continue with Subsection E. Stormwater Management.

2. Grit and grease processing

Describe below how the grit and grease waste is treated at the facility. In your description, include how and where the grit and grease is introduced to the treatment works and how it is separated or processed. Provide a flow diagram showing how grit and grease is processed at the facility.

Click here to enter text.

3. Grit disposal

Does the facility have a Municipal Solid Waste (MSW) registration or permit for grit disposal?

Yes ☐ No ☐

If No, contact the TCEQ Municipal Solid Waste team at 512-239-0000. Note: A registration or permit is required for grit disposal. Grit shall not be combined with treatment plant sludge. See the instruction booklet for additional information on grit disposal requirements and restrictions.

Describe the method of grit disposal.

Click here to enter text.

4. Grease and decanted liquid disposal

Note: A registration or permit is required for grease disposal. Grease shall not be combined with treatment plant sludge. For more information, contact the TCEQ Municipal Solid Waste team at 512-239-0000.

Describe how the decant and grease are treated and disposed of after grit separation.

Click here to enter text.

E. Stormwater management

1. Applicability

Does the facility have a design flow of 1.0 MGD or greater in any phase?

Yes ☒ No ☐

Does the facility have an approved pretreatment program, under 40 CFR Part 403?

Yes ☒ No ☐

If no to both of the above, then skip to Subsection F, Other Wastes Received.

2. MSGP coverage

Is the stormwater runoff from the WWTP and dedicated lands for sewage disposal currently permitted under the TPDES Multi-Sector General Permit (MSGP), TXR050000?

Yes ☒ No ☐

If yes, please provide MSGP Authorization Number and skip to Subsection F, Other Wastes Received:

TXR05 CX88 or TXRNE Click here to enter text

If no, do you intend to seek coverage under TXR050000?

Yes ☐ No ☒

3. Conditional exclusion

Alternatively, do you intend to apply for a conditional exclusion from permitting based TXR050000 (Multi Sector General Permit) Part II B.2 or TXR050000 (Multi Sector General Permit) Part V, Sector T 3(b)?

Yes ☐ No ☒

If yes, please explain below then proceed to Subsection F, Other Wastes Received:

N/A

4. Existing coverage in individual permit

Is your stormwater discharge currently permitted through this individual TPDES or TLAP permit?

Yes ☐ No ☒

If yes, provide a description of stormwater runoff management practices at the site that are authorized in the wastewater permit then skip to Subsection F, Other Wastes Received.

Click here to enter text.

5. Zero stormwater discharge

Do you intend to have no discharge of stormwater via use of evaporation or other means?

Yes ☐ No ☒

If yes, explain below then skip to Subsection F. Other Wastes Received.

Click here to enter text.

Note: If there is a potential to discharge any stormwater to surface water in the state as the result of any storm event, then permit coverage is required under the MSGP or an individual discharge permit. This requirement applies to all areas of facilities with treatment plants or systems that treat, store, recycle, or reclaim domestic sewage, wastewater or sewage sludge (including dedicated lands for sewage sludge disposal located within the onsite property boundaries) that meet the applicability criteria of above. You have the option of obtaining coverage under the MSGP for direct discharges, (recommended), or obtaining coverage under this individual permit.

6. Request for coverage in individual permit

Are you requesting coverage of stormwater discharges associated with your treatment plant under this individual permit?

Yes ☐ No ☒

If yes, provide a description of stormwater runoff management practices at the site for which you are requesting authorization in this individual wastewater permit and describe whether you intend to comingle this discharge with your treated effluent or discharge it via a separate dedicated stormwater outfall. Please also indicate if you intend to divert stormwater to the treatment plant headworks and indirectly discharge it to water in the state.

Click here to enter text.

Note: Direct stormwater discharges to waters in the state authorized through this individual permit will require the development and implementation of a stormwater pollution prevention plan (SWPPP) and will be subject to additional monitoring and reporting requirements. Indirect discharges of stormwater via headworks recycling will require compliance with all individual permit requirements including 2-hour peak flow limitations. All stormwater discharge authorization requests will require additional information during the technical review of your application.

F. Discharges to the Lake Houston Watershed

Does the facility discharge in the Lake Houston watershed?
Yes ☐ No ☒

If yes, a Sewage Sludge Solids Management Plan is required. See Example 5 in the instructions.

G. Other wastes received including sludge from other WWTPs and septic waste

1. Acceptance of sludge from other WWTPs

Does the facility accept or will it accept sludge from other treatment plants at the facility site?
Yes ☐ No ☒

If yes, attach sewage sludge solids management plan. See Example 5 of the instructions.

In addition, provide the date that the plant started accepting sludge or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the sludge, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Click here to enter text.

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

2. Acceptance of septic waste

Is the facility accepting or will it accept septic waste?

Yes ☐ No ☒

If yes, does the facility have a Type V processing unit?

Yes ☐ No ☐

If yes, does the unit have a Municipal Solid Waste permit?

Yes ☐ No ☐

If yes to any of the above, provide a the date that the plant started accepting septic waste, or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the septic waste, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Click here to enter text.

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

3. Acceptance of other wastes (not including septic, grease, grit, or RCRA, CERCLA or as discharged by IUs listed in Worksheet 6)

Is the facility accepting or will it accept wastes that are not domestic in nature excluding the categories listed above?

Yes ☐ No ☒

If yes, provide the date that the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons), a description of the entities generating the waste, and any distinguishing chemical or other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action.

Click here to enter text.

Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 58)

Is the facility in operation?

Yes ☒ No ☐

If no, this section is not applicable. Proceed to Section 8.

If yes, provide effluent analysis data for the listed pollutants. ***Wastewater treatment facilities*** complete Table 1.0(2). **W*ater treatment facilities*** discharging filter backwash water, complete Table 1.0(3).

Note: The sample date must be within 1 year of application submission.

Table 1.0(2) - Pollutant Analysis for Wastewater Treatment Facilities

Pollutant	**Average Conc.**	**Max Conc.**	**No. of Samples**	**Sample Type**	**Sample Date/Time**
$CBOD_5$, mg/l	2.7	4.45	10	Comp	3-1 to 3-31/0800
Total Suspended Solids, mg/l	1.49	4.0	10	Comp	3-1 to 3-31/0800
Ammonia Nitrogen, mg/l	0.0	0.0	10	Comp	3-1 to 3-31/0800
Nitrate Nitrogen, mg/l	16.7	16.7	1	Comp	3-9-21/0600
Total Kjeldahl Nitrogen, mg/l	2.0	2.0	1	Comp	3-9-21/0600
Sulfate, mg/l	91.0	91.0	1	Comp	3-9-21/0600
Chloride, mg/l	174.0	174.0	1	Comp	3-9-21/0600
Total Phosphorus, mg/l	0.38	0.60	10	Comp	3-1 to 3-31/0800
pH, standard units	8.20	8.55	9	Grab	3-1 to 3-31/1000
Dissolved Oxygen*, mg/l	8.75	9.26	6	Grab	3-5 to 3-26/0800
Chlorine Residual, mg/l	N/A	N/A	N/A	N/A	N/A
E.coli (CFU/100ml) freshwater	1.60	124.3	31	Grab	3-1 to 3-31/1000
Entercocci (CFU/100ml)	N/A	N/A	N/A	N/A	N/A

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
saltwater					
Total Dissolved Solids, mg/l	989	1000	2	Comp	3-1 to 4-8/0800
Electrical Conductivity, µmohs/cm, †	N/A	N/A	N/A	N/A	N/A
Oil & Grease, mg/l	<5.0		1	Grab	3-9-21/0720
Alkalinity ($CaCO_3$)*, mg/l	174		1	Grab	3-12-21/0915

*TPDES permits only

†TLAP permits only

Table 1.0(3) - Pollutant Analysis for Water Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Suspended Solids, mg/l					
Total Dissolved Solids, mg/l					
pH, standard units					
Fluoride, mg/l					
Aluminum, mg/l					
Alkalinity ($CaCO_3$), mg/l					

Section 8. Facility Operator (Instructions Page 60)

Facility Operator Name: Orlando Pena

Facility Operator's License Classification and Level: A

Facility Operator's License Number: WW0004005

Section 9. Sewage Sludge Management and Disposal (Instructions Page 60)

A. Sludge disposal method

Identify the current or anticipated sludge disposal method or methods from the

following list. Check all that apply.

☒ Permitted landfill

☐ Permitted or Registered land application site for beneficial use

☐ Land application for beneficial use authorized in the wastewater permit

☐ Permitted sludge processing facility

☐ Marketing and distribution as authorized in the wastewater permit

☐ Composting as authorized in the wastewater permit

☐ Permitted surface disposal site (sludge monofill)

☐ Surface disposal site (sludge monofill) authorized in the wastewater permit

☐ Transported to another permitted wastewater treatment plant or permitted sludge processing facility. If you selected this method, a written statement or contractual agreement from the wastewater treatment plant or permitted sludge processing facility accepting the sludge must be included with this application.

☐ Other: Click here to enter text.

B. Sludge disposal site

Disposal site name: Mesquite Creek Landfill

TCEQ permit or registration number: 48029

County where disposal site is located: Comal

C. Sludge transportation method

Method of transportation (truck, train, pipe, other): Truck

Name of the hauler: Residuals Transport

Hauler registration number: 24346

Sludge is transported as a:

Liquid ☐ semi-liquid ☐ semi-solid ☒ solid ☐

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 60)

A. Beneficial use authorization

Does the existing permit include authorization for land application of sewage sludge for beneficial use?

Yes ☐ No ☒

If yes, are you requesting to continue this authorization to land apply sewage sludge for beneficial use?

Yes ☐ No ☐

If yes, is the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)** attached to this permit application (see the instructions for details)?

Yes ☐ No ☐

B. Sludge processing authorization

Does the existing permit include authorization for any of the following sludge processing, storage or disposal options?

Sludge Composting	Yes ☐	No ☒
Marketing and Distribution of sludge	Yes ☐	No ☒
Sludge Surface Disposal or Sludge Monofill	Yes ☐	No ☒
Temporary storage in sludge lagoons	Yes ☐	No ☒

If yes to any of the above sludge options and the applicant is requesting to continue this authorization, is the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)** attached to this permit application?

Yes ☐ No ☐

Section 11. Sewage Sludge Lagoons (Instructions Page 61)

Does this facility include sewage sludge lagoons?

Yes ☐ No ☒

If yes, complete the remainder of this section. If no, proceed to Section 12.

A. Location information

The following maps are required to be submitted as part of the application. For each map, provide the Attachment Number.

- Original General Highway (County) Map:

  Attachment: Click here to enter text.
- USDA Natural Resources Conservation Service Soil Map:

  Attachment: Click here to enter text.
- Federal Emergency Management Map:

  Attachment: Click here to enter text.
- Site map:

  Attachment: Click here to enter text.

Discuss in a description if any of the following exist within the lagoon area. Check all that apply.

- ☐ Overlap a designated 100-year frequency flood plain
- ☐ Soils with flooding classification
- ☐ Overlap an unstable area
- ☐ Wetlands
- ☐ Located less than 60 meters from a fault
- ☐ None of the above

Attachment: Click here to enter text.

If a portion of the lagoon(s) is located within the 100-year frequency flood plain, provide the protective measures to be utilized including type and size of protective structures:

Click here to enter text.

B. Temporary storage information

Provide the results for the pollutant screening of sludge lagoons. These results are in addition to pollutant results in Section 7 of Technical Report 1.0.

Nitrate Nitrogen, mg/kg: Click here to enter text.

Total Kjeldahl Nitrogen, mg/kg: Click here to enter text.

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg: Click here to enter text.

Phosphorus, mg/kg: Click here to enter text.

Potassium, mg/kg: Click here to enter text.

pH, standard units: Click here to enter text.

Ammonia Nitrogen mg/kg: Click here to enter text.

Arsenic: Click here to enter text.

Cadmium: Click here to enter text.

Chromium: Click here to enter text.

Copper: Click here to enter text.

Lead: Click here to enter text.

Mercury: Click here to enter text.

Molybdenum: Click here to enter text.

Nickel: Click here to enter text.

Selenium: Click here to enter text.

Zinc: Click here to enter text.

Total PCBs: Click here to enter text.

Provide the following information:

Volume and frequency of sludge to the lagoon(s): Click here to enter text.

Total dry tons stored in the lagoons(s) per 365-day period: Click here to enter text.

Total dry tons stored in the lagoons(s) over the life of the unit: Click here to enter text.

C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec?

Yes ☐ No ☐

If yes, describe the liner below. Please note that a liner is required.

Click here to enter text.

D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the

lagoon(s):

Click here to enter text

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)

  Attachment: Click here to enter text

- Copy of the closure plan

  Attachment: Click here to enter text

- Copy of deed recordation for the site

  Attachment: Click here to enter text

- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons

  Attachment: Click here to enter text

- Description of the method of controlling infiltration of groundwater and surface water from entering the site

  Attachment: Click here to enter text

- Procedures to prevent the occurrence of nuisance conditions

  Attachment: Click here to enter text

E. Groundwater monitoring

Is groundwater monitoring currently conducted at this site, or are any wells available for groundwater monitoring, or are groundwater monitoring data otherwise available for the sludge lagoon(s)?

Yes ☐ No ☐

If groundwater monitoring data are available, provide a copy. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater as a separate attachment.

Attachment: Click here to enter text

Section 12. Authorizations/Compliance/Enforcement

(Instructions Page 63)

A. Additional authorizations

Does the permittee have additional authorizations for this facility, such as reuse authorization, sludge permit, etc?

Yes ☐ No ☒

If yes, provide the TCEQ authorization number and description of the authorization:

Click here to enter text

B. Permittee enforcement status

Is the permittee currently under enforcement for this facility?

Yes ☐ No ☒

Is the permittee required to meet an implementation schedule for compliance or enforcement?

Yes ☐ No ☒

If yes to either question, provide a brief summary of the enforcement, the implementation schedule, and the current status:

Click here to enter text

Section 13. RCRA/CERCLA Wastes (Instructions Page 63)

A. RCRA hazardous wastes

Has the facility received in the past three years, does it currently receive, or will it receive RCRA hazardous waste?

Yes ☐ No ☒

B. Remediation activity wastewater

Has the facility received in the past three years, does it currently receive, or will it receive CERCLA wastewater, RCRA remediation/corrective action wastewater or other remediation activity wastewater?

Yes ☐ No ☒

C. Details about wastes received

If yes to either Subsection A or B above, provide detailed information concerning these wastes with the application.

Attachment: Click here to enter text.

Section 14. Laboratory Accreditation (Instructions Page 64)

All laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*, which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review *30 TAC Chapter 25* for specific requirements.

The following certification statement shall be signed and submitted with every application. See the *Signature Page* section in the Instructions, for a list of designated representatives who may sign the certification.

CERTIFICATION:

I certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.*

Printed Name: Ryan Kelso

Title: COO, New Braunfels Utilities

Signature: _____

Date: _____

DOMESTIC TECHNICAL REPORT WORKSHEET 2.0

RECEIVING WATERS

The following is required for all TPDES permit applications

001

Section 1. Domestic Drinking Water Supply (Instructions Page 73)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

Yes ☐ No ☒

If yes, provide the following:
Owner of the drinking water supply: Click here to enter text.

Distance and direction to the intake: Click here to enter text.

Attach a USGS map that identifies the location of the intake.

Attachment: Click here to enter text.

Section 2. Discharge into Tidally Affected Waters (Instructions Page 73)

Does the facility discharge into tidally affected waters?

Yes ☐ No ☒

If yes, complete the remainder of this section. If no, proceed to Section 3.

A. Receiving water outfall

Width of the receiving water at the outfall, in feet: Click here to enter text.

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

Yes ☐ No ☐

If yes, provide the distance and direction from outfall(s).

Click here to enter text.

C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

Yes ☐ No ☐

If yes, provide the distance and direction from the outfall(s).

Click here to enter text

Section 3. Classified Segments (Instructions Page 73)

Is the discharge directly into (or within 300 feet of) a classified segment?

Yes ☐ No ☒ 001

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

Section 4. Description of Immediate Receiving Waters (Instructions Page 75)

Name of the immediate receiving waters: 001 - Lake Dunlap Hydroelectric Plant Canal

A. Receiving water type

Identify the appropriate description of the receiving waters.

☐ Stream

☐ Freshwater Swamp or Marsh

☐ Lake or Pond

Surface area, in acres: Click here to enter text

Average depth of the entire water body, in feet: Click here to enter text

Average depth of water body within a 500-foot radius of discharge point, in feet: Click here to enter text

☒ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify: Click here to enter text.

B. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

☒ Intermittent - dry for at least one week during most years

☐ Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses

☐ Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

☐ USGS flow records

☐ Historical observation by adjacent landowners

☒ Personal observation

☐ Other, specify: Click here to enter text.

C. Downstream perennial confluences

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

Guadalupe River Below Comal River

D. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

Yes ☒ No ☐

If yes, discuss how.

Plant is downstream of Lake Dunlap Dam

E. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

Normal Flowing, clear of debris

Date and time of observation: 4-21-21/11:30

Was the water body influenced by stormwater runoff during observations?

Yes ☐ No ☒

Section 5. General Characteristics of the Waterbody (Instructions Page 74)

A. Upstream influences

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

- ☐ Oil field activities
- ☐ Upstream discharges
- ☐ Septic tanks
- ☐ Urban runoff
- ☒ Agricultural runoff
- ☐ Other(s), specify Click here to enter text

B. Waterbody uses

Observed or evidences of the following uses. Check all that apply.

- ☐ Livestock watering
- ☐ Irrigation withdrawal
- ☐ Fishing
- ☐ Contact recreation
- ☐ Non-contact recreation
- ☐ Navigation

☐ Domestic water supply ☐ Industrial water supply

☐ Park activities ☒ Other(s), specify Plant canal

C. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional

☒ Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored

☐ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid

☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

DOMESTIC TECHNICAL REPORT WORKSHEET 2.0

RECEIVING WATERS

The following is required for all TPDES permit applications

002

Section 1. Domestic Drinking Water Supply (Instructions Page 73)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

Yes ☐ No ☒

If yes, provide the following:
Owner of the drinking water supply: Click here to enter text.

Distance and direction to the intake: Click here to enter text.

Attach a USGS map that identifies the location of the intake.

Attachment: Click here to enter text.

Section 2. Discharge into Tidally Affected Waters (Instructions Page 73)

Does the facility discharge into tidally affected waters?

Yes ☐ No ☒

If yes, complete the remainder of this section. If no, proceed to Section 3.

A. Receiving water outfall

Width of the receiving water at the outfall, in feet: Click here to enter text.

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

Yes ☐ No ☐

If yes, provide the distance and direction from outfall(s).

Click here to enter text.

C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

Yes ☐ No ☐

If yes, provide the distance and direction from the outfall(s).

Click here to enter text

Section 3. Classified Segments (Instructions Page 73)

Is the discharge directly into (or within 300 feet of) a classified segment?

Yes ☒ No ☐

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

Section 4. Description of Immediate Receiving Waters (Instructions Page 75)

Name of the immediate receiving waters: Click here to enter text

A. Receiving water type

Identify the appropriate description of the receiving waters.

☐ Stream

☐ Freshwater Swamp or Marsh

☐ Lake or Pond

Surface area, in acres: Click here to enter text

Average depth of the entire water body, in feet: Click here to enter text

Average depth of water body within a 500-foot radius of discharge point, in feet: Click here to enter text

☐ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify: Click here to enter text.

B. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

☐ Intermittent - dry for at least one week during most years

☐ Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses

☐ Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

☐ USGS flow records

☐ Historical observation by adjacent landowners

☐ Personal observation

☐ Other, specify: Click here to enter text.

C. Downstream perennial confluences

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

Click here to enter text.

D. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

Yes ☐ No ☐

If yes, discuss how.

Click here to enter text.

E. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

Click here to enter text.

Date and time of observation: Click here to enter text.

Was the water body influenced by stormwater runoff during observations?

Yes ☐ No ☐

Section 5. General Characteristics of the Waterbody (Instructions Page 74)

A. Upstream influences

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

☐ Oil field activities
☐ Urban runoff
☐ Upstream discharges
☐ Agricultural runoff
☐ Septic tanks
☐ Other(s), specify Click here to enter text.

B. Waterbody uses

Observed or evidences of the following uses. Check all that apply.

☐ Livestock watering
☐ Contact recreation
☐ Irrigation withdrawal
☐ Non-contact recreation
☐ Fishing
☐ Navigation

☐ Domestic water supply ☐ Industrial water supply

☐ Park activities ☐ Other(s), specify Plant canal

C. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional

☐ Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored

☐ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid

☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

DOMESTIC WORKSHEET 4.0

POLLUTANT ANALYSES REQUIREMENTS*

The following is required for facilities with a permitted or proposed flow of 1.0 MGD or greater, facilities with an approved pretreatment program, or facilities classified as a major facility. See instructions for further details.

This worksheet is not required for minor amendments without renewal

Section 1. Toxic Pollutants (Instructions Page 87)

For pollutants identified in Table 4.0(1), indicate the type of sample.

Grab ☒ Composite ☒

Date and time sample(s) collected: 3-8-21/0935 – Grab, 3-8-21/0935 - Comp

Table 4.0(1) – Toxics Analysis

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrylonitrile	<50		1	50
Aldrin	<0.01		1	0.01
Aluminum	160		1	2.5
Anthracene	<10		1	10
Antimony	<5		1	5
Arsenic	<0.5		1	0.5
Barium	17		1	3
Benzene	<10		1	10
Benzidine	<50		1	50
Benzo(a)anthracene	<5		1	5

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Benzo(a)pyrene	<5		1	5
Bis(2-chloroethyl)ether	<10		1	10
Bis(2-ethylhexyl)phthalate	<10		1	10
Bromodichloromethane	<10		1	10
Bromoform	<10		1	10
Cadmium	<1		1	1
Carbon Tetrachloride	<2		1	2
Carbaryl	<5		1	5
Chlordane*	<0.2		1	0.2
Chlorobenzene	<10		1	10
Chlorodibromomethane	<10		1	10
Chloroform	<10		1	10
Chlorpyrifos	<0.05		1	0.05
Chromium (Total)	<3		1	3
Chromium (Tri) **(*1)**	<3		1	N/A
Chromium (Hex)	<3		1	3
Copper	7		1	2
Chrysene	<5		1	5
p-Chloro-m-Cresol	<10		1	10
4,6-Dinitro-o-Cresol	<50		1	50
p-Cresol	<10		1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Cyanide **(*2)**	<10	<10	4	10
4,4'- DDD	<0.1		1	0.1
4,4'- DDE	<0.1		1	0.1
4,4'- DDT	<0.02		1	0.02
2,4-D	<0.7		1	0.7
Demeton (O and S)	<0.20		1	0.20
Diazinon	<0.5		1	0.5/0.1
1,2-Dibromoethane	<10		1	10
m-Dichlorobenzene	<10		1	10
o-Dichlorobenzene	<10		1	10
p-Dichlorobenzene	<10		1	10
3,3'-Dichlorobenzidine	<5		1	5
1,2-Dichloroethane	<10		1	10
1,1-Dichloroethylene	<10		1	10
Dichloromethane	<20		1	20
1,2-Dichloropropane	<10		1	10
1,3-Dichloropropene	<10		1	10
Dicofol	<1		1	1
Dieldrin	<0.02		1	0.02
2,4-Dimethylphenol	<10		1	10
Di-n-Butyl Phthalate	<10		1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Diuron	<0.09		1	0.09
Endosulfan I (alpha)	<0.01		1	0.01
Endosulfan II (beta)	<0.02		1	0.02
Endosulfan Sulfate	<0.1		1	0.1
Endrin	<0.02		1	0.02
Ethylbenzene	<10		1	10
Fluoride	260		1	500
Guthion	<0.1		1	0.1
Heptachlor	<0.01		1	0.01
Heptachlor Epoxide	<0.01		1	0.01
Hexachlorobenzene	<5		1	5
Hexachlorobutadiene	<10		1	10
Hexachlorocyclohexane (alpha)	<0.05		1	0.05
Hexachlorocyclohexane (beta)	<0.05		1	0.05
gamma-Hexachlorocyclohexane (Lindane)	<0.05		1	0.05
Hexachlorocyclopentadiene	<10		1	10
Hexachloroethane	<20		1	20
Hexachlorophene	<10		1	10
Lead	<0.5		1	0.5
Malathion	<0.1		1	0.1

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Mercury	<0.005		1	0.005
Methoxychlor	<2		1	2
Methyl Ethyl Ketone	<50		1	50
Mirex	<0.02		1	0.02
Nickel	<2		1	2
Nitrate-Nitrogen	16,700		1	100
Nitrobenzene	<10		1	10
N-Nitrosodiethylamine	<20		1	20
N-Nitroso-di-n-Butylamine	<20		1	20
Nonylphenol	<333		1	333
Parathion (ethyl)	<0.1		1	0.1
Pentachlorobenzene	<20		1	20
Pentachlorophenol	<5		1	5
Phenanthrene	<10		1	10
Polychlorinated Biphenyls (PCB's) **(*3)**	<0.2		1	0.2
Pyridine	<20		1	20
Selenium	<5		1	5
Silver	<0.5		1	0.5
1,2,4,5-Tetrachlorobenzene	<20		1	20
1,1,2,2-Tetrachloroethane	<10		1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Tetrachloroethylene	<10		1	10
Thallium	<0.5		1	0.5
Toluene	<10		1	10
Toxaphene	<0.3		1	0.3
2,4,5-TP (Silvex)	<0.3		1	0.3
Tributyltin (see instructions for explanation)	N/A		1	0.01
1,1,1-Trichloroethane	<10		1	10
1,1,2-Trichloroethane	<10		1	10
Trichloroethylene	<10		1	10
2,4,5-Trichlorophenol	<50		1	50
TTHM (Total Trihalomethanes)	<10		1	10
Vinyl Chloride	<10		1	10
Zinc	47		1	5

(*1) Determined by subtracting hexavalent Cr from total Cr.

(*2) Cyanide, amenable to chlorination or weak-acid dissociable.

(*3) The sum of seven PCB congeners 1242, 1254, 1221, 1232, 1248, 1260, and 1016.

Section 2. Priority Pollutants

For pollutants identified in Tables 4.0(2)A-E, indicate type of sample.

Grab ☒ Composite ☒

Date and time sample(s) collected: 3-8-21/0935 – Grab, 3-8-21/0935 - Comp

Table 4.0(2)A – Metals, Cyanide, Phenols

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Antimony	<5		1	5
Arsenic	<0.5		1	0.5
Beryllium	<0.5		1	0.5
Cadmium	<1		1	1
Chromium (Total)	<3		1	3
Chromium (Hex)	<3		1	3
Chromium (Tri) (*1)	<3		1	N/A
Copper	7		1	2
Lead	<0.5		1	0.5
Mercury	<0.005		1	0.005
Nickel	<2		1	2
Selenium	<5		1	5
Silver	<0.5		1	0.5
Thallium	<0.5		1	0.5
Zinc	47		1	5
Cyanide (*2)	<10	<10	4	10
Phenols, Total	<10	17.8	4	10

(*1) Determined by subtracting hexavalent Cr from total Cr.

(*2) Cyanide, amenable to chlorination or weak-acid dissociable

Table 4.0(2)B – Volatile Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrolein	<50		1	50
Acrylonitrile	<50		1	50
Benzene	<10		1	10
Bromoform	<10		1	10
Carbon Tetrachloride	<2		1	2
Chlorobenzene	<10		1	10
Chlorodibromomethane	<10		1	10
Chloroethane	<50		1	50
2-Chloroethylvinyl Ether	<10		1	10
Chloroform	<10		1	10
Dichlorobromomethane [Bromodichloromethane]	<10		1	10
1,1-Dichloroethane	<10		1	10
1,2-Dichloroethane	<10		1	10
1,1-Dichloroethylene	<10		1	10
1,2-Dichloropropane	<10		1	10
1,3-Dichloropropylene [1,3-Dichloropropene]	<10		1	10
1,2-Trans-Dichloroethylene	<10		1	10
Ethylbenzene	<10		1	10
Methyl Bromide	<50		1	50
Methyl Chloride	<50		1	50
Methylene Chloride	<20		1	20
1,1,2,2-Tetrachloroethane	<10		1	10
Tetrachloroethylene	<10		1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Toluene	<10		1	10
1,1,1-Trichloroethane	<10		1	10
1,1,2-Trichloroethane	<10		1	10
Trichloroethylene	<10		1	10
Vinyl Chloride	<10		1	10

Table 4.0(2)C – Acid Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
2-Chlorophenol	<10		1	10
2,4-Dichlorophenol	<10		1	10
2,4-Dimethylphenol	<10		1	10
4,6-Dinitro-o-Cresol	<50		1	50
2,4-Dinitrophenol	<50		1	50
2-Nitrophenol	<20		1	20
4-Nitrophenol	<50		1	50
P-Chloro-m-Cresol	<10		1	10
Pentalchlorophenol	<5		1	5
Phenol	<10		1	10
2,4,6-Trichlorophenol	<10		1	10

Table 4.0(2)D – Base/Neutral Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acenaphthene	<10		1	10
Acenaphthylene	<10		1	10
Anthracene	<10		1	10
Benzidine	<50		1	50
Benzo(a)Anthracene	<5		1	5
Benzo(a)Pyrene	<5		1	5
3,4-Benzofluoranthene	<10		1	10
Benzo(ghi)Perylene	<20		1	20
Benzo(k)Fluoranthene	<5		1	5
Bis(2-Chloroethoxy)Methane	<10		1	10
Bis(2-Chloroethyl)Ether	<10		1	10
Bis(2-Chloroisopropyl)Ether	<10		1	10
Bis(2-Ethylhexyl)Phthalate	<10		1	10
4-Bromophenyl Phenyl Ether	<10		1	10
Butyl benzyl Phthalate	<10		1	10
2-Chloronaphthalene	<10		1	10
4-Chlorophenyl phenyl ether	<10		1	10
Chrysene	<5		1	5
Dibenzo(a,h)Anthracene	<5		1	5
1,2-(o)Dichlorobenzene	<10		1	10
1,3-(m)Dichlorobenzene	<10		1	10
1,4-(p)Dichlorobenzene	<10		1	10
3,3-Dichlorobenzidine	<5		1	5
Diethyl Phthalate	<10		1	10
Dimethyl Phthalate	<10		1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Di-n-Butyl Phthalate	<10		1	10
2,4-Dinitrotoluene	<10		1	10
2,6-Dinitrotoluene	<10		1	10
Di-n-Octyl Phthalate	<10		1	10
1,2-Diphenylhydrazine (as Azo-benzene)	<20		1	20
Fluoranthene	<10		1	10
Fluorene	<10		1	10
Hexachlorobenzene	<5		1	5
Hexachlorobutadiene	<10		1	10
Hexachlorocyclo-pentadiene	<10		1	10
Hexachloroethane	<20		1	20
Indeno(1,2,3-cd)pyrene	<5		1	5
Isophorone	<10		1	10
Naphthalene	<10		1	10
Nitrobenzene	<10		1	10
N-Nitrosodimethylamine	<50		1	50
N-Nitrosodi-n-Propylamine	<20		1	20
N-Nitrosodiphenylamine	<20		1	20
Phenanthrene	<10		1	10
Pyrene	<10		1	10
1,2,4-Trichlorobenzene	<10		1	10

Table 4.0(2)E - Pesticides

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Aldrin	<0.01		1	0.01
alpha-BHC (Hexachlorocyclohexane)	<0.05		1	0.05
beta-BHC (Hexachlorocyclohexane)	<0.05		1	0.05
gamma-BHC (Hexachlorocyclohexane)	<0.05		1	0.05
delta-BHC (Hexachlorocyclohexane)	<0.05		1	0.05
Chlordane	<0.2		1	0.2
4,4-DDT	<0.02		1	0.02
4,4-DDE	<0.1		1	0.1
4,4,-DDD	<0.1		1	0.1
Dieldrin	<0.02		1	0.02
Endosulfan I (alpha)	<0.01		1	0.01
Endosulfan II (beta)	<0.02		1	0.02
Endosulfan Sulfate	<0.1		1	0.1
Endrin	<0.02		1	0.02
Endrin Aldehyde	<0.1		1	0.1
Heptachlor	<0.01		1	0.01
Heptachlor Epoxide	<0.01		1	0.01
PCB-1242	<0.2		1	0.2
PCB-1254	<0.2		1	0.2
PCB-1221	<0.2		1	0.2
PCB-1232	<0.2		1	0.2

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
PCB-1248	<0.2		1	0.2
PCB-1260	<0.2		1	0.2
PCB-1016	<0.2		1	0.2
Toxaphene	<0.3		1	0.3

* For PCBS, if all are non-detects, enter the highest non-detect preceded by a "<".

Section 3. Dioxin/Furan Compounds

A. Indicate which of the following compounds from may be present in the influent from a contributing industrial user or significant industrial user. Check all that apply.

☐ 2,4,5-trichlorophenoxy acetic acid
Common Name 2,4,5-T, CASRN 93-76-5

☐ 2-(2,4,5-trichlorophenoxy) propanoic acid
Common Name Silvex or 2,4,5-TP, CASRN 93-72-1

☐ 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate
Common Name Erbon, CASRN 136-25-4

☐ 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate
Common Name Ronnel, CASRN 299-84-3

☐ 2,4,5-trichlorophenol
Common Name TCP, CASRN 95-95-4

☐ hexachlorophene
Common Name HCP, CASRN 70-30-4

For each compound identified, provide a brief description of the conditions of its/their presence at the facility.

Click here to enter text

B. Do you know or have any reason to believe that 2,3,7,8 Tetrachlorodibenzo-P-Dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

Yes ☐ No ☐

If **yes**, provide a brief description of the conditions for its presence.

Click here to enter text.

If any of the compounds in Subsection A **or** B are present, complete Table 4.0(2)F.

For pollutants identified in Table 4.0(2)F, indicate the type of sample.

Grab ☐ Composite ☐

Date and time sample(s) collected: Click here to enter text.

TABLE 4.0(2)F - DIOXIN/FURAN COMPOUNDS

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
2,3,7,8 TCDD	1					10
1,2,3,7,8	0.5					50
2,3,7,8 HxCDDs	0.1					50
1,2,3,4,6,7,8 HpCDD	0.01					50
2,3,7,8 TCDF	0.1					10
1,2,3,7,8 PeCDF	0.05					50
2,3,4,7,8 PeCDF	0.5					50
2,3,7,8 HxCDFs	0.1					50
2,3,4,7,8	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					0.5
PCB 81	0.0003					0.5

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
PCB 126	0.1					0.5
PCB 169	0.03					0.5
Total						

DOMESTIC WORKSHEET 5.0

TOXICITY TESTING REQUIREMENTS

The following is required for facilities with a currently-operating design flow greater than or equal to 1.0 MGD, with an EPA-approved pretreatment program (or those that are required to have one under 40 CFR Part 403), or are required by the TCEQ to perform Whole Effluent Toxicity testing. This worksheet is not required for minor amendments without renewal.

Section 1. Required Tests (Instructions Page 97)

Indicate the number of 7-day chronic or 48-hour acute Whole Effluent Toxicity (WET) tests performed in the four and one-half years prior to submission of the application.

7-day Chronic: 12

48-hour Acute: Click here to enter text.

Section 2. Toxicity Reduction Evaluations (TREs)

Has this facility completed a TRE in the past four and a half years? Or is the facility currently performing a TRE?

Yes ☐ No ☒

If yes, describe the progress to date, if applicable, in identifying and confirming the toxicant.

N/A

Section 3. Summary of WET Tests

If the required biomonitoring test information has not been previously submitted via both the Discharge Monitoring Reports (DMRs) and the Table 1 (as found in the permit), provide a summary of the testing results for all valid and invalid tests performed over the past four and one-half years. Make additional copies of this table as needed.

Table 5.0(1) – Summary of WET Tests

Test Date	Test Species	NOEC Survival	NOEC Sub-lethal
Submitted via DMR			

DOMESTIC WORKSHEET 6.0

INDUSTRIAL WASTE CONTRIBUTION

The following is required for all publicly owned treatment works (POTWs)

Section 1. All POTWs (Instructions Page 99)

A. Industrial users

Provide the number of each of the following types of industrial users (IUs) that discharge to your POTW and the daily flows from each user. See the Instructions for definitions of Categorical IUs, Significant IUs – non-categorical, and Other IUs.

If there are no users, enter 0 (zero).

Categorical IUs:

Number of IUs: 1

Average Daily Flows, in MGD: 0.003

Significant IUs – non-categorical:

Number of IUs: 0

Average Daily Flows, in MGD: 0

Other IUs:

Number of IUs: 0

Average Daily Flows, in MGD: 0

B. Treatment plant interference

In the past three years, has your POTW experienced treatment plant interference (see instructions)?

Yes ☐ No ☒

If yes, identify the dates, duration, description of interference, and probable cause(s) and possible source(s) of each interference event. Include the names of the IUs that may have caused the interference.

N/A

C. Treatment plant pass through

In the past three years, has your POTW experienced pass through (see instructions)?

Yes ☐ No ☒

If yes, identify the dates, duration, a description of the pollutants passing through the treatment plant, and probable cause(s) and possible source(s) of each pass through event. Include the names of the IUs that may have caused pass through.

N/A

D. Pretreatment program

Does your POTW have an approved pretreatment program?

Yes ☒ No ☐

If yes, complete Section 2 only of this Worksheet.

Is your POTW required to develop an approved pretreatment program?

Yes ☐ No ☐

If yes, complete Section 2.c. and 2.d. only, and skip Section 3.

If no to either question above, skip Section 2 and complete Section 3 for each significant industrial user and categorical industrial user.

Section 2. POTWs with Approved Programs or Those Required to Develop a Program (Instructions Page 100)

A. Substantial modifications

Have there been any **substantial modifications** to the approved pretreatment program that have not been submitted to the TCEQ for approval according to *40 CFR §403.18*?

Yes ☐ No ☒

If yes, identify the modifications that have not been submitted to TCEQ, including the purpose of the modification.

N/A

B. Non-substantial modifications

Have there been any **non-substantial modifications** to the approved pretreatment program that have not been submitted to TCEQ for review and acceptance?

Yes ☐ No ☒

If yes, identify all non-substantial modifications that have not been submitted to TCEQ, including the purpose of the modification.

N/A

C. Effluent parameters above the MAL

In Table 6.0(1), list all parameters measured above the MAL in the POTW's effluent monitoring during the last three years. Submit an attachment if necessary.

Table 6.0(1) – Parameters Above the MAL

Pollutant	Concentration	MAL	Units	Date
See attached table				

Pollutant	Concentration	MAL	Units	Date

D. Industrial user interruptions

Has any SIU, CIU, or other IU caused or contributed to any problems (excluding interferences or pass throughs) at your POTW in the past three years?

Yes ☐ No ☒

If yes, identify the industry, describe each episode, including dates, duration, description of the problems, and probable pollutants.

N/A

Section 3. Significant Industrial User (SIU) Information and Categorical Industrial User (CIU) (Instructions Page 100)

A. General information

Company Name: Senior Flexonics Pathway

SIC Code: 3443

Telephone number: 830-629-8080 Fax number: Click here to enter text

Contact name: Craig Banning

Address: 2400 Longhorn Industrial Dr.

City, State, and Zip Code: New Braunfels, TX 78130

B. Process information

Describe the industrial processes or other activities that affect or contribute to the SIU(s) or CIU(s) discharge (i.e., process and non-process wastewater).

Senior Flexonics is a fabricator of metal hardware products that has the potential to discharge process wastewater subject to 40 CFR 420.106(b)(2) Iron and Steel Manufacturing Point Source Category, Subpart J-Cold Worked Pipe and Tube Mills using oil Solution.

C. Product and service information

Provide a description of the principal product(s) or services performed.

Fabricator of metal hardware products, expansion joints

D. Flow rate information

See the Instructions for definitions of "process" and "non-process wastewater."

Process Wastewater:

Discharge, in gallons/day: 570

Discharge Type: ☒ Continuous ☐ Batch ☐ Intermittent

Non-Process Wastewater:

Discharge, in gallons/day: 2,586

Discharge Type: ☒ Continuous ☐ Batch ☐ Intermittent

E. Pretreatment standards

Is the SIU or CIU subject to technically based local limits as defined in the instructions?

Yes ☒ No ☐

Is the SIU or CIU subject to categorical pretreatment standards found in *40 CFR Parts 405-471*?

Yes ☒ No ☐

If subject to categorical pretreatment standards, indicate the applicable category and subcategory for each categorical process.

Category: 420.106(b)(2)
Subcategories: J

Category: Click here to enter text.
Subcategories: Click here to enter text.

Category: Click here to enter text.
Subcategories: Click here to enter text.

Category: Click here to enter text.
Subcategories: Click here to enter text.

Category: Click here to enter text.

Subcategories: Click here to enter text.

F. Industrial user interruptions

Has the SIU or CIU caused or contributed to any problems (e.g., interferences, pass through, odors, corrosion, blockages) at your POTW in the past three years?

Yes ☐ No ☒

If yes, identify the SIU, describe each episode, including dates, duration, description of problems, and probable pollutants.

Click here to enter text.

A. Effluent parameters above the MAL

In Table 6.0(1), list all parameters measured above the MAL in the POTW's effluent monitoring during the last three years. Submit an attachment if necessary.

Table 6.0(1) – Parameters Above the MAL

Pollutant	Concentration	MAL	Units	Date
Aluminum	160	2.5	Ug/l	3-8-21
Barium	17	3.0	Ug/l	3-8-21
Copper	7	2.0	Ug/l	3-8-21
Nitrate-Nitrogen	16,700	100	Ug/l	3-8-21
Zinc	47	5.0	Ug/l	3-8-21
Arsenic	0.60	0.5	Ug/l	4-14-20
Aluminum	85.0	2.5	Ug/l	4-14-20
Barium	11.0	3.0	Ug/l	4-14-20
Copper	5	2.0	Ug/l	4-14-20
Zinc	34	5.0	Ug/l	4-14-20
Phenols, Total	50.05	10.0	Ug/l	4-14-20
Arsenic	0.50	0.5	Ug/l	7-28-20
Aluminum	170.0	2.5	Ug/l	7-28-20
Barium	14.0	3.0	Ug/l	7-28-20
Copper	14.0	2.0	Ug/l	7-28-20
Nickel, Total	2.0	2.0	Ug/l	7-28-20
Zinc	34.0	5.0	Ug/l	7-28-20
Arsenic	0.5	0.5	Ug/l	5-14-19
Aluminum	780.0	2.5	Ug/l	5-14-19

Barium	8.0	3.0	Ug/l	5-14-19
Copper	12.0	2.0	Ug/l	5-14-19
Nitrate-Nitrogen	16300.0	100	Ug/l	5-14-19
Zinc	30.0	5.0	Ug/l	5-14-19
Phenols, Total	11.60	10.0	Ug/l	5-14-19
Fluoride	670.0	100	Ug/l	5-14-19
Aluminum	140.0	2.5	Ug/l	10-22-19
Barium	13.0	3.0	Ug/l	10-22-19
Copper	8.0	2.0	Ug/l	10-22-19
Nickel	2.0	2	Ug/l	10-22-19
Zinc	38.0	5	Ug/l	10-22-19

LIST OF ATTACHMENTS
NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

Attachment A – Core Data Form (Admin Report 1.0, Section 3.C)

Attachment B – USGS Map (Admin. Report 1.0, Section 13)

Attachment C – Supplemental Technical Reports (Tech Report 1.0, Section 2.A and B)

Attachment D – Flow Schematics (Tech Report 1.0, Section 2.C)

Attachment E – Site Drawing (Tech Report 1.0, Section 3)

Attachment F – Justification for Plant Construction (Tech Report 1.0, Section 4)

Attachment G – Summary Submittal Letters and TCEQ Approval Letters (Tech. Report 1.0, Section 6.A)

Attachment H – Final Effluent Analysis (Tech Report 1.0, Section 7, worksheet 4.0)

ATTACHMENT A

CORE DATA FORM

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

May 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☐ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☒ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN **600522957**		RN **106228422**

SECTION II: Customer Information

4. General Customer Information | 5. Effective Date for Customer Information Updates (mm/dd/yyyy)

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* | *If new Customer, enter previous Customer below:*

New Braunfels Utilities

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☒ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☒ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address: 263 Main Plaza

City	New Braunfels	State	TX	ZIP	78131	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	blundmark@nbutexas.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(830) 608-8900		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☐ New Regulated Entity ☒ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Sam C. McKenzie, Jr. Water Reclamation Facility WWTP

23. Street Address of the Regulated Entity: *(No PO Boxes)*							
	City		State		ZIP		ZIP + 4	
24. County	Guadalupe						

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	approximately 4.0 miles southeast of the City of New Braunfels and 0.6 mile downstream from the Lake Dunlap Dam on the Guadalupe River

26. Nearest City	State	Nearest ZIP Code
New Braunfels	TX	78130

27. Latitude (N) In Decimal:	29.653456		28. Longitude (W) In Decimal:	-98.058648	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	39	12.4	-98	3	31.1

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
4952			

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Treatment of wastewater from domestic and commercial sources

34. Mailing Address:	263 Main Plaza							
	City	New Braunfels	State	TX	ZIP	78131	ZIP + 4	
35. E-Mail Address:	blundmark@nbutexas.com							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(830) 608-8900		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☒ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Jonathan Nguyen	41. Title:	Permit Specialist

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(512) 685-5156		( ) -	jnguyen@jonescarter.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	New Braunfels Utilities	Job Title:	COO
Name *(In Print)*:	Ryan Kelso	Phone:	(830) 608- 8900
Signature:		Date:	

ATTACHMENT B

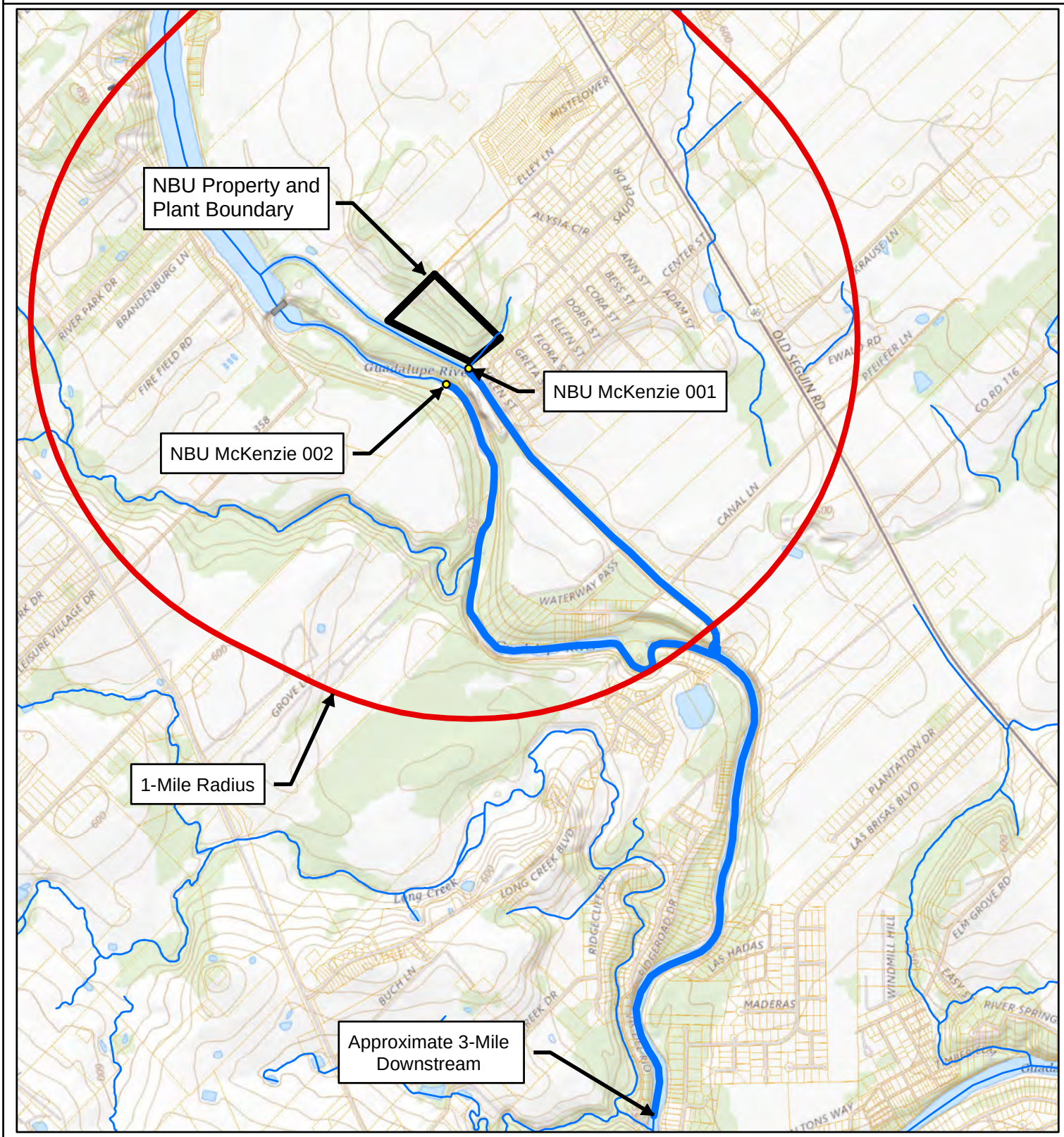
USGS MAP

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

May 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

NBU MCKENZIE USGS TOPO MAP



Disclaimer: This product is offered for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property, governmental and/or political boundaries or related facilities to said boundary. No express warranties are made by Jones & Carter, Inc. concerning the accuracy, completeness, reliability, or usability of the information included within this exhibit.

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439

N
W E
S

1 inch equals 2,000 feet

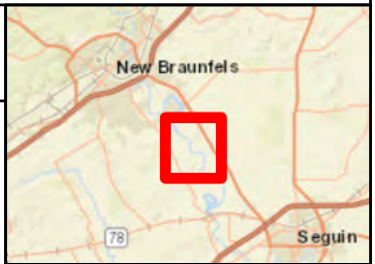
NBU MCKENZIE

GUADALUPE COUNTY, TEXAS

LEGEND

- Outfall
- Discharge Route
- Streams
- 1-Mile Radius
- Plant Boundary

WQ0010232004

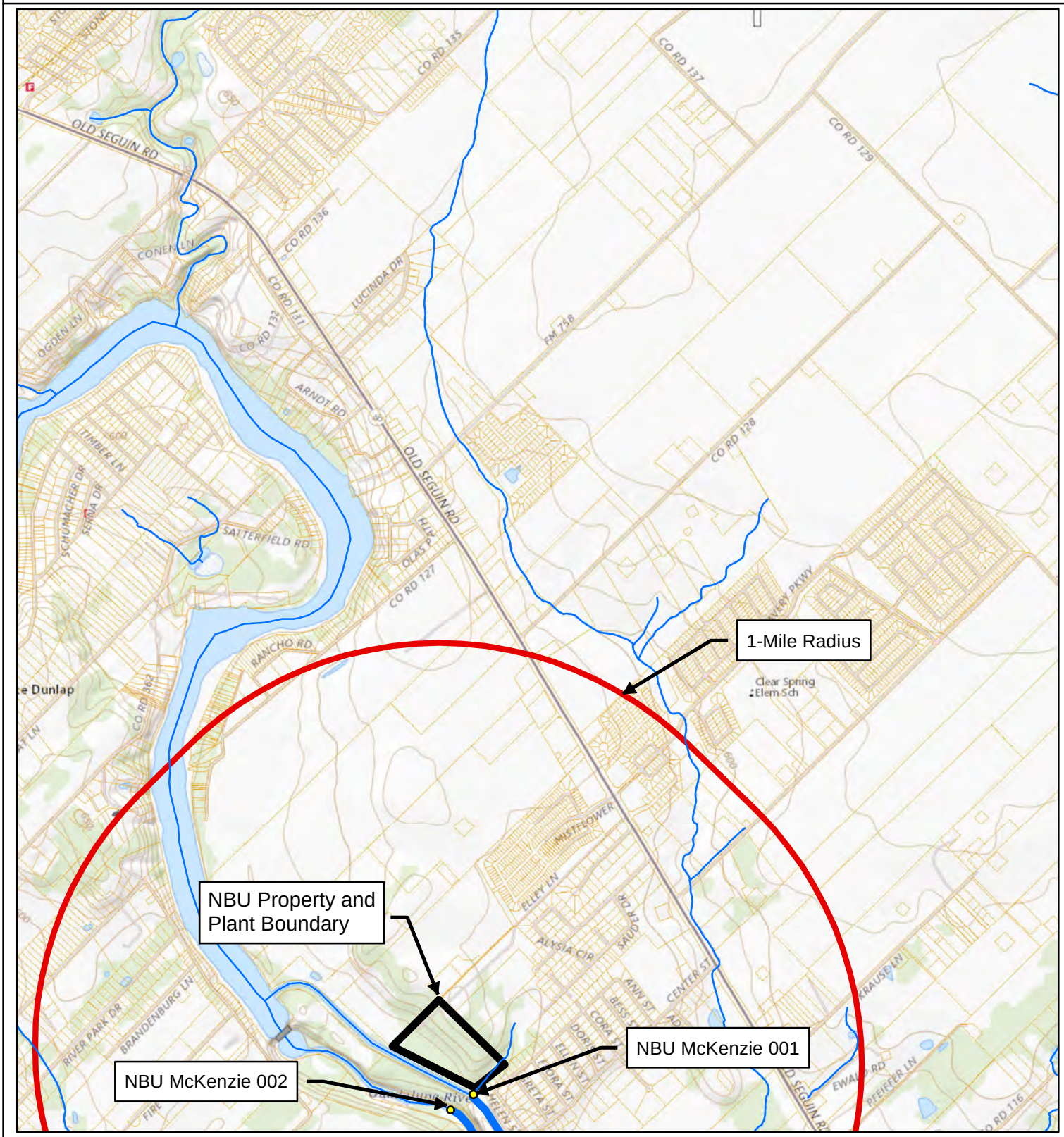


VICINITY MAP

Scale: 1 inch equals 10 miles

Path: V:\Practice Workspace\Corporate Services\GIS\Projects\05487_NBU_McKenzie\Projects\NBU_McKenzie_USGS_Topo_Map_8.5X11.mxd
Project Number: 05487-0014-00 Date: 5/11/2021 User Name: ada1

NBU MCKENZIE USGS TOPO MAP



Disclaimer: This product is offered for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property, governmental and/or political boundaries or related facilities to said boundary. No express warranties are made by Jones & Carter, Inc. concerning the accuracy, completeness, reliability, or usability of the information included within this exhibit.

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439

N W E S

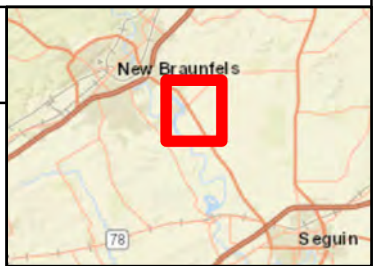
1 inch equals 2,000 feet

NBU MCKENZIE

GUADALUPE COUNTY, TEXAS

LEGEND

- Outfall
- Discharge Route
- Streams
- 1-Mile Radius
- Plant Boundary
- StratMap 2019 Land Parcels 48



VICINITY MAP

Scale: 1 inch equals 10 miles

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Project Number: 05487-0014-00 Date: 8/10/2021 User Name: ada1

ATTACHMENT C

SUPPLEMENTAL TECHNICAL REPORT

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

MAY 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

SUPPLEMENTAL TECHNICAL REPORT
DOMESTIC WASTEWATER PERMIT RENEWAL
for
NEW BRAUNFELS UTILITIES
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
GUADALUPE COUNTY, TEXAS

5/11/21

MAY 2021
JC Job No. 05487-0014-00

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

I. INTRODUCTION

The purpose of this report is to provide additional information pertaining to items in the Domestic Administrative Report and the Domestic Technical Report for the permit renewal application to the Sam C. McKenzie Jr. Water Reclamation Facility (WRF). The permit includes the existing operational Interim I - 2.5 MGD Phase and the future phases: Interim II – 4.9 MGD, Interim III – 7.5 MGD, and Final Phase – 9.9 MGD.

The WRF facilities are located approximately 4.0 miles southeast of the City of New Braunfels, 0.7 mile southwest of the intersection of State Highway 46 and Elley Lane, and 0.6 mile downstream from Lake Dunlap Dam on the Guadalupe River in Guadalupe County, Texas 78130.

II. LOCATION INFORMATION

Please see Item 7 of the Domestic Administrative Report 1.0 for specific location information. A USGS Map with the required site information in the Attachments section of this application.

III. TREATMENT UNITS

(For Item 3 of Technical Report 1.0)

The current facility is sized to treat 2.5 MGD. Future facilities will be constructed in three operational phases with total design flows as described in Section I. A detailed description of the treatment process for each phase is presented below:

A. Existing Interim I Phase – 2.5 MGD

The existing phase of the facility is a permanent concrete plant designed and constructed to treat the plant capacity of 2.5 MGD. The treatment processes consist of preliminary treatment, secondary treatment, tertiary treatment, and sludge handling. The preliminary treatment process includes a headworks structure with mechanical screening and grit removal upstream of the main facility lift station. The headworks also includes septage receiving station. The secondary treatment consists of an enhanced biological phosphorus removal (EBPR) process where 80% of the screened influent flows through an anaerobic-oxic (AO) process scheme. The remaining 20% of screened influent is mixed with the return activated sludge (RAS) and is sent through anoxic selector basins (one per treatment train) to reduce the dissolved oxygen (DO) and nitrate content of the RAS prior to introducing it to the anaerobic basins. The main process unit (MPU) has a single influent channel and rapid mix basin ahead of two parallel treatment trains. Each treatment train consists of one anaerobic basin, one aeration basin, one clarifier loading basin, one secondary clarifier, and one anoxic selector basin. An alum dosing system is provided as a backup to the biological phosphorous removal process. Each treatment train also includes a secondary clarifier with a hydraulic differential sludge removal mechanism. The tertiary treatment process consists of a single multi-compartmented, low-head, automatically backwashing tertiary filter; two ultraviolet (UV) disinfection channels; flow measurement; and post aeration. The sludge handling process consists of two mechanical fine screens, a two-stage membrane thickener, two aerobic digesters, and one belt filter press. Additional facilities include a non-potable water system, a sodium hypochlorite chemical disinfection system for the non-potable water system, a clean-in-place chemical system for the membrane thickeners, positive displacement blowers that provide process air for secondary treatment and for the digesters, and sludge and permeate pumps.

In this phase, raw sewage enters the screening structure from the gravity collection system. Screened influent flows to the aerated grit chamber where fine grit is separated and removed. The screened influent flows to the onsite lift station where it is pumped to the MPU influent channel. Flow is

distributed proportionally to the rapid mix basin and to the two parallel treatment trains as described above. Return activated sludge (RAS) is air lifted to the rapid mix basin from the secondary clarifiers. Clarified effluent from the MPU flows to the tertiary filter. Filtered effluent then flows through ultraviolet (UV) disinfection channels for pathogen inactivation. The final effluent from the UV disinfection basin then flows through a Parshall flume for flow measurement, through a post aeration basin for oxygen addition, and to an outfall selection box. The WRF is permitted to discharge in two different manners: Outfall 001 located on the Lake Dunlap Hydroelectric Plant Canal and Outfall 002 located on the Guadalupe River below Comal River in segment No. 1804.

Waste activated sludge (WAS) flows by gravity from the secondary clarifiers to the two aerobic digesters where volatile organics are reduced to stabilize the sludge. Scum is collected from the clarifiers and is pumped to the aerobic digesters. The WAS and scum pass through mechanical screens prior to discharging into the aerobic digesters. WAS is transferred by air lift from the aerobic digesters to the membrane thickeners. Permeate from the membrane thickeners is pumped to the non-potable water wet well. Thickened sludge is returned to the aerobic digesters. Thickened and digested sludge is pumped from the aerobic digesters to the belt press system for dewatering and then sludge cake is collected and hauled to a permitted landfill and filtrate is returned to the onsite lift station.

B. Proposed Interim II Phase – 4.9 MGD

The proposed Interim II Phase WRF will include all portions of the Interim Phase I WRF. The headworks will have mechanical and manual screens sized for the Interim II Phase. The lift station will be expanded and additional pump capacity will be provided for the Interim II Phase. A flow splitting structure will be constructed to receive flow from the lift station and distribute flow proportionally to the existing main process unit (Plant No. 1) and the proposed main process unit (Plant No. 2). The proposed Plant No. 2 will include two treatment trains and will operate in the same manner as Plant No. 1. Two additional tertiary filters will be constructed. Additional UV disinfection modules will be installed at the existing UV disinfection basin. A second alum polishing system dedicated to Plant No. 2 will be constructed. A WAS pump station will be constructed to pump WAS from the clarifiers to the aerobic digesters. Three aerobic digesters will be constructed, and the mechanical fine screens and membrane thickeners will be replaced.

C. Proposed Interim III Phase – 7.5MGD

The proposed Interim III Phase WRF will include all portions of the Interim II Phase WRF. The headworks will have mechanical and manual screens sized for the Interim III Phase. A second aerated grit chamber will be constructed. The lift station pumps will be replaced and sized for the Interim III Phase. A new main process unit (Plant No. 3) with one treatment train will be constructed and will operate in the same manner as the existing Plant Nos. 1 and 2, including a third alum polishing system. One additional tertiary filter will be constructed. Additional UV modules will be installed at the existing UV disinfection basin. A second WAS pump station will be constructed that is dedicated to Plant No. 3. A new solids treatment train will be constructed and will consist of two aerobic digesters, two mechanical screens and one membrane thickening unit. One new belt filter press will be installed in this phase.

D. Proposed Final Phase – 9.9 MGD

The Final Phase WRF will include all portions of the Interim III Phase WRF. The headworks will have mechanical and manual screens sized for the Final Phase. The lift station pumps will be replaced and additional pump capacity will be provided for the Final Phase. A second treatment train will be constructed at Plant No. 3 and will operate in the same manner as the existing Plant No. 3 treatment train. The existing alum polishing system dedicated to Plant No. 3 will be expanded in capacity. One new

tertiary filter will be constructed. Additional UV disinfection modules will be installed at the existing basin. Two new aerobic digesters, and one new mechanical fine screen, and one new membrane thickening unit will be constructed in this phase.

IV. DESIGN CALCULATIONS AND FEATURES
(For Item 3b of Technical Report 1.0 & Item 4 of Technical Report 1.1)

Design calculations are provided as part of this report on the following pages for Interim Phase II – 4.9 MGD, Interim Phase III – 7.5 MGD, and Final Phase – 9.9 MGD.

The current facilities and all future expansions will be equipped with design features to prevent overflows or bypassing of untreated wastewater. These features include the following:

- Electrical power is supplied by the utility company overhead power lines or by onsite standby power generation equipment. Additional standby generators in parallel will be installed with each facility expansion as necessary to meet power requirements.
- All process and equipment alarms for items such as equipment failures, high levels, etc. will be automatically sent to NBU's SCADA system where it will notify the Operator 24/7.
- Standby equipment will be provided at all major treatment units and pump stations to ensure operation in the event of equipment being out of service for repair or maintenance (i.e. standby pump in the lift station, standby blower at each blower bank, backup manual bar screen at the headworks, spare UV modules for disinfection, etc.) to prevent overflows and/or bypass of untreated wastewater.
- High level alarms are included in the lift station, UV disinfection basin, and aerobic digesters to notify the Operator to prevent overflows.
- A standpipe is installed at the aerobic digesters to allow overflow to drain to the lift station.

INTERIM I – 2.5 MGD

I. SCOPE

The existing Interim I – 2.5 MGD facility is a permanent concrete plant operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. Preliminary treatment units include the existing headworks with mechanical screens, an existing grit removal system, and a submersible lift station. The existing secondary treatment unit (Plant No. 1) consists of two treatment trains, a common influent channel and a rapid mix basin. Each treatment train consists of one anaerobic basin, one anoxic basin, one aeration basin, and one secondary clarifier operating as an enhanced biological phosphorus removal (EBPR) process. The tertiary treatment unit includes one multi-compartmented, low-head, automatically backwashing filter. The solids treatment units include two aerobic digesters with two-stage membrane thickening units, and one belt filter press. The disinfection unit includes a two-channel basin with in-channel UV disinfection equipment. Final effluent from the plant is measured by a Parshall flume, and is aerated to increase the dissolved oxygen concentration prior to release at the permitted discharge locations. Additional treatment equipment includes positive displacement blowers, a non-potable water system with chemical disinfection, and an alum chemical dosing system.

INTERIM II – 4.9 MGD

I. SCOPE

The proposed Interim II – 4.9 MGD facility will be a permanent concrete plant operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. The existing 2.5 MGD main process unit (Plant No. 1) will still be sized for 2.5 MGD but will only receive 2.45 MGD of flow at average daily flow (ADF) in this phase. The Interim II facility will include the existing 2.45 MGD Plant No. 1, existing facilities, and a proposed 2.45 MGD main process unit (Plant No. 2). Preliminary treatment units include the existing headworks, an existing grit removal system, and an expanded submersible lift station. The existing tertiary dual-media filters and aerobic digesters will also be expanded. The existing UV disinfection channels will be utilized and additional UV treatment modules will be installed. New process units include a flow splitting structure; anaerobic basins; anoxic basins; rapid mix basin; aeration basins; secondary clarifiers; dual media, multi-compartmented, low-head, automatically backwashed filter; aerobic digesters; membrane thickeners, and positive displacement blowers. No changes are proposed for the existing belt filter press facility.

II. WASTEWATER TREATMENT PLANT DESIGN

A. DESIGN CRITERIA

1. Daily Effluent Limits

a.	BOD_5	=	10 mg/L
b.	TSS	=	15 mg/L
a.	NH_3-N	=	3 mg/L
b.	Total Phosphorus	=	1 mg/L
c.	DO	=	4 mg/L
f.	*E Coli*	=	126 number colonies/100 mL

2. Process Criteria

The criteria used for the constructed aeration basins was based on TCEQ Chapter 217.

a.	Minimum Hydraulic Detention Time for Aerated Grit Chamber (minutes)	=	3.0
b.	Minimum Detention Time for Anaerobic Basins (hours)	=	1.5*
c.	Maximum Aeration Basin Organic Loading (lbs BOD_5/day/1,000 ft^3)	=	35

d.	Maximum Clarifier Surface Loading at Peak Flow ($gal/day/ft^2$)	=	1,200
e.	Minimum Clarifier Detention Time (hours)	=	1.8
f.	Maximum Clarifier Weir Loading at Peak Flow (gal/day/ft)	=	30,000
g.	Maximum Filter Flux Rate at Peak Flow for Dual Media, Multi-Compartmented, Low-Head, Automatically Backwashed Filter at Peak Flow ($gal/min/ft^2$)	=	4
h.	Minimum Backwash Flux Rate for Dual Media, Multi-Compartmented, Low-Head, Automatically Backwashed Filter (gpm/ft^2)	=	20
i.	Minimum Solids Retention Time in Aerobic Digester* (days)	=	28**
j.	Minimum Air Required for Digester ($scfm/1{,}000\ ft^3$)	=	30
k.	Minimum Oxygen Required for Aeration Basins (lbs O_2/1 lb BOD_5)	=	2.2

*WEF MOP 8, fifth edition, 14-58

**28-day SRT utilized instead of a 40-day SRT for use of a multi-stage digester per EPA publication "Control of Pathogens and Vector Attraction in Sewage Sludge."

B. TREATMENT FACILITIES

1. Flow

a.	Average (Design)	=	1.0Q	=	4,900,000 gpd	=	3,403 gpm
b.	Peak (2-hour)	=	4.0Q	=	19,600,000 gpd	=	13,611 gpm

2. Influent Composition

The following influent wastewater compositions are based on multi-part grab samples and composite samples collected at the existing headworks throughout 2019 and 2020 as the design basis for the Interim II facilities. The design values for BOD_5, TSS, NH_3-N, TP were calculated by adding one (1) standard deviation to the average.

a. BOD_5 = 340 mg/L

b. TSS = 300 mg/L

c. NH_3-N = 50 mg/L

d. TKN = 60 mg/L

e. TP = 8 mg/L

3. Organic Loadings

a.	BOD_5	=	(4.9 MGD)(8.34)(340 mg/L)	=	13,894 lbs BOD_5/day
b.	TSS	=	(4.9 MGD)(8.34)(300 mg/L)	=	12,260 lbs TSS/day
c.	NH_3-N	=	(4.9 MGD)(8.34)(50 mg/L)	=	2,043 lbs NH_3-N/day
d.	Total P	=	(4.9 MGD)(8.34)(8 mg/L)	=	327 lbs P/day

4. Process Basins and Equipment

a. Screening. The headworks has two mechanical screens, each with a minimum hydraulic capacity of 19.60 MGD, the design peak flow of the Interim II facility. The existing manual screen provides redundancy and has a minimum hydraulic capacity of 19.60 MGD. A conveyor collects and moves screenings from the mechanical screens to a dumpster to be hauled offsite to a permitted landfill.

b. Grit Removal System. One existing grit basin and cyclonic degritter with classifier removes grit from screened influent. A bypass will route flow from the screening area to the wet well in the event that the grit removal equipment is out of service.

c. Lift Station. The submersible lift station consists of one wet well. A second wet well will be constructed and will be hydraulically linked to the existing wet well. Six pumps across both wet wells, five duty and one standby, will be installed to provide a firm hydraulic pumping capacity of 13,611 gpm at the design peak flow of the facility.

d. Flow Splitter. All flow will be pumped from the lift station to a new flow splitter. The flow splitter will use weirs to distribute flow proportionately to two main process units (Plant Nos. 1 & 2) based on the following splits.

i. Plant No. 1 – 2.45 MGD

ii. Plant No. 2 – 2.45 MGD

e. Secondary Treatment.

Plant No. 1 – 2.45 MGD. The existing secondary treatment plant consists of a common influent channel, rapid mix basin and two treatment trains. Each treatment train consists of one anoxic selector basin, one anaerobic basin, one aeration basin, one aerated clarifier loading basin, and one secondary clarifier operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. Phosphorous is removed through the A-O process with alum addition as a secondary treatment method. Nitrogen removal is limited to treatment of the return activated sludge side stream. The intent of the partial nitrogen removal is only to help promote the biological phosphorous removal process by reducing the amount of nitrates in the process.

Anaerobic Basins

i. Required Volume at Average Daily Flow
(2,450,000 gal/day)(1.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 20,471 ft^3

ii. Existing Volume
2(16 ft)(46 ft)(16 ft) = 23,552 ft^3

iii. Actual Hydraulic Retention Time at Average Daily Flow
(23,552 ft^3)(7.48gal/ft^3)(24 hr/day)/(2,450,000 gal/day) = 1.7 hrs

Aeration Volume

i. Required Volume Using Traditional Design Method
(2.45 MGD)(8.34)(340 mg/L)/(35 lb BOD_5/1000 ft^3)
= 198,492 ft^3

ii. Existing Volume
(Irregular Polygon w/ Aerated Loading Basins)
2(16 ft)(6,262.5 ft^2) + 2(14.56 ft)(130 ft^2) = 204,186 ft^3

iii. Actual Organic Loading Treated
(2.45 MGD)(8.34)(340 mg/L)/(204,186 ft^3)
= 34.0 lb BOD_5/1000 ft^3

Anoxic Selector Basins for RAS Side Stream

i. Design Flow to Anoxic Basins
(20% Influent Flow to Plant No. 1) + (Minimum RAS Flow)
(0.2)(2,450,000 gpd) + (614 gpm)(2)(1,440 min/day) = 2,258,320 gpd

ii. Required Volume at Average Daily Flow
(2,258,320 gpd)(0.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 6,290 ft^3

iii. Existing Volume
2(17.19 ft)(16 ft)(16 ft) = 8,801 ft^3

iv. Actual Hydraulic Retention Time
(8,801 ft^3)(7.48gal/ft^3)(24 hr/day)/(2,258,320 gal/day) = 0.70 hrs

Secondary Clarifiers

i. Required Surface Area At Peak Flow
(2.45 MGD)(4)(10^6 gal/MG)/1200 gal/day/ft^2 = 8,167 ft^2

ii. Existing Surface Area (Octagonal Sides)
2{(75 ft)^2 – [(75 ft)/((1/√2) +(1/√2) + 1)]^2} = 9,320 ft^2

iii. Existing Surface Loading at Peak Flow
(2.45 MGD)(4)(10^6 gal/MG)/(9,320 ft^2) = 1,052 gpd/ft^2

iv. Existing Clarifier Side Water Depth = 14.5 ft

v. Existing Hydraulic Detention Time at Peak Flow
(9,320 ft^2)(14.5 ft)(7.48 gal/ft^3)(24 hr/day)/
(10^6 gallons/MG)(2.45 MGD)(4) = 2.47 hours

vi. Existing Clarifier Weir Length
(2)(430 ft) = 860 ft

vii. Existing Weir Loading at Peak Flow
(2.45 MGD)(10^6 gpd)(4)/(860 ft) = 11,395 gpd/ft

Plant No. 2 – 2.45 MGD. The proposed secondary treatment plant consists of a common influent channel, rapid mix basin, and two treatment trains. Each treatment train consists of one anoxic selector basin, one anaerobic basin, one aeration basin, one aerated clarifier loading basin, one aerated clarifier effluent basin, and one secondary clarifier operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. Phosphorous is removed through the A-O process with alum addition as a secondary treatment method. Nitrogen removal is limited to treatment of the return activated sludge side stream. The intent of the partial nitrogen removal is only to help promote the biological phosphorous removal process by reducing the amount of nitrates in the process.

Anaerobic Basins

i. Required Volume at Average Daily Flow
(2,450,000 gal/day)(1.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 20,471 ft^3

ii. Proposed Volume
2(16 ft)(46 ft)(16 ft) = 23,552 ft^3

iii. Proposed Hydraulic Retention Time at Average Daily Flow
(23,552 ft^3)(7.48gal/ft^3)(24 hr/day)/(2,450,000 gal/day) = 1.7 hrs

Aeration Volume

i. Required Volume Using Traditional Design Method
(2.45 MGD)(8.34)(340 mg/L)/(35 lb BOD_5/1000 ft^3)
= 198,492 ft^3

ii. Proposed Volume
(Irregular Polygon w/ Aerated Loading Basins)
2(16 ft)(6,300 ft^2) + 2(14.56 ft)(193 ft^2) = 207,220 ft^3

iii. Actual Organic Loading Treated
(2.45 MGD)(8.34)(340 mg/L)/(207,220 ft^3)
= 33.5 lb BOD_5/1000 ft^3

Anoxic Selector Basins for RAS Side Stream

i. Design Flow to Anoxic Basins
(20% Influent Flow to Plant No. 1) + (Minimum RAS Flow)
(0.2)(2.45 MGD)(10^6 gal/MG) + (614 gpm)(2)(1,440 min/day)= 2,258,320 gal/day

ii. Required Volume at Average Daily Flow
(2,450,000 gal/day)(0.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 6,824 ft^3

iii. Proposed Volume
2(17.19 ft)(16 ft)(16 ft) = 8,801 ft^3

iv. Actual Hydraulic Retention Time
(8,801 ft^3)(7.48 gal/ft^3)(24 hr/day)/(2,258,320 gal/day) = 0.70 hrs

Secondary Clarifiers

i. Required Surface Area At Peak Flow
(2.45 MGD)(4)(10^6 gal/MG)/(1200 gal/day/ft^2) = 8,167 ft^2

ii. Proposed Surface Area (Circular Sides)
2(π/4)(75 ft)^2 = 8,835 ft^2

iii. Proposed Surface Loading at Peak Flow
(2.45 MGD)(4)(10^6 gal/MG)/(8,835 ft^2) = 1,109 gpd/ft^2

iv. Proposed Clarifier Side Water Depth = 14.5 ft

v. Proposed Hydraulic Detention Time at Peak Flow
(8,835 ft^2)(14.5 ft)(7.48 gal/ft^3)(24 hr/day)/
(10^6 gallons/MG)(4)(2.45 MGD) = 2.35 hours

vi. Proposed Clarifier Weir Length
(2)[π(75 ft – 2ft) + π(75 ft – 4ft)]} = 904 ft

vii. Proposed Weir Loading at Peak Flow
(2.45 MGD)(10^6 gal/MG)(4)/(904 ft) = 10,840 gpd/ft

f. Tertiary Multi-Compartmented, Low-Head, Automatically Backwashed Dual Media Filters – Filtration. Clarified effluent from the parallel secondary treatment plants flows to the filters. One existing and two proposed parallel filter beds will consist of dual media.

i. Required Surface Area at Peak Flow
(13,611 gpm)/(4 gpm/ ft^2) = 3,402 ft^2

ii. Existing Surface Area
(1)(16 ft)(86 ft) = 1,376 ft^2

iii. Proposed Surface Area
(2)(16 ft)(86 ft) = 2,752ft^2

iv. Total Surface Area
(1,376 ft^2) + (2,752ft^2) = 4,128 ft^2

v. Actual Filtration Flux Rate at Peak Flow
(13,611 gpm)/(4,128 ft^2) = 3.3 gpm/ft^2

vi. Actual Filtration Flux Rate at Peak Flow
with One Filter Out of Service
(13,611 gpm)/[(2)(16 ft)(86 ft)] = 4.9 gpm/ft^2

g. Tertiary Multi-Compartmented, Low-Head, Automatically Backwashed Dual Media Filters – Backwash. Each filter basin is comprised of 86 cells where each cell has an area of 16 ft^2. Backwash pumps will be provided to meet or exceed the minimum backwash flow rate. Backwash cycles per cell will be at least 20 seconds per compartment (approximately 30 minutes of backwash per cycle per filter).

i. Surface Area per backwash cell = 16 ft^2

ii. Minimum Backwash Flow Rate (per filter)
(20 gpm/ft^2)(16 ft^2) = 320 gpm

h. Ultraviolet Disinfection. Filtered effluent passes through three existing parallel channels containing ultraviolet (UV) disinfection modules. The UV modules are low-pressure high intensity type and utilize 254 nm wavelength light with an assumed 65% minimum transmittance and 20 mJ/cm^2 UV dose rate. Each disinfection channel will include at least two banks positioned in series.

i. Post Aeration. Disinfected effluent passes through a post aeration basin that includes coarse bubble aeration to provide oxygen to the disinfected effluent to increase the dissolved oxygen (DO) concentrations to meet the minimum required DO for the final effluent. The air demand is included in the Air Requirements section of this report.

j. Aerobic Digesters. The Interim II facility will have two existing and three proposed digester basins. Two pairs of digesters will operate in conjunction with one membrane thickening unit per pair of digesters. The fifth digester will serve as a transfer basin from which the sludge pumps will pull thickened sludge to pump to the belter filter press. The digester sizing assumes 0.75 pound of solids produced per pound of BOD_5 applied, solids are 85% volatile organics, 38% of the volatiles are destroyed during digestion, and the average MLSS concentration in the digesters is 30,000 mg/l.

i. Solids Production
(13,894 lbs BOD5 /day)(0.75 lb solids/1 lb BOD5)* = 10,420 lbs solids/day

ii. Digested Solids Production
(10,420 lbs solids/day)(1-(0.38)(0.85)) = 7,054 lbs solids/day

iii. Average Digested Solids Production
(10,420 lbs solids/day + 7,054 lbs solids/day)/2 = 8,737 lbs solids/day

iv. Total Solids in Digester for 28-day SRT
(8,737 lbs solids/day)(28 days) = 244,636 lbs solids

v. Required Volume
(244,636 lbs solids)(10^6)/(8.34)/(30,000 mg/l MLSS)/(7.48) = 130,716 ft^3

vi. Existing Volume
(Aerobic Digester Volume) – (Membrane Thickener Volume)
(2)(16 ft)(25 ft)(76.25 ft) – ((2)(16 ft)(13 ft)(27 ft)
= 49,768 ft^3

vii. Proposed Volume
(2)(16 ft)(25 ft)(76.25 ft) + (1)(16 ft)(20 ft)(76.25 ft) = 85,400 ft^3

viii. Total Volume
(49,768 ft^3) + (85,400 ft^3) = 135,168 ft^3

ix. Actual Solids Residence Time
(135,168 ft^3)(7.48)(8.34)(30,000 mg/l)/(10^6)/(8,738 lbs/day)
= 28.9 days

*WEF MOP 8, Fifth Edition, Figure 20.5

k. Sludge Thickening. The existing aerobic digesters also utilize submerged membranes to thicken sludge. Additional submerged membranes will be added to the proposed digester volume to maintain an average MLSS concentration in the digesters of 30,000 mg/L. Mechanical fine screens screen all sludge entering the submerged membrane basins.

l. Sludge Dewatering. Digested and thickened sludge is pumped from the aerobic digesters to the existing belt press dewatering facility. The existing 2-meter belt press will be utilized and assumes operation 8 hours per day and 5 days per week, a maximum feed rate of 250 gpm/press at a sludge thickness of 70,000 mg/l, and 2,000 lbs of dry solids per hour per press. In the event that the belt press is out of service, digested sludge can be wet hauled for disposal at a permitted landfill.

i. Hydraulic Loading
(lbs solid per day)/(SG_{solids})(% solids)(γ_{water})
[(10,420 lbs solid per day)/(1.03)(0.03)(62.4 lb/ft^3)](7.48) = 40,422 gal/day

ii. Total Belt Filter Press Units Required Based on Hydraulic Capacity
(40,422 gal/d)(7/5)/(480 min/d)/(250 gal/min/press) = 0.47 belt filter press unit

iii. Total Belt Filter Press Units Required Based on Solids Capacity
(10,420 lbs solids/d)(7/5)/(8 op hr/d)/(2,000 lbs solids/hr/press)
= 0.91 belt filter press unit

iv. Existing Belt Filter Press Unit = 1 belt filter press unit

m. Air Requirements. The Interim II facilities will be served by two blower banks: one bifurcated bank with blowers serving both process air requirements and digester air requirements, and one bank for membrane thickener air requirements. The process/digester blower bank will consist of eight blowers: five blowers dedicated to process air demands, two dedicated to digester air demands and a common spare blower. The membrane blower bank will consist of three blowers with one blower being a spare unit.

Process Blowers Demand:

Grit Removal System Process Air

i. Grit Removal System Air Requirement (Mixing)
[(27 ft)^2(7.71 ft)+((27 ft)^2(14.5 ft)/3)-((2 ft)^2(1 ft)/3)] = 132 scfm
(30 scfm/1,000 ft^3)

Plant No. 1 and Plant No. 2 Process Air

i. Aeration Basins

1. Air Required for Treatment

$$\frac{(1.2)(340\ mg/L\ BOD_5) + (4.6)(70\ mg/L\ TKN)}{(340\ mg/L\ BOD_5)} = 2.1\ lb\ O_2/\ lb\ BOD_5*$$

*TCEQ Chapter 217.155(a)(3) requires using a minimum of 2.2 lb O_2/lb BOD_5 if the system is intended to nitrify, which is used below for calculations.

2. Fine Bubble Requirements

$$\frac{(340\ mg/L\ BOD_5)(8.34)(4.9\ MGD)(2.2\ lb\ O_2/lb\ BOD_5)}{(10.7\%*)(0.075)(0.23)(1{,}440)} = 11{,}500\ scfm$$

* Wastewater Oxygen Transfer Efficiency is based on the actual efficiency for the installed aeration systems based on the manufacturer provided data

Miscellaneous Air Demands

i. Plant No. 1 Return Activated Sludge Air Lifts
(2) 8" Airlifts @ 80 scfm/Airlift = 160 scfm
(2) 12" Airlifts @ 180 scfm/Airlift = 360 scfm

ii. Plant No. 2 Return Activated Sludge Air Lifts
(2) 8" Airlifts @ 80 scfm/Airlift = 160 scfm
(2) 12" Airlifts @ 180 scfm/Airlift = 360 scfm

iii. Total Return Activated Sludge Air Demand
(2)(160 scfm) + (2)(360 scfm) = 1,040 scfm

iv. Plant No. 1 Clarifier Loading Basins
(2)(14.56 ft)(130 ft^2) (30 scfm/1000 ft^3) = 114 scfm

v. Plant No. 2 Clarifier Loading Basins and Effluent Basins
(4)(14.56 ft)(193 ft^2) (30 scfm/1000 ft^3) = 338 scfm

vi. Total Miscellaneous Air Demands
(1,040 scfm) + (114 scfm) + (338 scfm) = 1,492 scfm

UV Disinfection Air Scour

i. Post-Aeration Air Requirement
Manufacturer Specified Requirement = 225 scfm

Post-Aeration Process Air

ii. Post-Aeration Air Requirement
(6,466 ft3)(30 scfm/1000 ft^3) = 194 scfm

Total Process Air Requirement
(Grit Removal System) + (Fine Bubble Req.) +
(Misc. Air Demands) + (UV Scour) + (Post-Aeration)
(132 scfm)+(11,500 scfm)
+(1,492 scfm)+(225 scfm)+(194 scfm) = 13,543 scfm

Digester Blowers Demand:

Aerobic Digester Air Requirement
(135,168 ft^3)(30 scfm/1000 ft^3) = 4,055 scfm

Waste Activated Sludge & Sludge Transfer Air Lifts
(2)(55 scfm) + (6)(15 scfm) = 200 scfm

Total Solids Air Requirement
(Aerobic Digesters) + (Sludge Transfer Air Lifts)
(4,055 scfm) + (200 scfm) = 4,255 scfm

Membrane Blower Bank Demand:

Membrane Thickeners Air Requirement
(2)(500 scfm/MBT) = 1,000 scfm

Total Membrane Blowers Air Requirement
(Membrane Thickeners)
(1,000 scfm) = 1,000 scfm

n. Blower Capacities

Process Blowers

i. Total Process Air Requirement = 13,543 scfm

ii. Firm Blower Capacity with Largest Unit out of Service
(5)(3,000 scfm) = 15,000 scfm

Digester Blowers

i. Total Solids Air Requirement = 4,255 scfm

ii. Firm Blower Capacity with Largest Unit out of Service
(2)(3,000 scfm) = 6,000 scfm

Membrane Thickener Air

i.	Total Membrane Air Requirement	=	1,000 scfm
ii.	Firm Blower Capacity with Largest Unit out of Service (2)(510 scfm)	=	1,020 scfm

INTERIM III – 7.5 MGD

I. SCOPE

The proposed Interim III – 7.5 MGD facility will be a permanent concrete plant operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. The two existing 2.45 MGD main process units (Plant No. 1 & 2) were designed with a treatment capacity of 2.5 MGD. Plant Nos. 1 & 2 will each receive 2.5 MGD of flow at average daily flow (ADF) in this phase. The Interim III facility will include the construction of a proposed 2.5 MGD main process unit (Plant No. 3) which will operate in parallel with the two existing main process units (Plant Nos 1 & 2). The headworks will have mechanical and manual screens sized for the Interim III Phase and the structure will be modified if necessary. The grit removal system will be expanded. The lift station pumps will be replaced. The existing dual-media filters will be expanded. A proposed solids treatment train with aerobic digesters will be constructed. No modifications will be made to the existing solids treatment train. The existing UV disinfection channels will be utilized and additional UV treatment modules will be installed. New process units include: one grit removal system; one secondary treatment plant that consists of one influent channel, one anaerobic basin, one aeration basin, one anoxic basin, one secondary clarifier with one aerated loading basin and one aerated effluent basin; dual media, multi-compartmented, low-head, automatically backwashed filters; aerobic digesters; and positive displacement blowers.

II. WASTEWATER TREATMENT PLANT DESIGN

A. DESIGN CRITERIA

1. Daily Effluent Limits

a.	BOD_5	=	10 mg/L
b.	TSS	=	15 mg/L
d.	NH_3-N	=	3 mg/L
e.	Total Phosphorus	=	0.75 mg/L
f.	DO	=	4 mg/L
g.	*E Coli*	=	126 number colonies/100 mL

2. Process Criteria

The criteria used for the constructed aeration basins was based on TCEQ Chapter 217.

a.	Minimum Hydraulic Detention Time for Aerated Grit Chamber (minutes)	=	3.0
b.	Minimum Detention Time for Anaerobic Basins (hours)	=	1.5*

c.	Maximum Aeration Basin Organic Loading (lbs BOD_5/day/1,000 ft^3)	=	35
d.	Maximum Clarifier Surface Loading at Peak Flow (gal/day/ft^2)	=	1,200
e.	Minimum Clarifier Detention Time (hours)	=	1.8
f.	Maximum Clarifier Weir Loading at Peak Flow (gal/day/ft)	=	30,000
g.	Maximum Filter Flux Rate at Peak Flow for Dual Media, Multi-Compartmented, Low-Head, Automatically Backwashed Filter at Peak Flow (gal/min/ft^2)	=	4
h.	Minimum Backwash Flux Rate for Dual Media, Multi-Compartmented, Low-Head, Automatically Backwashed Filter (gpm/ft^2)	=	20
i.	Minimum Solids Retention Time in Aerobic Digester* (days)	=	28**
j.	Minimum Air Required for Digester (scfm/1,000 ft^3)	=	30
k.	Minimum Oxygen Required for Aeration Basins (lbs O_2/1 lb BOD_5)	=	2.2

*WEF MOP 8, fifth edition, 14-58

**28-day SRT utilized instead of a 40-day SRT for use of a multi-stage digester per EPA publication "Control of Pathogens and Vector Attraction in Sewage Sludge."

B. TREATMENT FACILITIES

1. Flow

a.	Average (Design)	=	1.0Q	=	7,500,000 gpd	=	5,208 gpm
b.	Peak (2-hour)	=	4.0Q	=	30,000,000 gpd	=	20,833 gpm

2. Influent Composition

The following influent wastewater compositions are based on multi-part grab samples and composite samples collected at the existing headworks throughout 2019 and 2020 as the design basis for Interim II

facility expansion. The design values for BOD_5, TSS, NH_3-N, TP were calculated by adding one (1) standard deviation to the average.

a. BOD_5 = 340 mg/L

b. TSS = 300 mg/L

c. NH_3-N = 50 mg/L

d. TKN = 60 mg/L

e. TP = 8 mg/L

3. Organic Loadings

a.	BOD_5	=	(7.5 MGD)(8.34)(340 mg/L)	=	21,647 lbs BOD_5/day
b.	TSS	=	(7.5 MGD)(8.34)(300 mg/L)	=	18,765 lbs TSS/day
c.	NH_3-N	=	(7.5 MGD)(8.34)(50 mg/L)	=	3,128 lbs NH_3-N/day
d.	Total P	=	(7.5 MGD)(8.34)(8 mg/L)	=	500 lbs P/day

4. Process Basins and Equipment

a. Screening. The headworks will have mechanical and manual screens sized for the Interim III Phase. A conveyor will collect and move screenings from the mechanical screens to a dumpster to be hauled offsite to a permitted landfill.

b. Grit Removal System. The grit removal system will be comprised of two grit basins and two cyclonic degritters with classifiers. The system will be sized for the Interim III Phase. If one system is out of service, the remaining system and/or the bypass may be utilized to ensure the headworks remains in service.

c. Lift Station. The submersible lift station consists of two wet wells that are hydraulically linked. Six pumps across both wet wells will be replaced. Five duty pumps and one standby will provide a firm hydraulic pumping capacity of 20,833 gpm at the design peak flow of the Interim III facility.

d. Flow Splitter. All flow is pumped from the lift station to a flow splitter that uses weirs to distribute flow proportionately to the two existing main process units (Plant Nos. 1 & 2) and the one proposed main process unit (Plant No. 3) based on the following splits.

i. Plant No. 1 – 2.5 MGD

ii. Plant No. 2 – 2.5 MGD

iii. Plant No. 3 – 2.5 MGD

e. Secondary Treatment.

Plant No. 1 – 2.5 MGD. The existing Plant No. 1 will return to receiving 2.5 MGD. See the Interim II phase section for a description of the secondary process. No changes other than increasing the average daily flow (ADF) from 2.45 MGD to 2.5 MGD are proposed.

Anaerobic Basins

i. Required Volume at Average Daily Flow
(2,500,000 gal/day)(1.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 20,889 ft^3

ii. Existing Volume
2(16 ft)(46 ft)(16 ft) = 23,552 ft^3

iii. Actual Hydraulic Retention Time at Average Daily Flow
(23,552 ft^3)(7.48gal/ft^3)(24 hr/day)/(2,500,000 gal/day) = 1.7 hrs

Aeration Volume

i. Required Volume Using Traditional Design Method
(2.5 MGD)(8.34)(340 mg/L)/(35 lb BOD_s/1000 ft^3)
= 202,543 ft^3

ii. Existing Volume
(Irregular Polygon w/ Aerated Loading Basins)
2(16 ft)(6,262.5 ft^2) + 2(14.56 ft)(130 ft^2) = 204,186 ft^3

iii. Actual Organic Loading Treated
(2.5 MGD)(8.34)(340 mg/L)/(204,186 ft^3)
= 34.7 lb BOD_5/1000 ft^3

Anoxic Selector Basins for RAS Side Stream

i. Design Flow to Anoxic Basins
(20% Influent Flow to Plant No. 1) + (Minimum RAS Flow)
(0.2)(2,500,000 gpd) + (614 gpm)(2)(1,440 min/day) = 2,268,320 gpd

ii. Required Volume at Average Daily Flow
(2,268,320 gpd)(0.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 6,318 ft^3

iii. Existing Volume
2(17.19 ft)(16 ft)(16 ft) = 8,801 ft^3

iv. Actual Hydraulic Retention Time
(8,801 ft^3)(7.48gal/ft^3)(24 hr/day)/(2,268,320 gal/day) = 0.70 hrs

Secondary Clarifiers

i. Required Surface Area At Peak Flow
(2.50 MGD)(4)(10^6 gal/MG)/1200 gal/day/ft^2 = 8,333 ft^2

ii. Existing Surface Area (Octagonal Sides)
$2\{(75\ ft)^2 - [(75\ ft)/((1/\sqrt{2}) + (1/\sqrt{2}) + 1))]^2\}$ = 9,320 ft^2

iii. Proposed Surface Loading at Peak Flow
(2.50 MGD)(4)(10^6 gal/MG)/(9,320 ft^2) = 1,072 gpd/ft^2

iv. Existing Clarifier Side Water Depth = 14.5 ft

v. Proposed Hydraulic Detention Time at Peak Flow
(9,320 ft^2)(14.5 ft)(7.48 gal/ft^3)(24 hr/day)/
(10^6 gallons/MG)(2.50 MGD)(4) = 2.43 hours

vi. Existing Clarifier Weir Length
(2)(430 ft) = 860 ft

vii. Proposed Weir Loading at Peak Flow
(2.50 MGD)(10^6 gpd/MGD)(4)/(860 ft) = 11,628 gpd/ft

Plant No. 2 – 2.5 MGD. No changes are proposed to Plant No. 2 other than increasing the average daily flow (ADF) from 2.45 MGD to 2.5 MGD. See the Interim II phase section for a description of the secondary process.

Anaerobic Basins

i. Required Volume at Average Daily Flow
(2,500,000 gal/day)(1.5 hr)/(24 hr/day)/(7.48 gal/ft^3) = 20,899 ft^3

ii. Existing Volume
2(16 ft)(46 ft)(16 ft) = 23,552 ft^3

iii. Actual Hydraulic Retention Time at Average Daily Flow
(23,552 ft^3)(7.48gal/ft^3)(24 hr/day)/(2,500,000 gal/day) = 1.69 hrs

Aeration Volume

i. Required Volume Using Traditional Design Method
(2.50 MGD)(8.34)(340 mg/L)/(35 lb BOD_5/1000 ft^3)
= 202,542 ft^3

ii. Existing Volume
(Irregular Polygon w/ Aerated Loading Basins)
2(16 ft)(6,300 ft^2) + 2(14.56 ft)(193 ft^2) = 207,220 ft^3

iii. Actual Organic Loading Treated
(2.50 MGD)(8.34)(340 mg/L)/(207,220 ft^3)
= 34.2 lb BOD_5/1000 ft^3

Anoxic Selector Basins for RAS Side Stream

i. Design Flow to Anoxic Basins
(20% Influent Flow to Plant No. 1) + (Minimum RAS Flow)
(0.2)(2.50 MGD)(10^6 gal/MG) + (614 gpm)(2)(1,440 min/day)= 2,268,320 gal/day

ii. Required Volume at Average Daily Flow
(2,500,000 gal/day)(0.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 6,963 ft^3

iii. Existing Volume
2(17.19 ft)(16 ft)(16 ft) = 8,801 ft^3

iv. Actual Hydraulic Retention Time
(8,801 ft^3)(7.48 gal/ft^3)(24 hr/day)/(2,268,320 gal/day) = 0.70 hrs

Secondary Clarifiers

i. Required Surface Area At Peak Flow
(2.50 MGD)(4)(10^6 gal/MG)/1200 gal/day/ft^2 = 8,333 ft^2

ii. Existing Surface Area (Circular Sides)
2(π/4)(75 ft)^2 = 8,835 ft^2

iii. Proposed Surface Loading at Peak Flow
(2.50 MGD)(4)(10^6 gal/MG)/(8,835 ft^2) = 1,132 gpd/ft^2

iv.	Exist Clarifier Side Water Depth	=	14.5 ft
v.	Proposed Hydraulic Detention Time at Peak Flow $(8{,}835\ ft^2)(14.5\ ft)(7.48\ gal/ft^3)(24\ hr/day)/$ $(10^6\ gallons/MG)(4)(2.50\ MGD)$	=	2.30 hours
vi.	Exist Clarifier Weir Length $(2)[\pi(75\ ft - 2ft) + \pi(75\ ft - 4ft)]$	=	904 ft
vii.	Proposed Weir Loading at Peak Flow $(2.5\ MGD)(10^6\ gal/MG)(4)/(904\ ft)$	=	11,062 gpd/ft

Plant No. 3, Train No. 1 – 2.5 MGD. The proposed secondary treatment plant consists of an influent channel, rapid mix basin, and one treatment train. The treatment train consists of one anoxic selector basin, one anaerobic basin, one aeration basin, and one secondary clarifier operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. Phosphorous is removed through the A-O process with alum addition as a secondary treatment method. Nitrogen removal is limited to treatment of the return activated sludge side stream. The intent of the partial nitrogen removal is only to help promote the biological phosphorous removal process by reducing the amount of nitrates in the process.

Anaerobic Basin

i.	Required Volume at Average Daily Flow $(2{,}500{,}000\ gal/day)(1.5\ hr)/(24\ hr/day)/(7.48 gal/ft^3)$	=	20,889 ft^3
ii.	Proposed Volume $1(24\ ft)(64\ ft)(16\ ft)$	=	24,576 ft^3
iii.	Actual Hydraulic Retention Time at Average Daily Flow $(24{,}576\ ft^3)(7.48 gal/ft^3)(24\ hr/day)/(2{,}500{,}000\ gal/day)$	=	1.7 hrs

Aeration Basin

i.	Required Volume Using Traditional Design Method $(2.50\ MGD)(8.34)(340\ mg/L)/(35\ lb\ BOD_5/1000\ ft^3)$	=	202,542 ft^3
ii.	Proposed Volume (Irregular Polygon) $1(105\ ft)(125\ ft)(16\ ft)$	=	210,000 ft^3
iii.	Actual Organic Loading Treated $(2.5\ MGD)(8.34)(340\ mg/L)/(210{,}000\ ft^3)$	=	33.7 lb $BOD_5/1000\ ft^3$

Anoxic Selector Basin for RAS Side Stream

i. Design Flow to Anoxic Basin
(20% Influent Flow to Plant No. 3) + (Minimum RAS Flow)
$(0.2)(2.50\ MGD)(10^6\ gal/MG) + (1320\ gpm)(1{,}440\ min/day)$ = 2,400,800 gal/day

ii. Required Volume at Average Daily Flow
$(2{,}400{,}800\ gal/day)(0.5\ hr)/(24\ hr/day)/(7.48 gal/ft^3)$ = 6,686 ft^3

iii. Proposed Volume
$1(30\ ft)(16\ ft)(16\ ft)$ = 7,680 ft^3

iv. Actual Hydraulic Retention Time
$(7{,}680\ ft^3)(7.48 gal/ft^3)(24\ hr/day)/(2{,}400{,}800\ gal/day)$ = 0.57 hrs

Secondary Clarifier

i. Required Surface Area At Peak Flow
$(2.5\ MGD)(4)(10^6\ gal/MG)/(1{,}200\ gal/day/ft^2)$ = 8,333 ft^2

ii. Proposed Surface Area (Circular)
$(\pi/4)(105\ ft)^2$ = 8,659 ft^2

iii. Proposed Surface Loading at Peak Flow
$(2.5\ MGD)(4)(10^6\ gal/MG)/(8{,}659\ ft^2)$ = 1,155 gpd/ft^2

iv. Proposed Clarifier Side Water Depth = 14.5 ft

v. Proposed Hydraulic Detention Time at Peak Flow
$(8{,}659\ ft^2)(14.5\ ft)(7.48\ gal/ft^3)(24\ hr/day)/$
$(2.5\ MGD)(4)(10^6\ gal/MG)$ = 2.25 hours

vi. Proposed Clarifier Weir Length
$\pi(105\ ft - 4ft) + \pi(105\ ft - 8ft)$ = 622 ft

vii. Proposed Weir Loading at Peak Flow
$(2.5\ MGD)(10^6\ gal/MG)(4)/(622\ ft)$ = 16,077 gpd/ft

f. Tertiary Multi-Compartmented, Low-Head, Automatically Backwashed Dual Media Filters – Filtration.
Clarified effluent flows from the parallel main process units (Plant Nos. 1, 2, & 3) to the tertiary filters. Three existing filter beds consist of dual media and one proposed filter bed will consist of dual media.

i. Required Surface Area at Peak Flow
$(20{,}833\ gpm)/(4\ gpm/ft^2)$ = 5,209 ft^2

ii. Existing Surface Area
(3)(16 ft)(86 ft) = 4,128 ft^2

iii. Proposed Surface Area
(1)(16 ft)(86 ft) = 1,376 ft^2

iv. Total Surface Area
4,128 ft^2 + 1,376 ft^2 = 5,504 ft^2

v. Actual Filtration Flux Rate at Peak Flow
(20,833 gpm)/(5,504 ft^2) = 3.8 gpm/ft^2

vi. Actual Filtration Flux Rate at Peak Flow with One Filter Out of Service
(2,0833 gpm)/[(3)(16 ft)(86 ft)] = 5.0 gpm/ft^2

g. Tertiary Multi-Compartmented, Low-Head, Automatically Backwashed Dual Media Filters – Backwash. Each filter basin is comprised of 86 cells where each cell has an area of 16 ft^2. Backwash pumps will be provided to meet or exceed the minimum backwash flow rate Backwash cycles per cell will be at least 20 seconds per compartment (approximately 30 minutes of backwash per cycle per filter).

i. Surface Area per backwash cell = 16 ft^2

ii. Minimum Backwash Flow Rate (per filter)
(20 gpm/ft^2)(16 ft^2) = 320 gpm

h. Ultraviolet Disinfection. Filtered effluent passes through three existing parallel channels containing ultraviolet (UV) disinfection modules. Additional UV modules will be installed, if needed, to inactivate pathogens. The existing structure will be modified, if needed, to install additional UV modules. The UV modules are low-pressure high intensity type and utilize 254 nm wavelength light with an assumed 65% minimum transmittance and 20 mJ/cm^2 UV dose rate. Each disinfection channel will include at least two banks positioned in series.

i. Post Aeration. Disinfected effluent passes through a post aeration basin that includes coarse bubble aeration to provide oxygen to the disinfected effluent to increase the dissolved oxygen (DO) concentrations to meet the minimum required DO for the final effluent. The air demand is included in the Air Requirements section of this report.

j. Aerobic Digesters.

Solids Treatment Train No. 1 (5.0 MGD)
No modifications or changes to the existing Solids Treatment Train No. 1 are proposed. The average daily flow (ADF) to both Plant Nos. 1 and 2 will increase from 2.45 MGD to 2.5 MGD, each. Calculations for the revised organic loading and solids retention time are shown below. Refer to the Interim II section for a written description of the solids treatment train no. 1.

i. Plant No. 1 and Plant No. 2 Organic Loading
(2.5 MGD + 2.5 MGD)(8.34)(340 mg/L) = 14,178 lbs solids/day

ii. Solids Production
(14,178 lbs BOD_5/day)(0.75 lb solids/1 lb BOD_5)* = 10,634 lbs solids/day

iii. Digested Solids Production
(10,634 lbs solids/day)(1-(0.38)(0.85)) = 7,200 lbs solids/day

iv. Average Digested Solids Production
(10,634 lbs solids/day + 7,200 lbs solids/day)/2 = 8,917 lbs solids/day

v. Total Solids in Digester for 28-day SRT
(8,917 lbs solids/day)(28 days) = 249,676 lbs solids

vi. Required Volume
(249,676 lbs solids)(10^6)/(8.34)/(30,000 mg/l MLSS)/(7.48) = 133,409 ft^3

vii. Existing Volume
(Aerobic Digester Volume) – (Membrane Thickener Volume)
[(4)(16 ft)(25 ft)(76.25 ft) + (1)(16 ft)(20 ft)(76.25 ft)] – ((2)(16 ft)(13 ft)(27 ft)
= 135,168 ft^3

viii. Actual Solids Residence Time
(135,168 ft^3)(7.48)(8.34)(30,000 mg/l)/(10^6)/(8,917 lbs/day)
= 28.4 days

*WEF MOP 8. Fifth Edition, Figure 20.5

Solids Treatment Train No. 2 (2.5 MGD)

All waste activated sludge (WAS) from the proposed Plant No. 3 will be pumped to the proposed Solids Treatment Train No. 2. The proposed Solids Treatment Train No. 2 will consist of one pair of digesters that will operate in conjunction with one membrane thickening unit. Sludge pumps will pull thickened sludge from the second digester to pump to the belt filter press. The digester sizing assumes 0.75 pound of solids produced per pound of BOD_5 applied, solids are 85% volatile organics, 38% of the volatiles are destroyed during digestion, and the average MLSS concentration in the digesters is 30,000 mg/l.

i. Plant No. 3 Organic Loading
(2.5 MGD)(8.34)(340 mg/L) = 7,089 lbs solids/day

i. Solids Production
(7,089 lbs BOD_5/day)(0.75 lb solids/1 lb BOD_5)* = 5,317 lbs solids/day

ii. Digested Solids Production
(5,317 lbs solids/day)(1-(0.38)(0.85)) = 3,599 lbs solids/day

iii. Average Digested Solids Production
(5,317 lbs solids/day + 3,599 lbs solids/day)/2 = 4,458 lbs solids/day

iv. Total Solids in Digester for 28-day SRT
(4,458 lbs solids/day)(28 days) = 124,824 lbs solids

v. Required Volume
(124,824 lbs solids)(10^6)/(8.34)/(30,000 mg/l MLSS)/(7.48) = 66,698 ft^3

vi. Proposed Volume
(Aerobic Digester Volume) – (Membrane Thickener Volume)
(2)(16 ft)(27 ft)(85 ft) – (1)(16 ft)(13 ft)(27 ft)
= 67,392 ft^3

vii. Actual Solids Residence Time
(67,392 ft^3)(7.48)(8.34)(30,000 mg/l)/(10^6)/(4,458 lbs/day)
= 28.3 days

*WEF MOP 8, Fifth Edition, Figure 20.5

k. Sludge Thickening. The existing Solids Treatment Train No. 1 aerobic digesters utilize submerged membranes to thicken sludge. No modifications or changes will be made to the existing Solids Treatment Train No. 1 from those described in the Interim II – 4.9 MGD report.

The proposed Solids Treatment Train No. 2 will also utilize submerged membranes to maintain an average MLSS concentration in the digesters of 30,000 mg/L. Proposed mechanical screens will screen all sludge entering the submerged membrane basins of this solids treatment train.

l. Sludge Dewatering. Digested and thickened sludge will be pumped from the existing Solids Treatment Train No. 1 and the from the proposed Solids Treatment Train No. 2 to the existing 2-meter belt filter press dewatering facility. One existing and one proposed belt press will be utilized and assumes operation 8 hours per day and 5 days per week, a maximum feed rate of 250 gpm/press at a sludge thickness of 70,000 mg/l, and 2,000 lbs of dry solids per hour per press. In the event that a belt press is out of service, digested sludge can be wet hauled for disposal at a permitted landfill.

i. Solids Production (Plant Nos. 1, 2, & 3)
(7.5 MGD)(8.34)(340 mg/L) = 21,267 lbs solids/day

ii. Hydraulic Loading
(lbs solid per day)/(SG_{solids})(% solids)(γ_{water})
[(21,267 lbs solid per day)/(1.03)(0.03)(62.4 lb/ft^3)](7.48) = 82,502 gal/day

iii. Total Belt Filter Press Units Required Based
on Hydraulic Capacity
(82,502 gal/d)(7/5)/(480 min/d)/(250 gal/min/press) = 0.96 belt filter press

iv. Total Belt Filter Press Units Required Based on Solids Capacity
(21,267 lbs solids/d)(7/5)/(8 op hr/d)/(2,000 lbs solids/hr/press)
= 1.86 belt filter press

v. Existing Belt Filter Press Units
(1 belt filter press unit) = 1 belt filter press unit

vi. Proposed Belt Filter Press Units
(1 belt filter press unit) = 1 belt filter press unit

vii. Total Belt Filter Press Units
(1 belt filter press unit) + (1 belt filter press unit) = 2 belt filter press units

m. Air Requirements. The Interim III facilities will be served by two blower banks: one bifurcated bank with blowers serving both process air requirements and digester air requirements, and one bank for membrane thickener air requirements. The process/digester blower bank will consist of twelve blowers: eight blowers dedicated to process air demands, three dedicated to digester air demands and a common spare blower. The membrane blower bank will consist of four blowers with one blower being a spare unit.

Process Blowers Demand:

Grit Removal System Nos. 1 & 2 Process Air

i. Grit Removal System Air Requirement (Mixing)
$(2)[(27\ ft)^2(7.71\ ft)+((27\ ft)^2(14.5\ ft)/3)-((2\ ft)^2(1\ ft)/3)]$ $(30\ scfm/1{,}000\ ft^3)$ = 264 scfm

Plant No. 1 and Plant No. 2 Process Air

ii. Aeration Basins

1. Air Required for Treatment

$$\frac{(1.2)(340\ mg/L\ BOD_5) + (4.6)(70\ mg/L\ TKN)}{(340\ mg/L\ BOD_5)} = 2.1\ lb\ O_2/\ lb\ BOD_5*$$

*TCEQ Chapter 217.155(a)(3) requires using a minimum of 2.2 lb O_2/lb BOD_5 if the system is intended to nitrify, which is used below for calculations.

2. Fine Bubble Requirements

$$\frac{(340\ mg/L\ BOD_5)(8.34)(5.0\ MGD)(2.2\ lb\ O_2/lb\ BOD_5)}{(10.7\%*)(0.075)(0.23)(1{,}440)} = 11{,}736\ scfm$$

* Wastewater Oxygen Transfer Efficiency is based on the actual efficiency for the installed aeration systems based on the manufacturer provided data

Plant No. 3 Process Air

iii. Aeration Basins

1. Air Required for Treatment

$$\frac{(1.2)(340\ mg/L\ BOD_5) + (4.6)(70\ mg/L\ TKN)}{(340\ mg/L\ BOD_5)} = 2.1\ lb\ O_2/\ lb\ BOD_5*$$

*TCEQ Chapter 217.155(a)(3) requires using a minimum of 2.2 lb O_2/lb BOD_5 if the system is intended to nitrify, which is used below for calculations.

2. Fine Bubble Requirements

$$\frac{(340\ mg/L\ BOD_5)(8.34)(2.5\ MGD)(2.2\ lb\ O_2/lb\ BOD_5)}{(10.7\%*)(0.075)(0.23)(1{,}440)} = 5{,}868\ scfm$$

* Wastewater Oxygen Transfer Efficiency is based on the actual efficiency for the installed aeration systems based on the manufacturer provided data

Miscellaneous Air Demands

iv. Plant No. 1 Return Sludge Air Lifts
(2) 8" Airlifts @ 80 scfm/Airlift = 160 scfm
(2) 12" Airlifts @ 180 scfm/Airlift = 360 scfm

v. Plant No. 2 Return Sludge Air Lifts
(2) 8" Airlifts @ 80 scfm/Airlift = 160 scfm
(2) 12" Airlifts @ 180 scfm/Airlift = 360 scfm

vi. Plant No. 3 Return Sludge Air Lifts
(6) 12" Airlifts @ 220 scfm/Airlift = 1320 scfm

vii. Total Return Sludge Air Demand
(2)(160 scfm) + (2)(360 scfm) + (1320 scfm) = 2,360 scfm

viii. Plant No. 1 Clarifier Loading Basins
(2)(14.56 ft)(130 ft^2) (30 scfm/1000 ft^3) = 114 scfm

ix. Plant No. 2 Clarifier Loading Basins and Effluent Basins
(4)(14.56 ft)(193 ft^2) (30 scfm/1000 ft^3) = 338 scfm

x. Plant No. 3 Clarifier Loading Basin and Effluent Basin
(2)(14.56 ft)(386 ft^2) (30 scfm/1000 ft^3) = 338 scfm

xi. Total Miscellaneous Air Demands
(2,360 scfm) + (114 scfm) + (338 scfm) + (338 scfm) = 3,150 scfm

UV Disinfection Air Scour

xii. Post-Aeration Air Requirement = 225 scfm

Post-Aeration Process Air

xiii. Post-Aeration Air Requirement
(6,466 ft^3)(30 scfm/1000 ft^3) = 194 scfm

Total Process Blowers Air Requirement
(Grit Removal System) + (Fine Bubble Req.) + (Misc. Air Demands)
+ (UV Scour) + (Post-Aeration)
(264 scfm)+(11,736 scfm)+(5,867 scfm)+(3,150 scfm)
+(225 scfm)+(194 scfm) = 21,436 scfm

Digester Blowers Demand:

Solids Treatment Train No. 1
Aerobic Digester Air Requirement
(135,168 ft^3)(30 scfm/1000 ft^3) = 4,055 scfm

Waste Sludge & Sludge Transfer Air Lifts
(2)(55 scfm) + (6)(15 scfm) = 200 scfm

Solids Treatment Train No. 2
Aerobic Digester Air Requirement
(67,392 ft^3)(30 scfm/1000 ft^3) = 2,022 scfm

Waste Sludge & Sludge Transfer Air Lifts
(2)(55 scfm) + (3)(15 scfm) = 155 scfm

Total Solids Air Requirement
(Aerobic Digesters) + (Sludge Transfer Air Lifts)
(4,055 scfm) + (2,022 scfm) + (200 scfm) + (155 scfm) = 6,432 scfm

Membrane Blowers Demand
Solids Treatment Train No. 1
Membrane Thickeners Air Requirement
(2)(500 scfm/MBT) = 1,000 scfm

Solids Treatment Train No. 2
Membrane Thickeners Air Requirement
(1)(500 scfm/MBT) = 500 scfm

Total Membrane Blowers Air Requirement
(Membrane Thickeners)
(1,000 scfm) + (500 scfm) = 1,500 scfm

n. Blower Capacities

Process Blowers

i.	Total Process Air Requirement	=	21,436 scfm
ii.	Firm Blower Capacity with Largest Unit out of Service (8)(3,000 scfm)	=	24,000 scfm

Digester Blowers

i.	Total Solids Air Requirement	=	6,432 scfm
ii.	Firm Blower Capacity with Largest Unit out of Service (3)(3,000 scfm)	=	9,000 scfm

Membrane Blowers

i.	Total Membrane Air Requirement	=	1,500 scfm
iii.	Firm Blower Capacity with Largest Unit out of Service (3)(510 scfm)	=	1,530 scfm

FINAL PHASE – 9.9 MGD

I. SCOPE

The proposed Final Phase – 9.9 MGD will be a permanent concrete plant operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector. The existing 2.5 MGD main process units, Plant Nos. 1 and 2, will still be sized to treat 2.5 MGD (each) but will only receive 2.45 MGD (each) of flow at average daily flow (ADF) in this phase. The existing Plant No. 3 will be expanded from 2.5 MGD to 5.0 MGD by constructing a second treatment train. The headworks will have mechanical and manual screens sized for the Final Phase and the structure will be modified if necessary. The two existing grit removal systems will remain in service. The lift station pumps will be replaced. The Solids Treatment Train No. 2 will be expanded. No modifications will be made to the existing Solids Treatment Train No. 1. The existing UV disinfection structure will be modified to accommodate the required number of UV disinfection modules. New treatment units include the proposed Plant No. 3 treatment train; dual media, multi-compartmented, low-head, automatically backwashed filters; aerobic digesters; and positive displacement blowers. The proposed Plant No. 3 treatment train includes one anaerobic basin, one aeration basin, one anoxic basin, one clarifier with one aerated loading basin and aerated effluent basin.

II. WASTEWATER TREATMENT PLANT DESIGN

A. DESIGN CRITERIA

1. Daily Effluent Limits

a.	BOD_5	=	10 mg/L
b.	TSS	=	15 mg/L
c.	NH_3-N	=	3 mg/L
d.	Total Phosphorus	=	0.5 mg/L
e.	DO	=	4 mg/L
h.	*E Coli*	=	126 number colonies/100 mL

2. Process Criteria

The criteria used for the constructed aeration basins was based on TCEQ Chapter 217.

a.	Minimum Hydraulic Detention Time for Aerated Grit Chamber (minutes)	=	3.0
b.	Minimum Detention Time for Anaerobic Basins (hours)	=	1.5*
c.	Maximum Aeration Basin Organic Loading (lbs BOD_5/day/1,000 ft^3)	=	35

d.	Maximum Clarifier Surface Loading at Peak Flow ($gal/day/ft^2$)	=	1,200
e.	Minimum Clarifier Detention Time (hours)	=	1.8
f.	Maximum Clarifier Weir Loading at Peak Flow (gal/day/ft)	=	30,000
g.	Maximum Filter Flux Rate at Peak Flow for Dual Media, Multi-Compartmented, Low-Head, Automatically Backwashed Filter at Peak Flow ($gal/min/ft^2$)	=	4
h.	Minimum Backwash Flux Rate for Dual Media, Multi-Compartmented, Low-Head, Automatically Backwashed Filter (gpm/ft^2)	=	20
i.	Minimum Solids Retention Time in Aerobic Digester* (days)	=	28**
j.	Minimum Air Required for Digester ($scfm/1{,}000\ ft^3$)	=	30
k.	Minimum Oxygen Required for Aeration Basins (lbs O_2/1 lb BOD_5)	=	2.2

*WEF MOP 8, fifth edition, 14-58

**28-day SRT utilized instead of a 40-day SRT for use of a multi-stage digester per EPA publication "Control of Pathogens and Vector Attraction in Sewage Sludge."

B. TREATMENT FACILITIES

1. Flow

   a. Average (Design) = 1.0Q = 9,900,000 gpd = 6,875 gpm

   b. Peak (2-hour) = 4.0Q = 39,600,000 gpd = 27,500 gpm

2. Influent Composition

   The following influent wastewater compositions are based on multi-part grab samples and composite samples collected at the existing headworks throughout 2019 and 2020 as the design basis for the Interim II facilities. The design values for BOD_5, TSS, NH_3-N, TP were calculated by adding one (1) standard deviation to the average.

a. BOD_5 = 340 mg/L

b. TSS = 300 mg/L

c. NH_3-N = 50 mg/L

d. TKN = 60 mg/L

e. TP = 8 mg/L

3. Organic Loadings

a.	BOD_5	=	(9.9 MGD)(8.34)(340 mg/L)	=	28,073 lbs BOD_5/day
b.	TSS	=	(9.9 MGD)(8.34)(300 mg/L)	=	24,770 lbs TSS/day
c.	NH_3-N	=	(9.9 MGD)(8.34)(50 mg/L)	=	4,129 lbs NH_3-N/day
d.	Total P	=	(9.9 MGD)(8.34)(8 mg/L)	=	661 lbs P/day

4. Process Basins and Equipment

a. Screening. The headworks will have mechanical and manual screens sized for the Final Phase. A conveyor will collect and move screenings from the mechanical screens to a dumpster to be hauled offsite to a permitted landfill.

b. Grit Removal System. The grit removal system will be comprised of the two existing grit basins and two cyclonic degritters with classifiers. No changes are proposed for the grit removal system. If one system is out of service, the remaining system and/or the bypass may be utilized to ensure the headworks remains in service.

c. Lift Station. The submersible lift station consists of two wet wells that are hydraulically linked. Six pumps across both wet wells will be replaced. Five duty pumps and one standby will provide a firm hydraulic pumping capacity of 27,500 gpm at the design peak flow of the Final Phase facility.

d. Flow Splitter. All flow is pumped from the lift station to a flow splitter that uses weirs to distribute flow proportionately to the three existing main process units (Plant Nos. 1, 2, & 3) based on the following splits. The existing weirs will be modified to distribute flow proportionately to the existing three secondary treatment plants. The flow split for each respective secondary treatment plant is defined below.

i. Plant No. 1 – 2.45 MGD

ii. Plant No. 2 – 2.45 MGD

iii. Plant No. 3 – 5.0 MGD

e. Secondary Treatment.

Plant No. 1 – 2.45 MGD. The existing Plant No. 1 will remain sized to treat 2.5 MGD at average daily flow (ADF) but will only receive 2.45 MGD of flow at ADF in this phase. See the Interim II phase section for a description of the secondary process and for calculations. No changes other than decreasing the ADF from 2.50 MGD to 2.45 MGD are proposed.

Plant No. 2 – 2.45 MGD. The existing Plant No. 2 will remain sized to treat 2.5 MGD at average daily flow (ADF) but will only receive 2.45 MGD of flow at ADF in this phase. See the Interim II phase section for a description of the secondary process and for calculations. No changes other than decreasing the ADF from 2.50 MGD to 2.45 MGD are proposed.

Plant No. 3 – 5.0 MGD. The existing Plant No. 3 will be expanded in this phase. One proposed treatment train will be constructed to operate in parallel with the existing Plant No. 3 treatment train. The proposed treatment train will consist of one anoxic selector basin, one anaerobic basin, one aeration basin, one aerated clarifier loading basin, one secondary clarifier operating as an enhanced biological phosphorus removal anaerobic-oxic (A-O) process with an anoxic selector, and one aerated clarifier effluent basin. The influent channel will be modified to accommodate the proposed treatment train. Phosphorous is removed through the A-O process with alum addition as a secondary treatment method. Phosphorous is removed with the biological nutrient removal process and alum addition as a secondary treatment method. Nitrogen removal is limited to treatment of the return activated sludge side stream. The intent of the partial nitrogen removal is only to help promote the biological phosphorous removal process by reducing the amount of nitrates in the process.

Anaerobic Basins

i. Required Volume at Average Daily Flow
(5,000,000 gal/day)(1.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 41,778 ft^3

ii. Existing Volume
1(24 ft)(64 ft)(16 ft) = 24,576 ft^3

iii. Proposed Volume
1(24 ft)(64 ft)(16 ft) = 24,576 ft^3

iv. Total Volume
(24,576 ft^3) + (24,576 ft^3) = 49,152 ft^3

v. Actual Hydraulic Retention Time at Average Daily Flow
(49,152 ft^3)(7.48gal/ft^3)(24 hr/day)/(5,000,000 gal/day) = 1.8 hrs

Aeration Basins

i. Required Volume Using Traditional Design Method
(5.0 MGD)(8.34)(340 mg/L)/(35 lb BOD_s/1000 ft^3)
= 405,086 ft^3

ii. Existing Volume
1(105 ft)(125 ft)(16 ft) = 210,000 ft^3

iii. Proposed Volume
1(105 ft)(125 ft)(16 ft) = 210,000 ft^3

iv. Total Volume
(210,000 ft^3) + (210,000 ft^3) = 420,000 ft^3

v. Actual Organic Loading Treated
(5.0 MGD)(8.34)(340 mg/L)/(420,000 ft^3)
= 33.8 lb BOD_5/1000 ft^3

Anoxic Selector Basins for RAS Side Stream

i. Design Flow to Anoxic Basins
(20% Influent Flow to Plant No. 3) + (Minimum RAS Flow)
(0.2)(5.0 MGD)(10^6 gal/MG) + (2)(1320 gpm)(1,440 min/day)= 4,801,600 gal/day

ii. Required Volume at Average Daily Flow
(4,801,600 gal/day)(0.5 hr)/(24 hr/day)/(7.48gal/ft^3) = 13,373 ft^3

iii. Existing Volume
1(30 ft)(16 ft)(16 ft) = 7,680 ft^3

iv. Proposed Volume
1(30 ft)(16 ft)(16 ft) = 7,680 ft^3

v. Total Volume
(7,680 ft^3) + (7,680 ft^3) = 15,360 ft^3

vi. Actual Hydraulic Retention Time
(15,360 ft^3)(7.48 gal/ft^3)(24 hr/day)/(4,801,600 gal/day) = 0.57 hrs

Secondary Clarifiers

i. Required Surface Area At Peak Flow
(5.0 MGD)(4)(10^6 gal/MG)/1,200 gal/day/ft^2 = 16,667 ft^2

ii. Existing Surface Area (Circular)
(π/4)(105 ft)^2 = 8,659 ft^2

iii. Proposed Surface Area (Circular Sides)
$(\pi/4)(105\ ft)^2$ = $8,659\ ft^2$

iv. Total Surface Area
$(8,659\ ft^2) + (8,659\ ft^2)$ = $17,318\ ft^2$

v. Proposed Surface Loading at Peak Flow
$(4)(5,000,000\ gpd)/(17,318\ ft^2)$ = $1,155\ gpd/ft^2$

vi. Proposed Clarifier Side Water Depth = 14.5 ft

vii. Proposed Hydraulic Detention Time at Peak Flow
$(17,318\ ft^2)(14.5\ ft)(7.48\ gal/ft^3)(24\ hr/day)/$
$(10^6\ gallons/MG)(4)(5.0\ MGD)$ = 2.25 hours

viii. Exist Clarifier Weir Length
$\pi(105\ ft - 4ft) + \pi(105\ ft - 8ft)$ = 622 ft

ix. Proposed Clarifier Weir Length
$\pi(105\ ft - 4ft) + \pi(105\ ft - 8ft)$ = 622 ft

x. Total Weir Length
$(2)(622\ ft)$ = 1,244 ft

xi. Proposed Weir Loading at Peak Flow
$(5.0\ MGD)(10^6\ gal/MG)(4)/(1,244\ ft)$ = $16,077\ gpd/ft$

f. <u>Tertiary Multi-Compartmented, Low-Head, Automatically Backwashed Dual Media Filters - Filtration.</u>
Clarified effluent flows from the parallel main process units (Plant Nos. 1, 2, & 3) to the tertiary filters. Four existing filter beds consist of dual media and one proposed filter bed will consist of dual media

i. Required Surface Area at Peak Flow
$(27,500\ gpm)/(4\ gpm/\ ft^2)$ = $6,875\ ft^2$

ii. Existing Surface Area
$(4)(16\ ft)(86\ ft)$ = $5,504\ ft^2$

iii. Proposed Surface Area
$(1)(16\ ft)(86\ ft)$ = $1,376\ ft^2$

iv. Total Surface Area
$(5,504\ ft^2) + (1,376\ ft^2)$ = $6,880\ ft^2$

iii. Actual Filtration Flux Rate at Peak Flow
$(27,500\ gpm)/(6,880\ ft^2)$ = $4.0\ gpm/ft^2$

iv. Actual Filtration Flux Rate at Peak Flow with One Filter Out of Service
$(27,500\ gpm)/[(4)(16\ ft)(86\ ft)]$ = $5.0\ gpm/ft^2$

g. Tertiary Multi-Compartmented, Low-Head, Automatically Backwashed Dual Media Filters – Backwash. Each filter basin is comprised of 86 cells where each cell has an area of 16 ft^2. Backwash pumps will be provided to meet or exceed the minimum backwash flow rate Backwash cycles per cell will be at least 20 seconds per compartment (approximately 30 minutes of backwash per cycle per filter).

i. Surface Area per backwash cell = 16 ft^2

ii. Minimum Backwash Flow Rate (per filter)
(20 gpm/ft^2)(16 ft^2) = 320 gpm

h. Ultraviolet Disinfection. Filtered effluent passes through three existing parallel channels containing ultraviolet (UV) disinfection modules. Additional UV modules will be installed, if needed, to inactivate pathogens. The existing structure will be modified, if needed, to install additional UV modules. The UV modules are low-pressure high intensity type and utilize 254 nm wavelength light with an assumed 65% minimum transmittance and 20 mJ/cm^2 UV dose rate. Each disinfection channel will include at least two banks positioned in series.

i. Post Aeration. Disinfected effluent passes through the existing post aeration basin that includes coarse bubble aeration to provide oxygen to the disinfected effluent to increase the dissolved oxygen (DO) concentrations to meet the minimum required DO for the final effluent. The air demand is included in the Air Requirements section of this report.

j. Aerobic Digesters.

Solids Treatment Train No. 1 (4.9 MGD)
No modifications or changes to the existing Solids Treatment Train No. 1 are proposed. The average daily flow (ADF) to both Plant Nos. 1 and 2 will be decreased from 2.5 MGD to 2.45 MGD, each. The organic loading and solids retention time will be the same as those described in the Interim II – 4.9 MGD report. Refer to that report for all sizing calculations.

Solids Treatment Train No. 2 (5.0 MGD)
All waste activated sludge (WAS) from expanded Plant No. 3 will be pumped to the existing solids treatment train No. 2. The existing Solids Treatment Train No. 2 will be expanded and will consist of two pairs of digesters that will operate in conjunction with one membrane thickening unit per pair of digesters. Sludge pumps will pull thickened sludge from one digester of each pair to pump to the belt filter press. The digester sizing assumes 0.75 pound of solids produced per pound of BOD_5 applied, solids are 85% volatile organics, 38% of the volatiles are destroyed during digestion, and the average MLSS concentration in the digesters is 30,000 mg/l.

i. Plant No. 3 Organic Loading
(5.0 MGD)(8.34)(340 mg/L) = 14,178 lbs solids/day

ii. Solids Production
(14,178 lbs BOD_5 /day)(0.75 lb solids/1 lb BOD_5)* = 10,634 lbs solids/day

iii. Digested Solids Production
(10,634 lbs solids/day)(1-(0.38)(0.85)) = 7,200 lbs solids/day

iv. Average Digested Solids Production
(10,634 lbs solids/day + 7,200 lbs solids/day)/2 = 8,917 lbs solids/day

v. Total Solids in Digester for 28-day SRT
(8,917 lbs solids/day)(28 days) = 249,676 lbs solids

vi. Required Volume
(249,676 lbs solids)(10^6)/(8.34)/(30,000 mg/l MLSS)/(7.48) = 133,410 ft^3

vii. Existing Volume
(Exist Digester Volume) – (Exist Membrane Thickener Volume)
(2)(16 ft)(27 ft)(85 ft) – (1)(16 ft)(13 ft)(27 ft)
= 67,824 ft^3

viii. Proposed Volume
(Exist Digester Volume) – (Exist Membrane Thickener Volume)
(2)(16 ft)(27 ft)(85 ft) – (1)(16 ft)(13 ft)(27 ft)
= 67,824 ft^3

ix. Total Volume
(67,824 ft^3) + (67,824 ft^3) = 135,648 ft^3

x. Actual Solids Residence Time
(134,784 ft^3)(7.48)(8.34)(30,000 mg/l)/(10^6)/(8,917 lbs/day)
= 28.3 days

*WEF MOP 8, Fifth Edition, Figure 20.5

k. Sludge Thickening. The existing Solids Treatment Train No. 1 aerobic digesters utilize submerged membranes to thicken sludge. No modifications or changes will be made to the existing Solids Treatment Train No. 1 from those described in the Interim II – 4.9 MGD report.

The expanded Solids Treatment Train No. 2 also utilizes submerged membranes to maintain an average MLSS concentration in the digesters of 30,000 mg/L. Additional mechanical screens will screen all sludge entering the submerged membrane basins of this solids treatment train.

l. Sludge Dewatering. Digested and thickened sludge will be pumped from the existing Solids Treatment Train No. 1 and the from the proposed Solids Treatment Train No. 2 to the existing belt filter press dewatering facility. Two existing 2-meter belt presses will be utilized and assumes operation 8 hours per day and 7 days per week, a maximum feed rate of 250 gpm/press at a sludge thickness of 70,000 mg/l, and 2,000 lbs of dry sohlids per hour per press. In the event that a belt press is out of service, digested sludge can be wet hauled for disposal at a permitted landfill.

i. Solids Production (Plant Nos. 1, 2, & 3)
(9.9 MGD)(8.34)(340 mg/L) = 28,073 lbs solids/day

ii. Hydraulic Loading
(lbs solid per day)/(SG_{solids})(% solids)(γ_{water})
[(28,073 lbs solid per day)/(1.03)(0.03)(62.4 lb/ft^3)](7.48) = 108,905 gal/day

iii. Total Belt Filter Press Units Required Based on Hydraulic Capacity
(108,905 gal/d)(7/7)/(480 min/d)/(250 gal/min/press) = 0.91 belt filter press

iv. Total Belt Filter Press Units Required Based on Solids Capacity
(28,073 lbs solids/d)(7/7)/(8 op hr/d)/(2,000 lbs solids/hr/press)
= 1.75 belt filter press

v. Existing Belt Filter Press Units
(2 belt filter press units) = 2 belt filter press units

vi. Total Belt Filter Press Units
(2 belt filter press unit) = 2 belt filter press units

m. Air Requirements. Final Phase facilities will be served by two blower banks: one bifurcated bank with blowers serving both process air requirements and digester air requirements, and one bank for membrane thickener air requirements. The process/digester blower bank will consist of thirteen blowers: nine blowers dedicated to process air demands, three dedicated to digester air demands and a common spare blower. The membrane blower bank will consist of five blowers with one blower being a spare unit.

Process Blowers Demand:

Grit Removal System Nos. 1 & 2 Process Air

i. Grit Removal System Air Requirement (Mixing)
(2)[(27 ft)^2(7.71 ft)+((27 ft)^2(14.5 ft)/3)-((2 ft)^2(1 ft)/3)] = 264 scfm
(30 scfm/1,000 ft^3)

Plant No. 1 and Plant No. 2 Process Air

ii. Aeration Basins

1. Air Required for Treatment

$$\frac{(1.2)(340\ mg/L\ BOD_5) + (4.6)(70\ mg/L\ TKN)}{(340\ mg/L\ BOD_5)} = 2.1\ lb\ O_2/\ lb\ BOD_5*$$

*TCEQ Chapter 217.155(a)(3) requires using a minimum of 2.2 lb O_2/lb BOD_5 if the system is intended to nitrify, which is used below for calculations.

2. Fine Bubble Requirements

$$\frac{(340\ mg/L\ BOD_5)(8.34)(4.9\ MGD)(2.2\ lb\ O_2/lb\ BOD_5)}{(10.7\%^*)(0.075)(0.23)(1{,}440)} = 11{,}500\ scfm$$

* Wastewater Oxygen Transfer Efficiency is based on the actual efficiency for the installed aeration systems based on the manufacturer provided data

Plant No. 3 Process Air

iii. Aeration Basins

1. Air Required for Treatment

$$\frac{(1.2)(340\ mg/L\ BOD_5) + (4.6)(70\ mg/L\ TKN)}{(340\ mg/L\ BOD_5)} = 2.1\ lb\ O_2/\ lb\ BOD_5^*$$

*TCEQ Chapter 217.155(a)(3) requires using a minimum of 2.2 lb O_2/lb BOD_5 if the system is intended to nitrify, which is used below for calculations.

2. Fine Bubble Requirements

$$\frac{(340\ mg/L\ BOD_5)(8.34)(5.0\ MGD)(2.2\ lb\ O_2/lb\ BOD_5)}{(10.7\%^*)(0.075)(0.23)(1{,}440)} = 11{,}736\ scfm$$

* Wastewater Oxygen Transfer Efficiency is based on the actual efficiency for the installed aeration systems based on the manufacturer provided data

Miscellaneous Air Demands

iv. Plant No. 1 Return Sludge Air Lifts
(2) 8" Airlifts @ 80 scfm/Airlift = 160 scfm
(2) 12" Airlifts @ 180 scfm/Airlift = 360 scfm

v. Plant No. 2 Return Sludge Air Lifts
(2) 8" Airlifts @ 80 scfm/Airlift = 160 scfm
(2) 12" Airlifts @ 180 scfm/Airlift = 360 scfm

vi. Plant No. 3 Return Sludge Air Lifts
(12) 12" Airlifts @ 220 scfm/Airlift = 2,640 scfm

vii. Total Return Sludge Air Demand
(2)(160 scfm) + (2)(360 scfm) + (2,640 scfm) = 3,680 scfm

viii. Plant No. 1 Clarifier Loading Basins
(2)(14.56 ft)(130 ft^2) (30 scfm/1000 ft^3) = 114 scfm

ix. Plant No. 2 Clarifier Loading Basins and Effluent Basins
(4)(14.56 ft)(193 ft^2) (30 scfm/1000 ft^3) = 338 scfm

x. Plant No. 3 Clarifier Loading Basins and Effluent Basins
(4)(14.56 ft)(386 ft^2)(30 scfm/1000 ft^3) = 675 scfm

xi. Total Miscellaneous Air Demands
(3,680 scfm) + (114 scfm) + (338 scfm) + (675 scfm) = 4,807 scfm

UV Disinfection Air Scour

xii. Post-Aeration Air Requirement = 225 scfm

Post-Aeration Process Air

xiii. Post-Aeration Air Requirement
(6,466 ft^3)(30 scfm/1000 ft^3) = 194 scfm

Total Process Blowers Air Requirement
(Grit Removal System) + (Fine Bubble Req.) + (Misc. Air Demands) + (UV Scour) + (Post-Aeration)
(264 scfm)+(11,500 scfm + 11,736 scfm)+(1,452 scfm) +(152 scfm)+(194 scfm) = 25,298 scfm

Digester Blowers Demand

Solids Treatment Train No. 1
Aerobic Digester Air Requirement
(135,168 ft^3)(30 scfm/1,000 ft^3) = 4,055 scfm

Waste Sludge & Sludge Transfer Air Lifts
(2)(55 scfm) + (6)(15 scfm) = 200 scfm

Solids Treatment Train No. 2
Aerobic Digester Air Requirement
(135,648 ft^3)(30 scfm/1000 ft^3) = 4,070 scfm

Waste Sludge & Sludge Transfer Air Lifts
(2)(55 scfm) + (4)(15 scfm) = 170 scfm

Total Solids Air Requirement
(Aerobic Digesters) + (Sludge Transfer Air Lifts)
(4,055 scfm + 4,070 scfm) + (200 scfm + 170 scfm) = 8,495 scfm

Membrane Blowers Demand:

Solids Treatment Train No. 1
Membrane Thickeners Air Requirement
(2)(500 scfm/MBT) = 1,000 scfm

Solids Treatment Train No. 2
Membrane Thickeners Air Requirement
(2)(500 scfm/MBT) = 1,000 scfm

Total Membrane Blowers Air Requirement
(Membrane Thickeners)
(1,000 scfm) + (1,000 scfm) = 2,000 scfm

n. Blower Capacities

Process Blowers

i. Total Process Air Requirement = 25,298 scfm

ii. Firm Blower Capacity with Largest Unit out of Service
(9)(3,000 scfm) = 27,000 scfm

Digester Blowers

i. Total Solids Air Requirement = 8,495 scfm

ii. Firm Blower Capacity with Largest Unit out of Service
(3)(3,000 scfm) = 9,000 scfm

Membrane Blowers

i. Total Membrane Air Requirement = 2,000 scfm

ii. Firm Blower Capacity with Largest Unit out of Service
(4)(510 scfm) = 2,040 scfm

ATTACHMENT D

FLOW SCHEMATICS

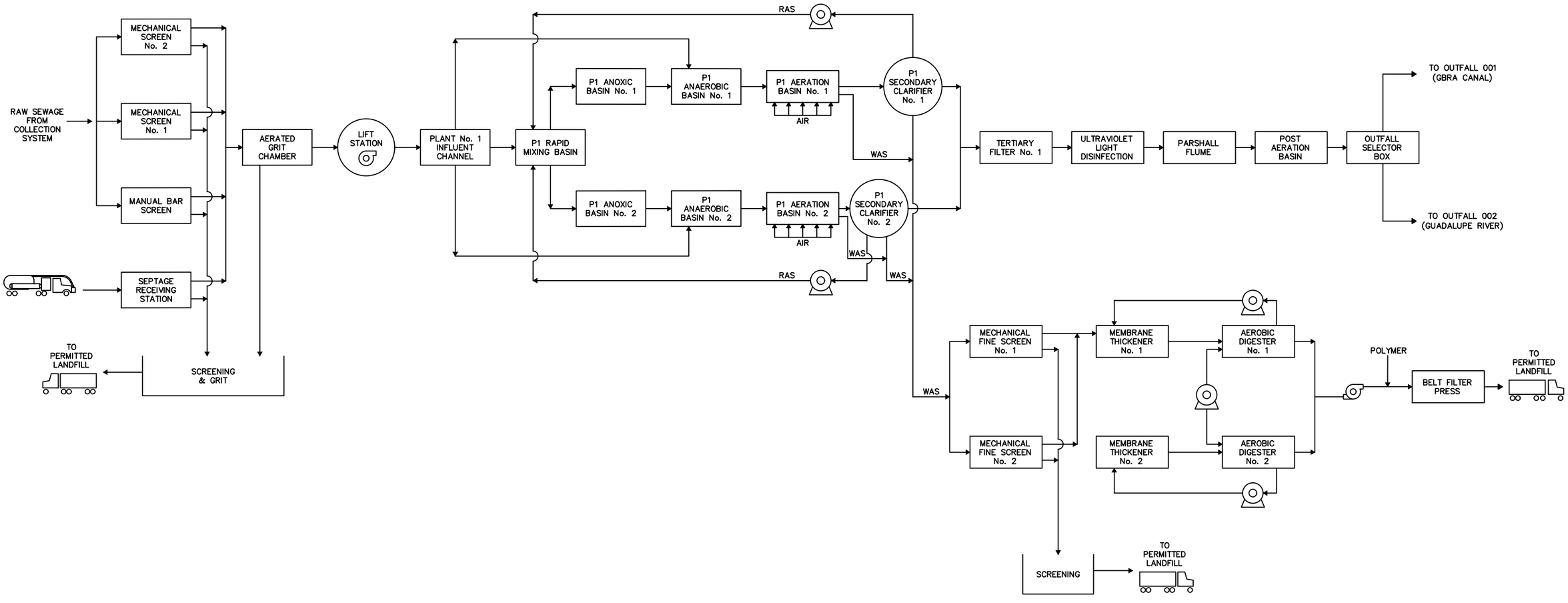
NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

MAY 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

LEGEND:

P1	PLANT No. 1
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
	EXISTING
	PROPOSED
	FUTURE
	AIR LIFT
	PUMP



ATTACHMENT I
FLOW SCHEMATIC – 2.5 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

LEGEND:

P1	PLANT No. 1
P2	PLANT No. 2
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
———	EXISTING
PROPOSED	
FUTURE	

AIR LIFT

PUMP

RAW SEWAGE FROM COLLECTION SYSTEM

MECHANICAL SCREEN No. 2

MECHANICAL SCREEN No. 1

MANUAL BAR SCREEN

SEPTAGE RECEIVING STATION

TO PERMITTED LANDFILL

SCREENING & GRIT

AERATED GRIT CHAMBER

LIFT STATION

FLOW SPLITTING STRUCTURE

PLANT No. 1 INFLUENT CHANNEL

P1 RAPID MIXING BASIN

P1 ANOXIC BASIN No. 1

P1 ANAEROBIC BASIN No. 1

P1 AERATION BASIN No. 1

AIR

P1 SECONDARY CLARIFIER No. 1

WAS

P1 ANOXIC BASIN No. 2

P1 ANAEROBIC BASIN No. 2

P1 AERATION BASIN No. 2

AIR

P1 SECONDARY CLARIFIER No. 2

WAS

RAS

WAS

PLANT No. 2 INFLUENT CHANNEL

P2 RAPID MIXING BASIN

P2 ANOXIC BASIN No. 1

P2 ANAEROBIC BASIN No. 1

P2 AERATION BASIN No. 1

AIR

P2 SECONDARY CLARIFIER No. 1

WAS

P2 ANOXIC BASIN No. 2

P2 ANAEROBIC BASIN No. 2

P2 AERATION BASIN No. 2

AIR

P2 SECONDARY CLARIFIER No. 2

WAS

RAS

TERTIARY FILTER No. 1

TERTIARY FILTER No. 2

TERTIARY FILTER No. 3

ULTRAVIOLET LIGHT DISINFECTION

PARSHALL FLUME

POST AERATION BASIN

OUTFALL SELECTOR BOX

TO OUTFALL 001 (GBRA CANAL)

TO OUTFALL 002 (GUADALUPE RIVER)

WAS PUMP STATION

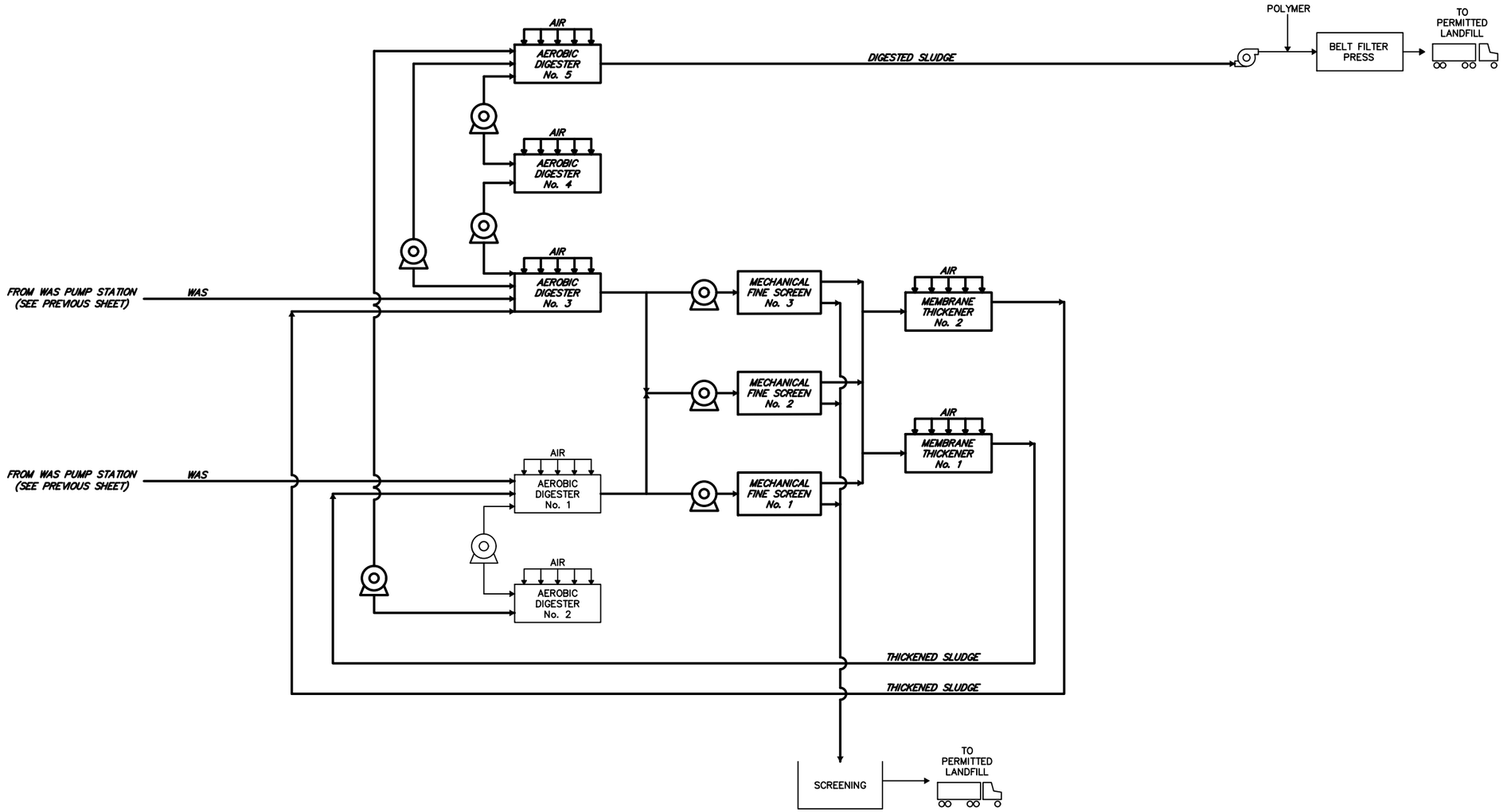
TO SOLIDS TREATMENT (SEE NEXT SHEET)

TO SOLIDS TREATMENT (SEE NEXT SHEET)

ATTACHMENT II–A
FLOW SCHEMATIC – 4.9 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

LEGEND:

P1	PLANT No. 1
P2	PLANT No. 2
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
	EXISTING
	PROPOSED
	FUTURE
	AIR LIFT
	PUMP



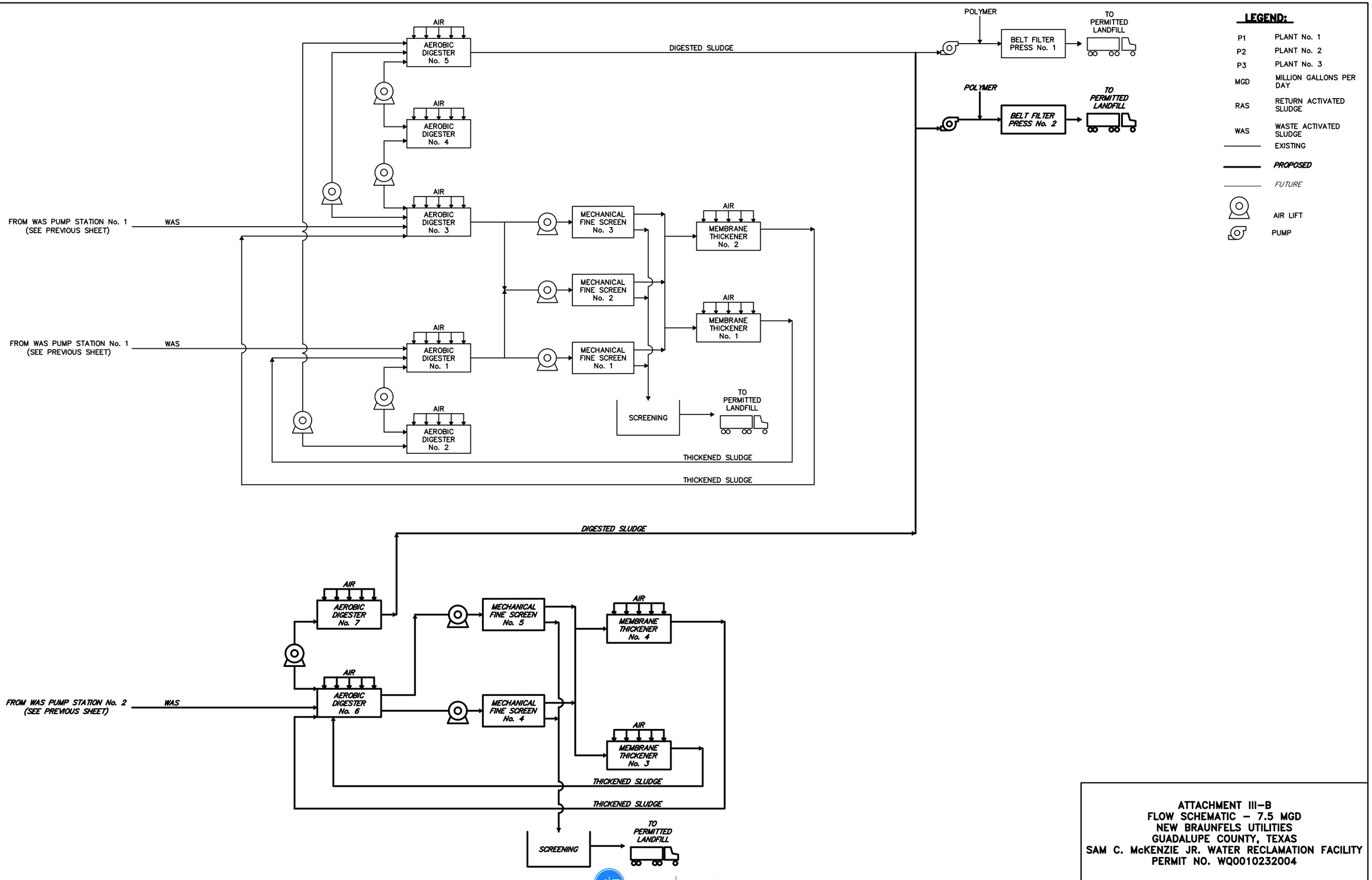
ATTACHMENT II–B
FLOW SCHEMATIC – 4.9 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

RAW SEWAGE FROM COLLECTION SYSTEM
MECHANICAL SCREEN No. 2
MECHANICAL SCREEN No. 1
MANUAL BAR SCREEN
SEPTAGE RECEIVING STATION
TO PERMITTED LANDFILL
SCREENING & GRIT
AERATED GRIT CHAMBER No. 1
AERATED GRIT CHAMBER No. 2
LIFT STATION
FLOW SPLITTING STRUCTURE
PLANT No. 1 INFLUENT CHANNEL
P1 RAPID MIXING BASIN
P1 ANOXIC BASIN No. 1
P1 ANAEROBIC BASIN No. 1
P1 AERATION BASIN No. 1
AIR
P1 SECONDARY CLARIFIER No. 1
WAS
RAS
P1 ANOXIC BASIN No. 2
P1 ANAEROBIC BASIN No. 2
P1 AERATION BASIN No. 2
AIR
P1 SECONDARY CLARIFIER No. 2
WAS
RAS
PLANT No. 2 INFLUENT CHANNEL
P2 RAPID MIXING BASIN
P2 ANOXIC BASIN No. 1
P2 ANAEROBIC BASIN No. 1
P2 AERATION BASIN No. 1
AIR
P2 SECONDARY CLARIFIER No. 1
WAS
RAS
P2 ANOXIC BASIN No. 2
P2 ANAEROBIC BASIN No. 2
P2 AERATION BASIN No. 2
AIR
P2 SECONDARY CLARIFIER No. 2
WAS
RAS
PLANT No. 3 INFLUENT CHANNEL
P3 RAPID MIXING BASIN
P3 ANOXIC BASIN No. 1
P3 ANAEROBIC BASIN No. 1
P3 AERATION BASIN No. 1
AIR
P3 SECONDARY CLARIFIER No. 1
WAS
RAS
TERTIARY FILTER No. 1
TERTIARY FILTER No. 2
TERTIARY FILTER No. 3
TERTIARY FILTER No. 4
ULTRAVIOLET LIGHT DISINFECTION
PARSHALL FLUME
POST AERATION BASIN
OUTFALL SELECTOR BOX
TO OUTFALL 001 (GBRA CANAL)
TO OUTFALL 002 (GUADALUPE RIVER)
WAS PUMP STATION No. 1
WAS
WAS
WAS
WAS
TO SOLIDS TREATMENT (SEE NEXT SHEET)
TO SOLIDS TREATMENT (SEE NEXT SHEET)
WAS PUMP STATION No. 2
WAS
WAS
TO SOLIDS TREATMENT (SEE NEXT SHEET)

LEGEND:

P1	PLANT No. 1
P2	PLANT No. 2
P3	PLANT No. 3
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
———	EXISTING
———	*PROPOSED*
———	*FUTURE*
	AIR LIFT
	PUMP

ATTACHMENT III–A
FLOW SCHEMATIC – 7.5 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004



ATTACHMENT III–B
FLOW SCHEMATIC – 7.5 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

RAW SEWAGE FROM COLLECTION SYSTEM

MECHANICAL SCREEN No. 2

MECHANICAL SCREEN No. 1

MANUAL BAR SCREEN

SEPTAGE RECEIVING STATION

TO PERMITTED LANDFILL

SCREENING & GRIT

AERATED GRIT CHAMBER No. 1

AERATED GRIT CHAMBER No. 2

LIFT STATION

FLOW SPLITTING STRUCTURE

PLANT No. 1 INFLUENT CHANNEL

P1 RAPID MIXING BASIN

P1 ANOXIC BASIN No. 1

P1 ANAEROBIC BASIN No. 1

P1 AERATION BASIN No. 1

AIR

P1 SECONDARY CLARIFIER No. 1

RAS

WAS

P1 ANOXIC BASIN No. 2

P1 ANAEROBIC BASIN No. 2

P1 AERATION BASIN No. 2

AIR

P1 SECONDARY CLARIFIER No. 2

WAS

RAS

WAS

PLANT No. 2 INFLUENT CHANNEL

P2 RAPID MIXING BASIN

P2 ANOXIC BASIN No. 1

P2 ANAEROBIC BASIN No. 1

P2 AERATION BASIN No. 1

AIR

P2 SECONDARY CLARIFIER No. 1

RAS

WAS

P2 ANOXIC BASIN No. 2

P2 ANAEROBIC BASIN No. 2

P2 AERATION BASIN No. 2

AIR

P2 SECONDARY CLARIFIER No. 2

WAS

RAS

WAS

WAS PUMP STATION No. 1

TO SOLIDS TREATMENT (SEE NEXT SHEET)

TO SOLIDS TREATMENT (SEE NEXT SHEET)

WAS

WAS

PLANT No. 3 INFLUENT CHANNEL

P3 RAPID MIXING BASIN

P3 ANOXIC BASIN No. 1

P3 ANAEROBIC BASIN No. 1

P3 AERATION BASIN No. 1

AIR

P3 SECONDARY CLARIFIER No. 1

RAS

WAS

P3 ANOXIC BASIN No. 2

P3 ANAEROBIC BASIN No. 2

P3 AERATION BASIN No. 2

AIR

P3 SECONDARY CLARIFIER No. 2

RAS

WAS

WAS PUMP STATION No. 2

TO SOLIDS TREATMENT (SEE NEXT SHEET)

TERTIARY FILTER No. 1

TERTIARY FILTER No. 2

TERTIARY FILTER No. 3

TERTIARY FILTER No. 4

TERTIARY FILTER No. 5

TERTIARY FILTER No. 6

ULTRAVIOLET LIGHT DISINFECTION

PARSHALL FLUME

POST AERATION BASIN

OUTFALL SELECTOR BOX

TO OUTFALL 001 (GBRA CANAL)

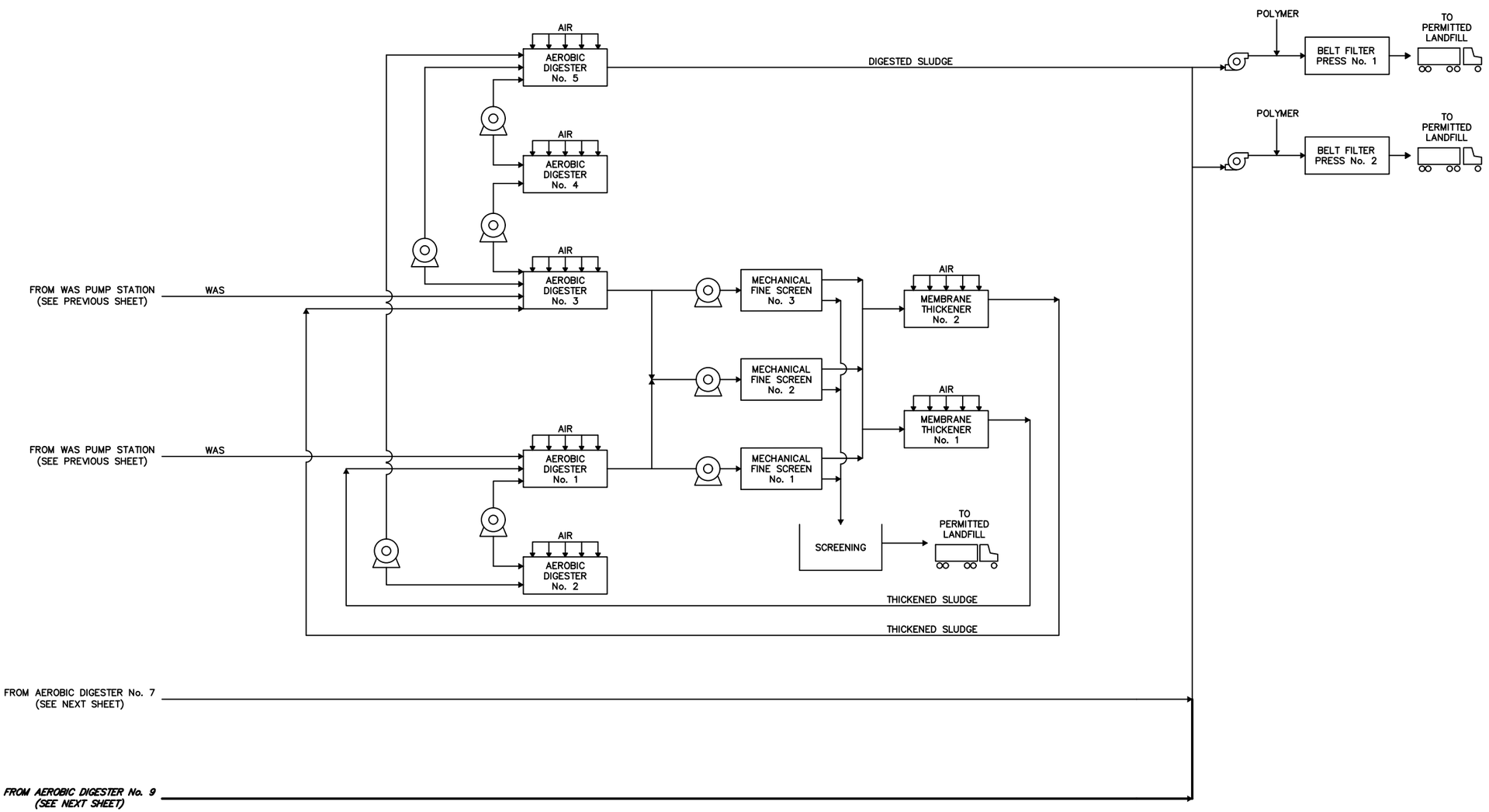
TO OUTFALL 002 (GUADALUPE RIVER)

LEGEND:

P1	PLANT No. 1
P2	PLANT No. 2
P3	PLANT No. 3
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
	EXISTING
	PROPOSED
	FUTURE
	AIR LIFT
	PUMP

ATTACHMENT IV-A
FLOW SCHEMATIC – 9.9 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

JONES|CARTER



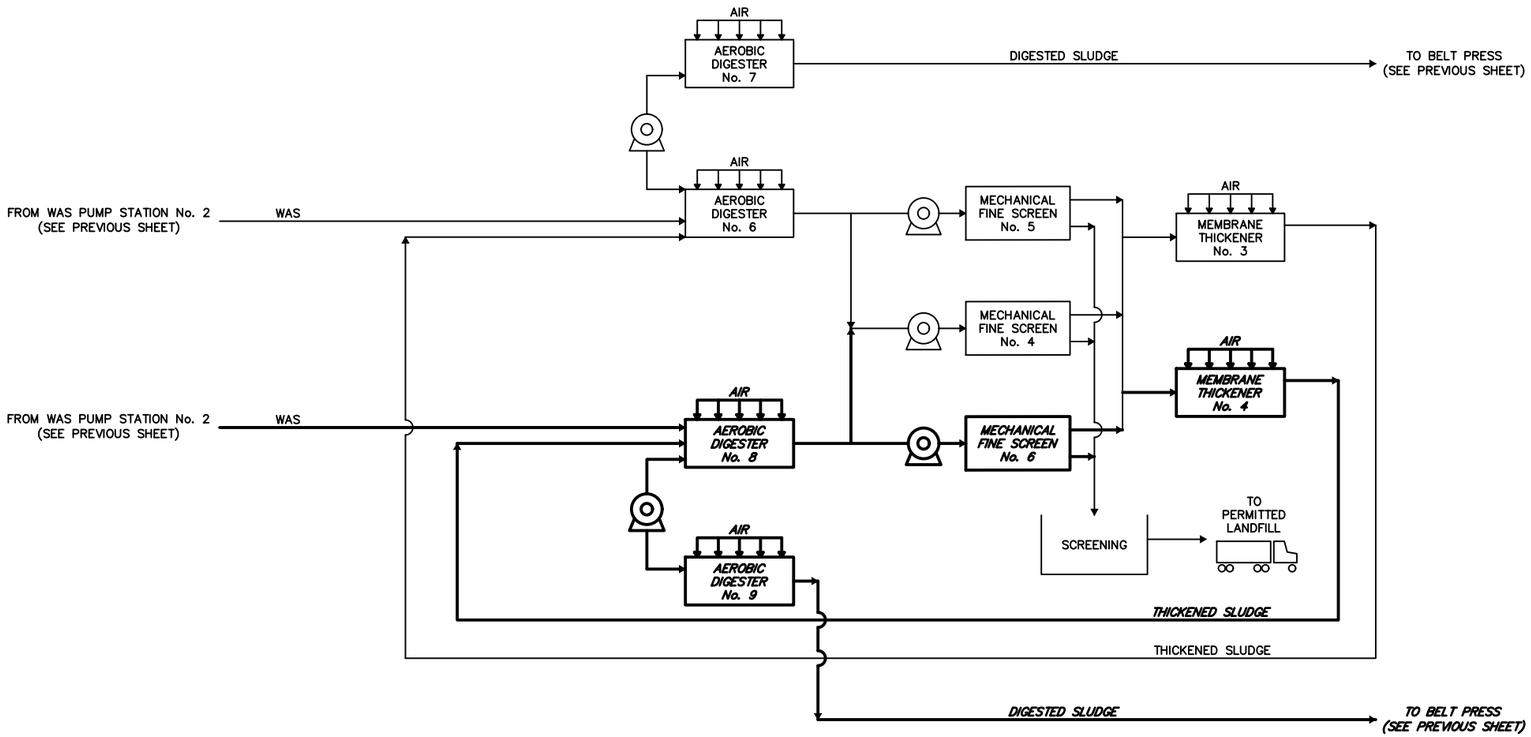
LEGEND:

P1	PLANT No. 1
P2	PLANT No. 2
P3	PLANT No. 3
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
	EXISTING
	PROPOSED
	FUTURE
	AIR LIFT
	PUMP

ATTACHMENT IV–B
FLOW SCHEMATIC – 9.9 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

LEGEND:

P1	PLANT No. 1
P2	PLANT No. 2
P3	PLANT No. 3
MGD	MILLION GALLONS PER DAY
RAS	RETURN ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
———	EXISTING
———	***PROPOSED***
———	*FUTURE*
	AIR LIFT
	PUMP



ATTACHMENT IV–C
FLOW SCHEMATIC – 9.9 MGD
NEW BRAUNFELS UTILITIES
GUADALUPE COUNTY, TEXAS
SAM C. McKENZIE JR. WATER RECLAMATION FACILITY
PERMIT NO. WQ0010232004

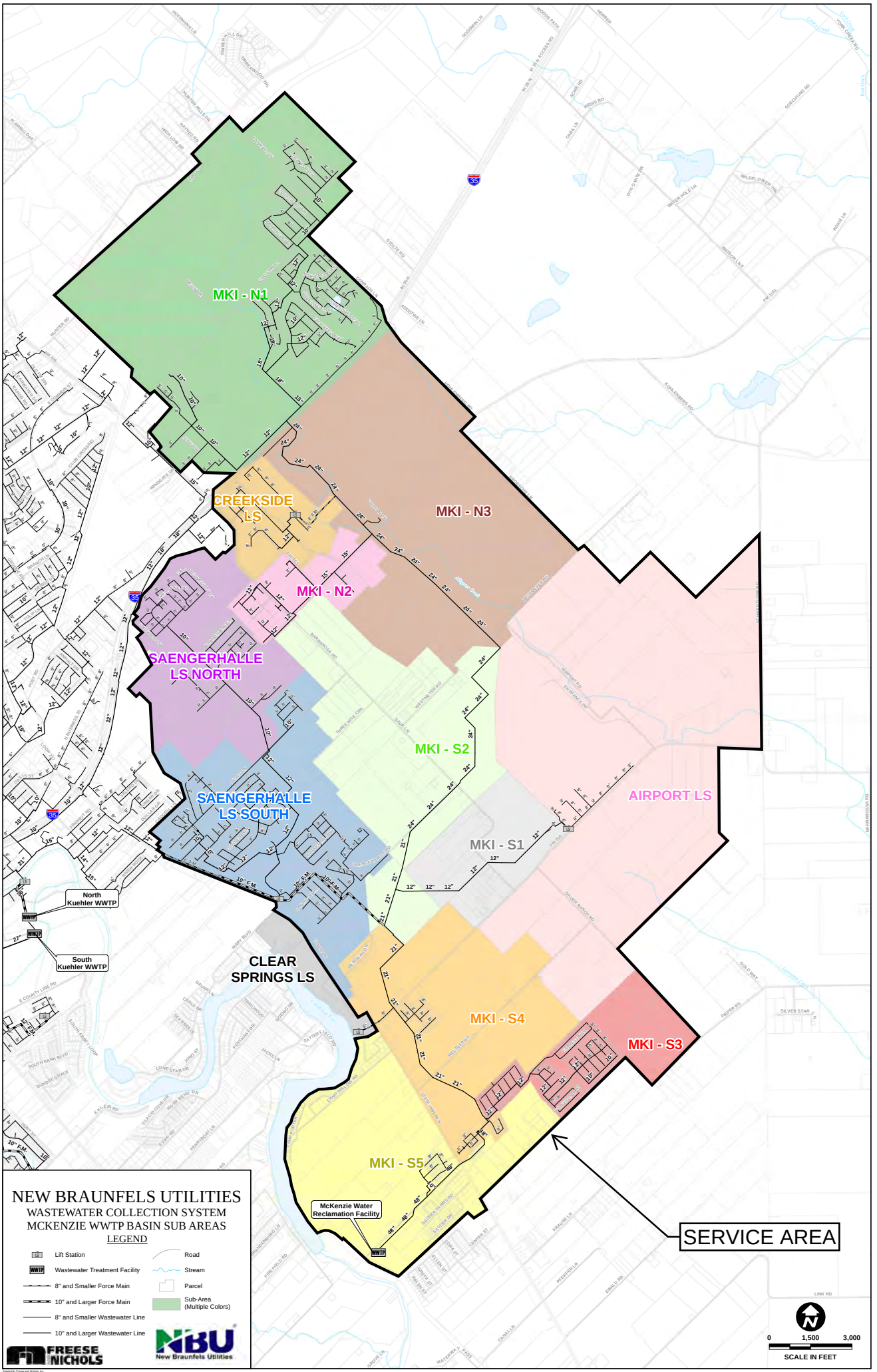
ATTACHMENT E

SITE DRAWING

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

May 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337


MKI - N1
CREEKSIDE LS
MKI - N3
MKI - N2
SAENGERHALLE LS NORTH
MKI - S2
SAENGERHALLE LS SOUTH
AIRPORT LS
MKI - S1
North Kuehler WWTP
South Kuehler WWTP
CLEAR SPRINGS LS
MKI - S4
MKI - S3
MKI - S5
McKenzie Water Reclamation Facility
SERVICE AREA
NEW BRAUNFELS UTILITIES
WASTEWATER COLLECTION SYSTEM
MCKENZIE WWTP BASIN SUB AREAS
LEGEND
Lift Station
Wastewater Treatment Facility
8" and Smaller Force Main
10" and Larger Force Main
8" and Smaller Wastewater Line
10" and Larger Wastewater Line
Road
Stream
Parcel
Sub-Area (Multiple Colors)
FREESE NICHOLS
NBU New Braunfels Utilities
0
1,500
3,000
SCALE IN FEET

ATTACHMENT F

JUSTIFICATION

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

May 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

JUSTIFICATION FOR PLANT EXPANSION
NEW BRAUNFELS UTILITIES

The New Braunfels Utilities ("NBU") Sam C. McKenzie, Jr. Water Reclamation Facility Wastewater Treatment Plant serves the eastern portions of the City of New Braunfels.

At build out, there will be 35,500 residential connections, 4,200 apartment unit connections, 500 commercial connections, and 50 other connections. For design purposes, the wastewater flow for residential connections is 240 gallons per day per connection (gpd/conn.), 150 gpd/conn. for apartment units, 1,000 gpd/conn. for commercial units, and 5,000 gpd/conn. for other connections.

Following is the connection and flow projection for NBU to complete build out:

Month / yr	Single family residential		Apartment Units		Commercial		Other		Total	
	connections	flow (gpd)	connections	flow (gpd)	connections	flow (gpd)	connections	flow (gpd)	connections	flow (gpd)
Jan-21	4,800	1,152,000	600	90,000	120	120,000	0	0	5520	1,362,000
Jan-22	5,800	1,392,000	640	96,000	170	170,000	2	10,000	6,612	1,668,000
Jan-23	6,400	1,536,000	700	105,000	220	220,000	4	20,000	7,324	1,881,000
Jan-24	7,000	1,680,000	1,000	150,000	320	320,000	19	95,000	8,339	2,245,000
Jan-25	8,500	2,040,000	1,100	165,000	340	340,000	22	110,000	9,962	2,655,000
Jan-26	10,000	2,400,000	1,500	225,000	400	400,000	30	150,000	11,930	3,175,000
Jan-27	12,000	2,880,000	1,600	240,000	400	400,000	30	150,000	14,030	3,670,000
Jan-28	13,500	3,240,000	1,700	255,000	420	420,000	35	175,000	15,655	4,090,000
Jan-29	14,800	3,552,000	1,720	258,000	421	421,000	35	175,000	16,976	4,406,000
Jan-30	16,000	3,840,000	1,800	270,000	430	430,000	40	200,000	18,270	4,740,000
Jan-31	17,000	4,080,000	1,900	285,000	450	450,000	42	210,000	19,392	5,025,000
Jan-32	19,000	4,560,000	2,500	375,000	470	470,000	44	220,000	22,014	5,625,000
Jan-33	20,500	4,920,000	2,600	390,000	470	470,000	44	220,000	23,614	6,000,000
Jan-34	22,000	5,280,000	2,650	397,500	475	475,000	44	220,000	25,169	6,372,500
Jan-35	23,500	5,640,000	2,750	412,500	480	480,000	45	225,000	26,775	6,757,500
Jan-36	24,500	5,880,000	2,900	435,000	480	480,000	45	225,000	27,925	7,020,000
Jan-37	25,500	6,120,000	3,200	480,000	480	480,000	48	240,000	29,228	7,320,000
Jan-38	26,500	6,360,000	3,300	495,000	485	485,000	48	240,000	30,333	7,580,000
Jan-39	28,000	6,720,000	3,400	510,000	490	490,000	50	250,000	31,940	7,970,000
Jan-40	29,500	7,080,000	3,500	525,000	495	495,000	50	250,000	33,545	8,350,000
Jan-41	30,500	7,320,000	3,600	540,000	497	497,000	50	250,000	34,647	8,607,000
Jan-42	32,000	7,680,000	3,700	555,000	500	500,000	50	250,000	36,250	8,985,000
Jan-43	33,000	7,920,000	3,800	570,000	500	500,000	50	250,000	37,350	9,240,000
Jan-44	34,000	8,160,000	3,995	599,250	500	500,000	50	250,000	38,545	9,509,250
Jan-45	35,000	8,400,000	4,150	622,500	500	500,000	50	250,000	39,700	9,772,500

Following is the construction schedule for the current and final plant phases:

Proposed flow	Interim I	Interim II	Interim III	Final
Design Flow (MGD)	2.5	4.9	7.5	9.9
2-Hr Peak Flow (MGD)	10	19.6	30	39.6
Date construction to commence	--	2/23	2/28	2/34
Date construction completed and discharge begins	--	1/24	1/29	1/35

ATTACHMENT G

SUMMARY SUBMITTAL AND TCEQ APPROVAL

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

May 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 25, 2013

Hal Craig Bell, PE
TRC Engineers, Inc.
505 East Huntland Dr. Ste. 250
Austin, Texas 78752

Re: New Braunfels Utilities
Proposed Sam C. McKenzie Water Reclamation Facility
Permit No. 10232-004
WWPR Log No. 0213/038
CN600522957; RN106228422
Guadalupe County

Dear Mr. Bell:

We have received the project summary transmittal letter dated February 14, 2013.

The rules which regulate the design, installation and testing of domestic wastewater projects are found in 30 TAC, Chapter 217, of the Texas Commission on Environmental Quality (TCEQ) rules titled, Design Criteria for Wastewater Systems.

Section 217.6(d), relating to case-by-case reviews, states in part that upon submittal of a summary transmittal letter, the executive director may approve of the project without reviewing a complete set of plans and specifications.

Under the authority of §217.6(e) a technical review of complete plans and specifications is not required. **However, the project proposed in the summary transmittal letter is approved for construction. Please note, that this conditional approval does not relieve the applicant of any responsibilities to obtain all other necessary permits or authorizations, such as wastewater treatment permit or other authorization as required by Chapter 26 of the Texas Water Code.** Below are provisions of the Chapter 217 regulations, which must be met as a condition of approval. These items are provided as a reminder. If you have already met these requirements, please disregard this additional notice.

1. You must keep certain materials on file for the life of the project and provide them to TCEQ upon request. These materials include an engineering report, test results, a summary transmittal letter, and the final version of the project plans and specifications. These materials shall be prepared and sealed by a Professional Engineer licensed in the State of Texas and must show substantial compliance with Chapter 217. All plans and specifications must conform to any waste discharge requirements authorized in a permit by the TCEQ. Certain specific items which shall be addressed in the engineering reportare discussed in §217.6(c). Additionally, the engineering report

must include all constants, graphs, equations, and calculations needed to show substantial compliance with Chapter 217. The items which shall be included in the summary transmittal letter are addressed in §217.6(c)(1)-(10).

2. Any deviations from Chapter 217 shall be disclosed in the summary transmittal letter and the technical justifications for those deviations shall be provided in the engineering report. Any deviations from Chapter 217 shall be based on the best professional judgement of the licensed professional engineer sealing the materials and the engineer's judgement that the design would not result in a threat to public health or the environment.

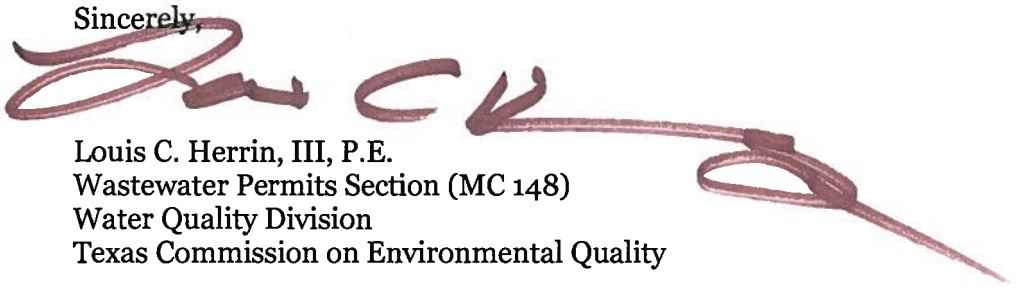
3. Any variance from a Chapter 217 requirement disclosed in your summary transmittal letter is approved. If in the future, additional variances from the Chapter 217 requirements are desired for the project, each variance must be requested in writing by the design engineer. Then, the TCEQ will consider granting a written approval to the variance from the rules for the specific project and the specific circumstances.

4. Within 60 days of the completion of construction, an appointed engineer shall notify both the Wastewater Permits Section of the TCEQ and the appropriate Region Office of the date of completion. The engineer shall also provide written certification that all construction, materials, and equipment were substantially in accordance with the approved project, the rules of the TCEQ, and any change orders filed with the TCEQ. All notifications, certifications, and change orders must include the signed and dated seal of a Professional Engineer licensed in the State of Texas.

This approval does not mean that future projects will be approved without a complete plans and specifications review. The TCEQ will provide a notification of intent to review whenever a project is to undergo a complete plans and specifications review. Please be reminded of §217.5 of the rules which states, "Approval given by the executive director...shall not relieve the sewerage system owner or the design engineer of any liabilities or responsibilities with respect to the proper design, construction, or authorized operation of the project in accordance with applicable commission rules."

If you have any questions or if we can be of any further assistance, please call me at (512) 239-4552.

Sincerely,



Louis C. Herrin, III, P.E.
Wastewater Permits Section (MC 148)
Water Quality Division
Texas Commission on Environmental Quality

LCH/mac

cc: TCEQ, Region 13 Office

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 23, 2012

MR HAL CRAIG BELL PE
TRC ENGINEERS INC
505 EAST HUNTLAND DR STE 250
AUSTIN TX 78752

Re: NEW BRAUNFELS UTILITIES
PROPOSED HWY 46 WWTP
PERMIT NO 10232-004
WWPR LOG NO 0412/036
CN600522957 RN106228422
GUADALUPE COUNTY

Dear Mr. Bell:

We have received the project summary transmittal letter dated April 16, 2012.

The rules which regulate the design, installation and testing of domestic wastewater projects are found in 30 TAC, Chapter 217, of the Texas Commission on Environmental Quality (TCEQ) rules titled, Design Criteria for Sewerage Systems.

Section 217.6(d), relating to case-by-case reviews, states in part that upon submittal of a summary transmittal letter, the executive director may approve of the project without reviewing a complete set of plans and specifications.

Under the authority of §217.6(e) a technical review of complete plans and specifications is not required. **However, the project proposed in the summary transmittal letter is approved for construction. Please note, that this conditional approval does not relieve the applicant of any responsibilities to obtain all other necessary permits or authorizations, such as wastewater treatment permit or other authorization as required by Chapter 26 of the Texas Water Code.** Below are provisions of the Chapter 217 regulations, which must be met as a condition of approval. These items are provided as a reminder. If you have already met these requirements, please disregard this additional notice.

1. You must keep certain materials on file for the life of the project and provide them to TCEQ upon request. These materials include an engineering report, test results, a summary transmittal letter, and the final version of the project plans and specifications. These materials shall be prepared and sealed by a Professional Engineer licensed in the State of Texas and must show substantial compliance with Chapter 217. All plans and specifications must conform to any waste discharge requirements authorized in a permit by the TCEQ. Certain specific items which shall be addressed in the engineering report

are discussed in §217.6(c). Additionally, the engineering report must include all constants, graphs, equations, and calculations needed to show substantial compliance with Chapter 217. The items which shall be included in the summary transmittal letter are addressed in §217.6(c)(1)-(10).

2. Any deviations from Chapter 217 shall be disclosed in the summary transmittal letter and the technical justifications for those deviations shall be provided in the engineering report. Any deviations from Chapter 217 shall be based on the best professional judgement of the licensed professional engineer sealing the materials and the engineer's judgement that the design would not result in a threat to public health or the environment.

3. Any variance from a Chapter 217 requirement disclosed in your summary transmittal letter is approved. If in the future, additional variances from the Chapter 217 requirements are desired for the project, each variance must be requested in writing by the design engineer. Then, the TCEQ will consider granting a written approval to the variance from the rules for the specific project and the specific circumstances.

4. Within 60 days of the completion of construction, an appointed engineer shall notify both the Wastewater Permits Section of the TCEQ and the appropriate Region Office of the date of completion. The engineer shall also provide written certification that all construction, materials, and equipment were substantially in accordance with the approved project, the rules of the TCEQ, and any change orders filed with the TCEQ. All notifications, certifications, and change orders must include the signed and dated seal of a Professional Engineer licensed in the State of Texas.

This approval does not mean that future projects will be approved without a complete plans and specifications review. The TCEQ will provide a notification of intent to review whenever a project is to undergo a complete plans and specifications review. Please be reminded of §217.5 of the rules which states, "Approval given by the executive director...shall not relieve the sewerage system owner or the design engineer of any liabilities or responsibilities with respect to the proper design, construction, or authorized operation of the project in accordance with applicable commission rules."

If you have any questions or if we can be of any further assistance, please call me at (512) 239-4552.

Sincerely,

Louis C. Herrin, III, P.E.
Wastewater Permits Section (MC 148)
Water Quality Division
Texas Commission on Environmental Quality

LCH/evm

cc: TCEQ, Region 13 Office

ATTACHMENT H

FINAL EFFLUENT ANALYSIS

NEW BRAUNFELS UTILITIES
SAM C. MCKENZIE, JR. WATER RECLAMATION FACILITY

May 2021

JONES | CARTER
Texas Board of Professional Engineers Registration No. F-439
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID:** Eff Grab #1 **Matrix:** Non-Potable Water **Date/Time Taken:** 3/8/2021 0935	**PCS Sample #:** 627972 **Page 1 of 1** **Date/Time Received:** 3/9/2021 10:12 **Report Date:** 4/7/2021 **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Cyanide, Amenable	+	See Attached				Pace Analytical Services - Dallas	

***Quality Statement:** All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.*

+ *Subcontract Work - NELAP Certified Lab*	These analytical results relate only to the sample tested. All data is reported on an 'As Is' basis unless designated as 'Dry Wt'. RL = Reporting Limits

Web Site: www.pcslab.net **Toll Free 800-880-4616** **1532 Universal City Blvd, Suite 100** **210-340-0343** **FAX # 210-658-7903**
eMail: chuck@pcslab.net **Universal City, TX 78148-3318**

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID: Eff Grab #1** **Matrix: Non-Potable Water** **Date/Time Taken: 3/8/2021 0935**	**PCS Sample #: 627973 Page 1 of 1** **Date/Time Received: 3/9/2021 10:12** **Report Date: 4/7/2021** **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Phenolics	+	See Attached				Pace Analytical Services - Dallas	

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

+ *Subcontract Work - NELAP Certified Lab*

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Universal City, TX 78148-3318
210-340-0343
FAX # 210-658-7903

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID:** Eff Grab #2 **Matrix:** Non-Potable Water **Date/Time Taken:** 3/8/2021 1445	**PCS Sample #:** 627974 **Page 1 of 1** **Date/Time Received:** 3/9/2021 10:12 **Report Date:** 4/7/2021 **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Cyanide, Amenable	+	See Attached				Pace Analytical Services - Dallas	

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FAX # 210-658-7903

POLLUTION CONTROL SERVICES

REVISED [1] Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID:** Eff Grab #2 **Matrix:** Non-Potable Water **Date/Time Taken:** 3/8/2021 1445	**PCS Sample #:** 627975 **Page 1 of 1** **Date/Time Received:** 3/9/2021 10:12 **Report Date:** 4/7/2021 **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Phenolics	+	See Attached				Pace Analytical Services - Dallas	

***Quality Statement:** All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.*

+ *Subcontract Work - NELAP Certified Lab*

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1 - See Sample LogIn Checklist Comments for Revision Information

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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID:** Eff Grab #3 **Matrix:** Non-Potable Water **Date/Time Taken:** 3/8/2021 2140	**PCS Sample #:** 627976 **Page 1 of 1** **Date/Time Received:** 3/9/2021 10:12 **Report Date:** 4/7/2021 **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Cyanide, Amenable	+	See Attached				Pace Analytical Services - Dallas	

***Quality Statement:** All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.*

+ *Subcontract Work - NELAP Certified Lab*

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210-340-0343
FAX # 210-658-7903

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID: Eff Grab #3** **Matrix: Non-Potable Water** **Date/Time Taken: 3/8/2021 2140**	**PCS Sample #: 627977 Page 1 of 1** **Date/Time Received: 3/9/2021 10:12** **Report Date: 4/7/2021** **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Phenolics	+	See Attached				Pace Analytical Services - Dallas	

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

+ *Subcontract Work - NELAP Certified Lab*

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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID:** Eff Grab #4 **Matrix:** Non-Potable Water **Date/Time Taken:** 3/9/2021 0617	**PCS Sample #:** 627978 **Page 1 of 1** **Date/Time Received:** 3/9/2021 10:12 **Report Date:** 4/7/2021 **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Cyanide, Amenable	+	See Attached				Pace Analytical Services - Dallas	

***Quality Statement:** All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.*

+ Subcontract Work - NELAP Certified Lab

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Universal City, TX 78148-3318
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POLLUTION CONTROL SERVICES

REVISED [1] Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID: Eff Grab #4** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0617**	**PCS Sample #: 627979 Page 1 of 1** **Date/Time Received: 3/9/2021 10:12** **Report Date: 4/7/2021** **Approved by:** Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Phenolics	+	See Attached				Pace Analytical Services - Dallas	

***Quality Statement:** All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.*

+ *Subcontract Work - NELAP Certified Lab*

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1 - See Sample LogIn Checklist Comments for Revision Information

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eMail: chuck@pcslab.net **Universal City, TX 78148-3318**

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID:** Eff Grab #1 **Matrix:** Non-Potable Water **Date/Time Taken:** 3/8/2021 0935	**PCS Sample #:** 627980 **Page 1 of 1** **Date/Time Received:** 3/9/2021 10:22 **Report Date:** 4/7/2021 **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Volatiles 624	See Attached				Pace Analytical Services - Dallas	

***Quality Statement:** All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.*

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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: IPP Sam McKenzie WWTP Annual** **Sample ID: Eff Comp** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627981 Page 1 of 2** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/15/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Arsenic/ICP MS	<0.0005	mg/L	0.0005	3/11/2021 14:20	EPA 200.8	DJL
Barium/ICP (Total)	0.017	mg/L	0.003	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Cadmium/ICP (Total)	<0.001	mg/L	0.001	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Chromium/ICP (Total)	<0.003	mg/L	0.003	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Copper/ICP (Total)	0.007	mg/L	0.002	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Lead/ICP MS	<0.0005	mg/L	0.0005	3/11/2021 14:20	EPA 200.8	DJL
Aluminum/ICP (Total)	0.160	mg/L	0.0025	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Beryllium/ICP (Total)	<0.0005	mg/L	0.0005	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Arsenic/ICP MS	2	20	70	98	96	130	96	85 - 115
Barium/ICP (Total)	1	20	75	96	97	125	105	85 - 115
Cadmium/ICP (Total)	<1	20	75	100	100	125	105	85 - 115
Chromium/ICP (Total)	<1	20	75	99	99	125	105	85 - 115
Copper/ICP (Total)	<1	20	75	100	100	125	105	85 - 115
Lead/ICP MS	<1	20	70	105	105	130	103	85 - 115
Aluminum/ICP (Total)	<1	20	75	99	99	125	105	85 - 115
Beryllium/ICP (Total)	<1	20	75	100	100	125	105	85 - 115

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

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FAX # 210-658-7903

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: IPP Sam McKenzie WWTP Annual** **Sample ID: Eff Comp** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627981 Page 2 of 2** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/15/2021**

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Nickel/ICP (Total)	<0.002	mg/L	0.002	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Zinc/ICP (Total)	0.047	mg/L	0.005	3/12/2021 14:58	EPA 200.7 / 6010 B	DJL
Antimony/ICP MS	<0.005	mg/L	0.005	3/11/2021 14:20	EPA 200.8	DJL
Thallium/ICP MS	<0.0005	mg/L	0.0005	3/11/2021 14:20	EPA 200.8	DJL
Selenium/ICP MS	<0.005	mg/L	0.005	3/11/2021 14:20	EPA 200.8	DJL
Silver/ICP MS	<0.0005	mg/L	0.0005	3/11/2021 14:20	EPA 200.8	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Nickel/ICP (Total)	1	20	75	96	95	125	105	85 - 115
Zinc/ICP (Total)	<1	20	75	94	94	125	105	85 - 115
Antimony/ICP MS	<1	20	70	97	97	130	99	85 - 115
Thallium/ICP MS	<1	20	70	107	107	130	105	85 - 115
Selenium/ICP MS	4	20	70	106	103	130	101	85 - 115
Silver/ICP MS	2	20	70	94	96	130	97	85 - 115

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

These analytical results relate only to the sample tested.
All data is reported on an 'As Is' basis unless designated as 'Dry Wt'.
RL = Reporting Limits

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FAX # 210-658-7903

POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: IPP Sam McKenzie WWTP Annu** **Sample ID: Eff Comp** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627982 Page 1 of 1** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/11/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Nitrate-N	16.7	mg/L	0.1	3/11/2021 15:23	EPA 300.0	JAS
Fluoride	0.26	mg/L	0.10	3/11/2021 15:23	EPA 300.0	JAS
Hexavalent Chrome	<0.003	mg/L	0.003	3/9/2021 13:45	SM 3500-Cr D	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Nitrate-N	1	20	70	99	98	130	97	85 - 115
Fluoride	3	10	93	99	96	109	95	85 - 115
Hexavalent Chrome	1	20	75	87	88	125	101	85 - 115

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name:** IPP Sam McKenzie WWTP Annual **Sample ID: Eff Comp** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627983 Page 1 of 1** **Date/Time Received: 3/9/2021 10:22** **Report Date: 4/7/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Pesticides 617	See Attached				ANA-LAB Corp	
604.1 Hexachlorophene	See Attached				Pace Analytical Services - Dallas	
Semi Volatiles 625	See Attached				Pace Analytical Services - Dallas	
Pesticides 608	See Attached				Pace Analytical Services - Dallas	
Pesticides 632	See Attached				Pace Analytical Services - Dallas	
Pesticide 1657	See Attached				ANA-LAB Corp	
Herbicides 615	See Attached				Pace Analytical Services - Dallas	

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

These analytical results relate only to the sample tested.
All data is reported on an 'As Is' basis unless designated as 'Dry Wt'.
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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: IPP Sam McKenzie WWTP Annual** **Sample ID: Eff Grab** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627984 Page 1 of 1** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/11/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Mercury/CVAFS	<0.000005	mg/L	0.000005	3/11/2021 08:56	EPA 245.7	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Mercury/CVAFS	1	20	70	93	94	130		

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

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All data is reported on an 'As Is' basis unless designated as 'Dry Wt'.
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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: Sam McKenzie TCEQ Major Permit** **Sample ID: Effluent Comp 03092124** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627985 Page 1 of 1** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/12/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Chloride	174	mg/L	1	3/10/2021 20:23	EPA 300.0	JAS
Sulfate	91	mg/L	1	3/10/2021 20:23	EPA 300.0	JAS
Alkalinity, Total	174	mg/L	10	3/12/2021 09:15	SM 2320 B	CRM

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Chloride	<1	10	95	96	97	103	95	85 - 115
Sulfate	<1	10	94	97	98	102	96	85 - 115
Alkalinity, Total	<1	10	95	96	96	107	100	85 - 115

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: Sam McKenzie TCEQ Major Permit** **Sample ID: Effluent 03092125** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0720**	**PCS Sample #: 627986 Page 1 of 1** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/10/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Oil and Grease (H.E.M.)	<5.0	mg/L	5	3/9/2021 12:00	EPA 1664 Rev	EMV

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Oil and Grease (H.E.M.)	<1	18	N/A	N/A	N/A	N/A	90	78 - 114

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

These analytical results relate only to the sample tested.
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POLLUTION CONTROL SERVICES

Report of Sample Analysis

Client Information	Sample Information	Laboratory Information
Trish Soechting **New Braunfels Utilities** **P.O. Box 310289** **New Braunfels, TX 78131**	**Project Name: Sam McKenzie TCEQ Major Permit** **Sample ID: Effluent Comp 03092143** **Matrix: Non-Potable Water** **Date/Time Taken: 3/9/2021 0600**	**PCS Sample #: 627987 Page 1 of 1** **Date/Time Received: 3/9/2021 10:22** **Report Date: 3/17/2021** **Approved by:** Chuck Wallgren, President

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Kjeldahl-N, Total	2	mg/L	1	3/16/2021 09:00	SM 4500-N B/E	CRM

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Kjeldahl-N, Total	4	10	91	105	101	110	106	85 - 115

Quality Statement: All supporting quality data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are abailable on request.

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POLLUTION CONTROL SERVICES

Chain of Custody Number: 627972

MULTIPLE SAMPLE ANALYSIS REQUEST AND CHAIN OF CUSTODY FORM

Stamp 1st sample and COC as same number

CUSTOMER INFORMATION

Name: New Braunfels Utilites

REPORT INFORMATION

Attention: Trish Soechting | Phone: (830) 608-8900 | Fax: (830) 626-1361

SAMPLE INFORMATION

Project Information:

IPP Sam McKenzie WWTP Annual

Report "Soils" ☐ As Is ☐ Dry Wt.

Collected By: L.King / J Rosales / ~~S Benbrook~~ SM

Client / Field Sample ID	Collected Date	Collected Time	Field Chlorine Residual mg/L	Composite or Grab	Matrix: DW-Drinking Water; NPW-Non-potable water; WW-Wastewater; LW-Liquid Waste	Container Type	Container Number	Preservative	Requested Analysis: CN-A335.1	Requested Analysis: Phenols	Instructions/Comments: PCS Sample Number
Eff Grab #1 03082108	Start: 3.8.21 End:	Start: 0935 End:		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☑ P ☐ G ☐ O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☑ NaOH ☑ ICE ☐	X		627972 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #1 03082112	Start: 3.8.21 End:	Start: 0935 End:		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐ P ☑ G ☐ O	1	☑ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☑ ICE ☐		X	627973 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #2 03082109	Start: 3.8.21 End:	Start: 1445 End:		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☑ P ☐ G ☐ O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☑ NaOH ☑ ICE ☐	X		627974 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #2 03082113	Start: 3.8.21 End:	Start: 1445 End:		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐ P ☑ G ☐ O	1	☑ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☑ ICE ☐		X	627975 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #3 03082110	Start: 3.8.21 End:	Start: 2140 End:		☐ C ☐ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☑ LW ☐ Other	☑ P ☐ G ☐ O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☑ NaOH ☑ ICE ☐	X		627976 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #3 03082114	Start: 3.8.21 End:	Start: 2140 End:		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐ P ☑ G ☐ O	1	☑ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☑ ICE ☐		X	627977 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #4 03092111	Start: 3.9.21 End:	Start: 0617 End:		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☑ P ☐ G ☐ O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☑ NaOH ☑ ICE ☐	X		627978 ☐S ☐B ☐N ☐HEM Other:
Eff Grab #4 03092115	Start: 3.9.21 End:	Start: 0617 End		☐ C ☑ G	☐ DW ☐ NPW ☑ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐ P ☑ G ☐ O	1	☑ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☑ ICE ☐		X	627979 ☐S ☐B ☐N ☐HEM Other:

Required Turnaround ☑ Routine (6-10 days) | EXPEDITE (See Surcharge Schedule) ☐ 8 Hrs ☐ 16 Hrs ☐ 24 Hrs ☐ 5 days ☐ Other _____ Rush Charges Authorized by: _____

Sample Archive/Disposal: ☐ Laboratory Standard ☐ Hold for client pick up

Container Type: P = Plastic, G = Glass, O = Other

Carrier ID:

Relinquished By:	J.Rosales / Lking	Date: 0930	Time: ~~1583~~ 21	Received By:	Trish Soechting	Date: 3.9.21	Time: 0930
Relinquished By:	Trish Soechting	Date: 3921	Time: 1022	Received By:		Date: 3/9/21	Time: 1022

Rev: Multiple Sample COC 20120201

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POLLUTION CONTROL SERVICES

Chain of Custody Number: 627980

MULTIPLE SAMPLE ANALYSIS REQUEST AND CHAIN OF CUSTODY FORM

Page 2/3

Stamp 1st sample and COC as same number

CUSTOMER INFORMATION
Name: New Braunfels Utilities

REPORT INFORMATION
Attention: Trish Soechting | Phone: (830) 608-8900 | Fax: (830) 626-1361

SAMPLE INFORMATION

Project Information:
IPP Sam McKenzie WWTP Annual
Report "Soils" ☐ As Is ☐ Dry Wt.

Collected By: J. Roesler / L King

Client / Field Sample ID	Collected Date	Collected Time	Field Chlorine Residual mg/L	Composite or Grab	Matrix	Container Type	Container Number	Preservative
Eff Grab #1 030821116	Start: 3.8.21 End:	Start: 0935 End:		☐ C ☒ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐P ☒G ☐O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☒ ICE ☐
Eff Grab #2 030821117	Start: 03.08.21 End:	Start: 1445 End:		☐ C ☒ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐P ☒G ☐O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☒ ICE ☐
Eff Grab #3 030821118	Start: 3.8.21 End:	Start: 2140 End:		☐ C ☒ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐P ☒G ☐O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☒ ICE ☐
Eff Grab #4 030921119	Start: 3.9.21 End:	Start: 0616 End:		☐ C ☒ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐P ☒G ☐O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☒ ICE ☐
Eff Comp 030921120	Start: 3.8.21 End: 3.9.21	Start: 0600 End: 0600		☒ C ☐ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☒P ☐G ☐O	1	☐ H_2SO_4 ☒ HNO_3 ☐ H_3PO_4 ☐ NaOH ☐ ICE ☐
Eff Comp 030921121	Start: 3.8.21 End: 3.9.21	Start: 0800 End: 0600		☒ C ☐ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☒P ☒G ☐O	1	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☒ ICE ☐
Eff Comp 030921122	Start: 3.8.21 End: 3.9.21	Start: 0800 End: 0600		☒ C ☐ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐P ☒G ☐O	7	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☒ ICE ☐
Eff Grab 030921123	Start: 3.8.21 End: 3.9.21	Start: 0800 End: 0600		☐ C ☒ G	☐ DW ☐ NPW ☒ WW ☐ Soil ☐ Sludge ☐ LW ☐ Other	☐P ☒G ☐O	3	☐ H_2SO_4 ☐ HNO_3 ☐ H_3PO_4 ☐ NaOH ☐ ICE ☒ DCL

Requested Analysis

VOC 624	Metals Table 3*	Hex Cr, F, NO3N	Pest 608, Pest 632	SVOC 625, Herb 615	Hex 604.1, Pest 617, Pest 1657	Hg Low Level		PCS Sample Number
X								627980
X								
X								
X								
	X							627981
		X						627982
			X	X	X			627983
						X		627984

Instructions/Comments:
*AgMS, Al_low, AsMS, Ba_low, Be_low, Cd_low, Cr_low, Cu_low, Ni_low, PbMS, SbMS, SeMS, TlMS, Zn_low
*Note: metals, Hg, VOCs/SVOCs, HexCr, NO3N,F, CN-A, and Phenols to be used for IPP and Permit Renewal

☐S ☐B ☐N ☐HEM Other:

Required Turnaround: ☒ Routine (6-10 days) | EXPEDITE (See Surcharge Schedule) ☐ 8 Hrs ☐ 16 Hrs ☐ 24 Hrs ☐ 5 days ☐ Other _____ Rush Charges Authorized by:

Sample Archive/Disposal: ☐ Laboratory Standard ☐ Hold for client pick up

Container Type: P = Plastic, G = Glass, O = Other

Carrier ID:

Relinquished By:	J. Roesler / Trish Soechting	Date:	3.9.21	Time:	0930	Received By:	Trish Soechting	Date:	3/9/21 Time: 0930
Relinquished By:	Trish Soechting	Date:	3.9.21	Time:	1022	Received By:		Date:	3/9/21 Time: 1022

Rev: Multiple Sample COC 20120201

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file path: Z:\COC\N\NBU\Inf_IPP_Annual_NK_Page2_Jan28_2016.pdf

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POLLUTION CONTROL SERVICES

Chain of Custody Number: 627985

MULTIPLE SAMPLE ANALYSIS REQUEST AND CHAIN OF COUSTODY FORM

Page 3/3

Stamp 1st sample and COC as same number

CUSTOMER INFORMATION	REPORT INFORMATION		
Name: New Braunfels Utilities	Attention: Trish Soechting	Phone: (830) 608-8900	Fax: (830) 626-1361

SAMPLE INFORMATION

Project Information: Sam McKenzie TCEQ Major Permit Renewal

Report "Soils" ☐ As Is ☐ Dry Wt.

Collected By: J. Roesler / L. King

Requested Analysis: [redacted], Talk, Cl, [redacted] | [redacted] | FOG (HEM) | TKN

Instructions/Comments: *Note: Metals, Hex Cr, F, NO3N, Pest 608, Pest 632, SVOC 625, Herb 615, Hex 604.1, Pest 617, Pest 1657, low level Hg results taken from IPP sampling

Client / Field Sample ID	Collected Date	Collected Time	Field Chlorine Residual mg/L	Composite or Grab	Matrix (DW-Drinking Water; NPW-Non-potable water; WW-Wastewater; LW-Liquid Waste)	Container Type	Number	Preservative	[redacted]	[redacted]	FOG (HEM)	TKN	PCS Sample Number
Effluent COMP 03092124	Start: 3-8-21 End: 3-9-21	Start: 0800 End: 0600		☒C ☐G	☐DW ☒NPW ☒WW ☐Soil ☐Sludge ☐LW ☐Other	☒P ☒G ☐O	11	☒H2SO4 ☒HNO3 ☐H3PO4 ☐NaOH ☒ICE ☐	X	X			627985 ☐S ☐B ☐N ☐HEM Other:
Effluent 03092125	Start: 3-9-21 End:	Start: 0720 End:		☐C ☒G	☐DW ☒NPW ☒WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☒G ☐O	1	☒H2SO4 ☐HNO3 ☐H3PO4 ☒NaOH ☒ICE ☐			X		627986 ☐S ☐B ☐N ☐HEM Other:
Effluent Comp 03092143	Start: 3-8-21 End: 3-9-21	Start: 0800 End: 0600		☒C ☐G	☐DW ☐NPW ☒WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☐G ☐O	1	☒H2SO4 ☐HNO3 ☐H3PO4 ☐NaOH ☒ICE ☐				X	627987 ☐S ☐B ☐N ☐HEM Other:
	Start: End:	Start: End:		☐C ☐G	☐DW ☐NPW ☐WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☐G ☐O		☐H2SO4 ☐HNO3 ☐H3PO4 ☐NaOH ☐ICE ☐					☐S ☐B ☐N ☐HEM Other:
	Start: End:	Start: End:		☐C ☐G	☐DW ☐NPW ☐WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☐G ☐O		☐H2SO4 ☐HNO3 ☐H3PO4 ☐NaOH ☐ICE ☐					☐S ☐B ☐N ☐HEM Other:
	Start: End:	Start: End:		☐C ☐G	☐DW ☐NPW ☐WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☐G ☐O		☐H2SO4 ☐HNO3 ☐H3PO4 ☐NaOH ☐ICE ☐					☐S ☐B ☐N ☐HEM Other:
	Start: End:	Start: End:		☐C ☐G	☐DW ☐NPW ☐WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☐G ☐O		☐H2SO4 ☐HNO3 ☐H3PO4 ☐NaOH ☐ICE ☐					☐S ☐B ☐N ☐HEM Other:
	Start: End:	Start: End:		☐C ☐G	☐DW ☐NPW ☐WW ☐Soil ☐Sludge ☐LW ☐Other	☐P ☐G ☐O		☐H2SO4 ☐HNO3 ☐H3PO4 ☐NaOH ☐ICE ☐					☐S ☐B ☐N ☐HEM Other:

Required Turnaround: ☐ Routine (6-10 days) | *EXPEDITE:* (See Surcharge Schedule) ☐ < 8 Hrs ☐ < 16 Hrs ☐ < 24 Hrs ☐ 5 days ☐ Other | *Rush Charges Authorized by:*

Sample Archive/Disposal: ☐ Laboratory Standard ☐ Hold for client pick up | Container Type: P = Plastic, G = Glass, O = Other | Carrier ID:

Relinquished By:	J. Roesler / L. King	Date:	3-9-21	Time:	0930	Received By:	Trish Soechting	Date: 3-9-21	Time: 0930
Relinquished By:	Trish Soechting	Date:	3-9-21	Time:	1022	Received By:	[signature]	Date: 3/9/21	Time: 1022

Rev. Multiple Sample COC

POLLUTION CONTROL SERVICES
1532 Universal City Blvd, Suite 100
Universal City, TX 78148-3318
Facsimilie 210.658.7903
210.340.0343

CHAIN OF CUSTODY & SUBCONTRACT TRACKING SHEET

TO: Pace Analytical Services, Inc.
400 W Bethany Rd, Ste 190
Allen, TX 75013

Relinquished by: Greg Felux
Date/Time: 03/09/2021 @ 1700
Received by: [signature] / Pace
Date/Time: 3/10/21 0857

PCS#	Date	Time	Analysis Requested	Pres	T. A. T.
627972	03/08/2021	0935	Cyanide, Amenable	NaOH	Std 001
627973	03/08/2021	0935	Phenolics	H2SO4	Std 002
627974	03/08/2021	1445	Cyanide, Amenable	NaOH	Std 003
627975	03/08/2021	1445	Phenolics	H2SO4	Std 004
627976	03/08/2021	2140	Cyanide, Amenable	NaOH	Std 005
627977	03/08/2021	2140	Phenolics	H2SO4	Std 006
627978	03/09/2021	0617	Cyanide, Amenable	NaOH	Std 007
627979	03/09/2021	0617	Phenolics	H2SO4	Std 008
627980	03/08/2021	0935	Volatiles 624	ICe	Std 009

Comments/Special Instructions: 2 - Project 1 of 2

Unless otherwise requested, send results and invoice to:

Chuck Wallgren
Pollution Control Services
1532 Universal City Blvd, Suite 100
Universal City, TX 78148-3318

WO#: 75151537
PM: MLM Due Date: 03/24/21
CLIENT: PCS

Authorized by: [signature] Date: 3/9/21

\\PCS-DC-2K16\aa\LIMS\Subout\627972.docx

POLLUTION CONTROL SERVICES
1532 Universal City Blvd, Suite 100
Universal City, TX 78148-3318
Facsimilie 210.658.7903
210.340.0343

CHAIN OF CUSTODY & SUBCONTRACT TRACKING SHEET

TO: Pace Analytical Services, Inc.
400 W Bethany Rd, Ste 190
Allen, TX 75013

Relinquished by: Greg Felux
Date/Time: 03/09/2021 @ 1700
Received by: Chuck Wallgren/Pace
Date/Time: 3/10/21 0851

PCS#	Date	Time	Analysis Requested	Pres	T. A. T.
627983	03/09/2021	0600	604.1 Hexachlorophene	ICE	std 010
627983	----------	----	Semi Volatiles 625		----
627983	----------	----	Herbicides 615		----
627983	----------	----	Pesticides 608		----
627983	----------	----	Pesticides 632		----

WO#: 75151537
PM: MLM Due Date: 03/24/21
CLIENT: PCS

Comments/Special Instructions: 2 Project 20/2

Unless otherwise requested, send results and invoice to:

Chuck Wallgren
Pollution Control Services
1532 Universal City Blvd, Suite 100
Universal City, TX 78148-3318

Authorized by: _____ Date: 3/9/21

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

April 04, 2021

Chuck Wallgren
Pollution Control Services
1532 Universal City Blvd. #100
Universal City, TX 78148

RE: Project: 627972
Pace Project No.: 75151537

Dear Chuck Wallgren:

Enclosed are the analytical results for sample(s) received by the laboratory on March 10, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:
- Pace Analytical Services - Dallas

Revised report on 04/04/2021 to correct phenol results replacing report on 03/23/2021.

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

Sincerely,

Melissa McCullough

Melissa McCullough
melissa.mccullough@pacelabs.com
(972)727-1123
Project Manager

Enclosures

cc: Michael Klang, Pollution Control Services
Office Manager

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

CERTIFICATIONS

Project: 627972
Pace Project No.: 75151537

Pace Analytical Services Dallas
Texas Certification T104704232-20-32
400 West Bethany Dr Suite 190, Allen, TX 75013
EPA# TX00074
Florida Certification #: E871118
Kansas Certification #: E-10388
Arkansas Certification #: 88-0647
Oklahoma Certification #: 8727
Louisiana Certification #: 30686
Iowa Certification #: 408

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: 627972
Pace Project No.: 75151537

Lab ID	Sample ID	Matrix	Date Collected	Date Received
75151537001	627972	Water	03/08/21 09:35	03/10/21 08:51
75151537002	627973	Water	03/08/21 09:35	03/10/21 08:51
75151537003	627974	Water	03/08/21 14:45	03/10/21 08:51
75151537004	627975	Water	03/08/21 14:45	03/10/21 08:51
75151537005	627976	Water	03/08/21 21:40	03/10/21 08:51
75151537006	627977	Water	03/08/21 21:40	03/10/21 08:51
75151537007	627978	Water	03/09/21 06:17	03/10/21 08:51
75151537008	627979	Water	03/09/21 06:17	03/10/21 08:51
75151537009	627980	Water	03/08/21 09:35	03/10/21 08:51
75151537010	627983	Water	03/09/21 06:00	03/10/21 08:51

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SAMPLE ANALYTE COUNT

Project: 627972
Pace Project No.: 75151537

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
75151537001	**627972**	SM 4500-CN-E	LNM1	1	PASI-D
		SM 4500-CN-G	LNM1	1	PASI-D
75151537002	**627973**	EPA 420.1	LNM1	1	PASI-D
75151537003	**627974**	SM 4500-CN-E	LNM1	1	PASI-D
		SM 4500-CN-G	LNM1	1	PASI-D
75151537004	**627975**	EPA 420.1	LNM1	1	PASI-D
75151537005	**627976**	SM 4500-CN-E	LNM1	1	PASI-D
		SM 4500-CN-G	LNM1	1	PASI-D
75151537006	**627977**	EPA 420.1	LNM1	1	PASI-D
75151537007	**627978**	SM 4500-CN-E	LNM1	1	PASI-D
		SM 4500-CN-G	LNM1	1	PASI-D
75151537008	**627979**	EPA 420.1	LNM1	1	PASI-D
75151537009	**627980**	EPA 624.1	ZST	37	PASI-D
75151537010	**627983**	EPA 608.3	UPL	9	PASI-D
		EPA 608.3	UPL	20	PASI-D
		EPA 615	UPL	3	PASI-D
		EPA 604.1	XLY	2	PASI-D
		EPA 632	XLY	3	PASI-D
		EPA 625.1	XLY	69	PASI-D

PASI-D = Pace Analytical Services - Dallas

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627972 **Lab ID: 75151537001** Collected: 03/08/21 09:35 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500CNE Cyanide, Total	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E Pace Analytical Services - Dallas								
Cyanide	ND	ug/L	10.0	4.3	1	03/12/21 15:00	03/12/21 16:13	57-12-5	
4500CNG Cyanide, Amenable	Analytical Method: SM 4500-CN-G Preparation Method: SM 4500-CN-C Pace Analytical Services - Dallas								
Amenable Cyanide	ND	ug/L	10.0	5.0	1	03/12/21 12:00	03/12/21 17:00	57-12-5	

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627973 **Lab ID: 75151537002** Collected: 03/08/21 09:35 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
420.1 Phenolics Chloroform Ext	Analytical Method: EPA 420.1 Preparation Method: EPA 420.1 Pace Analytical Services - Dallas								
Phenolics, Total Recoverable	ND	ug/L	10.0	8.0	1	03/16/21 16:11	03/16/21 16:45		

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627974 **Lab ID: 75151537003** Collected: 03/08/21 14:45 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500CNE Cyanide, Total	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E Pace Analytical Services - Dallas								
Cyanide	ND	ug/L	10.0	4.3	1	03/12/21 15:00	03/12/21 16:18	57-12-5	
4500CNG Cyanide, Amenable	Analytical Method: SM 4500-CN-G Preparation Method: SM 4500-CN-C Pace Analytical Services - Dallas								
Amenable Cyanide	ND	ug/L	10.0	5.0	1	03/12/21 12:00	03/12/21 17:00	57-12-5	

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627975 **Lab ID: 75151537004** Collected: 03/08/21 14:45 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
420.1 Phenolics Chloroform Ext	Analytical Method: EPA 420.1 Preparation Method: EPA 420.1 Pace Analytical Services - Dallas								
Phenolics, Total Recoverable	**13.7**	ug/L	10.0	8.0	1	04/02/21 13:12	04/02/21 16:34		

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627976 **Lab ID: 75151537005** Collected: 03/08/21 21:40 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500CNE Cyanide, Total	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E Pace Analytical Services - Dallas								
Cyanide	ND	ug/L	10.0	4.3	1	03/12/21 15:00	03/12/21 16:24	57-12-5	
4500CNG Cyanide, Amenable	Analytical Method: SM 4500-CN-G Preparation Method: SM 4500-CN-C Pace Analytical Services - Dallas								
Amenable Cyanide	ND	ug/L	10.0	5.0	1	03/12/21 12:00	03/12/21 17:00	57-12-5	

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627977 **Lab ID: 75151537006** Collected: 03/08/21 21:40 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
420.1 Phenolics Chloroform Ext	Analytical Method: EPA 420.1 Preparation Method: EPA 420.1 Pace Analytical Services - Dallas								
Phenolics, Total Recoverable	ND	ug/L	10.0	8.0	1	03/16/21 16:11	03/16/21 16:46		

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627978 **Lab ID: 75151537007** Collected: 03/09/21 06:17 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500CNE Cyanide, Total	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E Pace Analytical Services - Dallas								
Cyanide	ND	ug/L	10.0	4.3	1	03/12/21 15:00	03/12/21 16:34	57-12-5	
4500CNG Cyanide, Amenable	Analytical Method: SM 4500-CN-G Preparation Method: SM 4500-CN-C Pace Analytical Services - Dallas								
Amenable Cyanide	ND	ug/L	10.0	5.0	1	03/12/21 12:00	03/12/21 17:00	57-12-5	

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627979 **Lab ID: 75151537008** Collected: 03/09/21 06:17 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
420.1 Phenolics Chloroform Ext	Analytical Method: EPA 420.1 Preparation Method: EPA 420.1 Pace Analytical Services - Dallas								
Phenolics, Total Recoverable	**17.8**	ug/L	10.0	8.0	1	04/02/21 13:12	04/02/21 16:34		

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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627980 **Lab ID: 75151537009** Collected: 03/08/21 09:35 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
624.1 Volatile Organics 7 day	Analytical Method: EPA 624.1 Pace Analytical Services - Dallas								
Acrolein	ND	ug/L	50.0	5.4	1		03/10/21 17:10	107-02-8	
Acrylonitrile	ND	ug/L	50.0	7.1	1		03/10/21 17:10	107-13-1	
Benzene	ND	ug/L	10.0	2.1	1		03/10/21 17:10	71-43-2	
Bromoform	ND	ug/L	10.0	0.96	1		03/10/21 17:10	75-25-2	M1
Carbon tetrachloride	ND	ug/L	2.0	1.6	1		03/10/21 17:10	56-23-5	L1,M0
Chlorobenzene	ND	ug/L	10.0	2.8	1		03/10/21 17:10	108-90-7	
Dibromochloromethane	ND	ug/L	10.0	3.3	1		03/10/21 17:10	124-48-1	
Chloroethane	ND	ug/L	50.0	3.0	1		03/10/21 17:10	75-00-3	
2-Chloroethylvinyl ether	ND	ug/L	10.0	6.5	1		03/10/21 17:10	110-75-8	
Chloroform	ND	ug/L	10.0	2.1	1		03/10/21 17:10	67-66-3	
Bromodichloromethane	ND	ug/L	10.0	1.8	1		03/10/21 17:10	75-27-4	
1,1-Dichloroethane	ND	ug/L	5.0	2.9	1		03/10/21 17:10	75-34-3	
1,4-Dichlorobenzene	ND	ug/L	10.0	1.7	1		03/10/21 17:10	106-46-7	
1,3-Dichlorobenzene	ND	ug/L	10.0	4.2	1		03/10/21 17:10	541-73-1	
1,2-Dichlorobenzene	ND	ug/L	10.0	1.7	1		03/10/21 17:10	95-50-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	0.55	1		03/10/21 17:10	106-93-4	
1,2-Dichloroethane	ND	ug/L	10.0	2.0	1		03/10/21 17:10	107-06-2	
1,1-Dichloroethene	ND	ug/L	10.0	3.7	1		03/10/21 17:10	75-35-4	
1,2-Dichloropropane	ND	ug/L	10.0	0.80	1		03/10/21 17:10	78-87-5	
Total 1,3-Dichloropropene	ND	ug/L	10.0	3.7	1		03/10/21 17:10		N3
Ethylbenzene	ND	ug/L	10.0	0.40	1		03/10/21 17:10	100-41-4	
Bromomethane	ND	ug/L	50.0	3.5	1		03/10/21 17:10	74-83-9	
Chloromethane	ND	ug/L	50.0	3.6	1		03/10/21 17:10	74-87-3	
2-Butanone (MEK)	ND	ug/L	50.0	8.2	1		03/10/21 17:10	78-93-3	
Methylene Chloride	ND	ug/L	20.0	11.8	1		03/10/21 17:10	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	0.60	1		03/10/21 17:10	79-34-5	
Tetrachloroethene	ND	ug/L	10.0	4.9	1		03/10/21 17:10	127-18-4	
Toluene	ND	ug/L	10.0	2.2	1		03/10/21 17:10	108-88-3	
trans-1,2-Dichloroethene	ND	ug/L	10.0	5.0	1		03/10/21 17:10	156-60-5	
1,1,1-Trichloroethane	ND	ug/L	10.0	3.4	1		03/10/21 17:10	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	1.4	1		03/10/21 17:10	79-00-5	
Trichloroethene	ND	ug/L	10.0	2.6	1		03/10/21 17:10	79-01-6	
Vinyl chloride	ND	ug/L	10.0	4.7	1		03/10/21 17:10	75-01-4	
Total Trihalomethanes (Calc.)	ND	ug/L	10.0	3.4	1		03/10/21 17:10		
Surrogates									
4-Bromofluorobenzene (S)	96	%.	70-130		1		03/10/21 17:10	460-00-4	
Toluene-d8 (S)	96	%.	70-130		1		03/10/21 17:10	2037-26-5	
1,2-Dichloroethane-d4 (S)	97	%.	70-130		1		03/10/21 17:10	17060-07-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627983 **Lab ID: 75151537010** Collected: 03/09/21 06:00 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
608.3 GCS PCBs SF	Analytical Method: EPA 608.3 Preparation Method: EPA 608.3 Pace Analytical Services - Dallas								
PCB-1016 (Aroclor 1016)	ND	ug/L	0.20	0.18	1	03/15/21 15:07	03/17/21 00:44	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.20	0.19	1	03/15/21 15:07	03/17/21 00:44	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.20	0.20	1	03/15/21 15:07	03/17/21 00:44	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.20	0.14	1	03/15/21 15:07	03/17/21 00:44	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.20	0.048	1	03/15/21 15:07	03/17/21 00:44	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.20	0.17	1	03/15/21 15:07	03/17/21 00:44	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.20	0.14	1	03/15/21 15:07	03/17/21 00:44	11096-82-5	
Surrogates									
Tetrachloro-m-xylene (S)	77	%.	40-140		1	03/15/21 15:07	03/17/21 00:44	877-09-8	
Decachlorobiphenyl (S)	112	%.	40-140		1	03/15/21 15:07	03/17/21 00:44	2051-24-3	
608.3 GCS Pesticides SF	Analytical Method: EPA 608.3 Preparation Method: EPA 608.3 Pace Analytical Services - Dallas								
Aldrin	ND	ug/L	0.0099	0.0069	1	03/15/21 15:07	03/16/21 23:09	309-00-2	
alpha-BHC	ND	ug/L	0.050	0.0059	1	03/15/21 15:07	03/16/21 23:09	319-84-6	
beta-BHC	ND	ug/L	0.050	0.011	1	03/15/21 15:07	03/16/21 23:09	319-85-7	
delta-BHC	ND	ug/L	0.050	0.0040	1	03/15/21 15:07	03/16/21 23:09	319-86-8	
gamma-BHC (Lindane)	ND	ug/L	0.050	0.0050	1	03/15/21 15:07	03/16/21 23:09	58-89-9	
Dieldrin	ND	ug/L	0.020	0.0040	1	03/15/21 15:07	03/16/21 23:09	60-57-1	
Endosulfan I	ND	ug/L	0.0099	0.0040	1	03/15/21 15:07	03/16/21 23:09	959-98-8	
Endosulfan II	ND	ug/L	0.020	0.0040	1	03/15/21 15:07	03/16/21 23:09	33213-65-9	
Endrin	ND	ug/L	0.020	0.0040	1	03/15/21 15:07	03/16/21 23:09	72-20-8	
Heptachlor	ND	ug/L	0.0099	0.0059	1	03/15/21 15:07	03/16/21 23:09	76-44-8	
Heptachlor epoxide	ND	ug/L	0.0099	0.0040	1	03/15/21 15:07	03/16/21 23:09	1024-57-3	
4,4'-DDE	ND	ug/L	0.099	0.0040	1	03/15/21 15:07	03/16/21 23:09	72-55-9	CH
4,4'-DDT	ND	ug/L	0.020	0.0050	1	03/15/21 15:07	03/16/21 23:09	50-29-3	
4,4'-DDD	ND	ug/L	0.099	0.0059	1	03/15/21 15:07	03/16/21 23:09	72-54-8	CH
Chlordane (Technical)	ND	ug/L	0.20	0.041	1	03/15/21 15:07	03/16/21 23:09	57-74-9	
Endosulfan sulfate	ND	ug/L	0.099	0.0040	1	03/15/21 15:07	03/16/21 23:09	1031-07-8	
Toxaphene	ND	ug/L	0.30	0.20	1	03/15/21 15:07	03/16/21 23:09	8001-35-2	
Endrin aldehyde	ND	ug/L	0.099	0.012	1	03/15/21 15:07	03/16/21 23:09	7421-93-4	
Surrogates									
Tetrachloro-m-xylene (S)	75	%.	40-140		1	03/15/21 15:07	03/16/21 23:09	877-09-8	
Decachlorobiphenyl (S)	90	%.	40-140		1	03/15/21 15:07	03/16/21 23:09	2051-24-3	
615 Chlorinated Herbicides	Analytical Method: EPA 615 Preparation Method: EPA 615 Pace Analytical Services - Dallas								
2,4-D	ND	ug/L	0.70	0.067	1	03/16/21 16:30	03/22/21 17:48	94-75-7	
2,4,5-TP (Silvex)	ND	ug/L	0.30	0.069	1	03/16/21 16:30	03/22/21 17:48	93-72-1	
Surrogates									
2,4-DCAA (S)	82	%.	44-137		1	03/16/21 16:30	03/22/21 17:48	19719-28-9	
604.1 HPLC Hexachlorophene	Analytical Method: EPA 604.1 Preparation Method: EPA 604.1 Pace Analytical Services - Dallas								
Hexachlorophene	ND	ug/L	9.8	3.1	1	03/16/21 16:21	03/17/21 19:51	70-30-4	N3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627983 **Lab ID: 75151537010** Collected: 03/09/21 06:00 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
604.1 HPLC Hexachlorophene	Analytical Method: EPA 604.1 Preparation Method: EPA 604.1 Pace Analytical Services - Dallas								
Surrogates									
Nitrobenzene (S)	42	%.	25-108		1	03/16/21 16:21	03/17/21 19:51		
632 HPLC Carbamates	Analytical Method: EPA 632 Preparation Method: EPA 632 Pace Analytical Services - Dallas								
Carbaryl	ND	ug/L	3.9	0.60	1	03/16/21 16:21	03/17/21 19:51	63-25-2	
Diuron	ND	ug/L	0.078	0.020	1	03/16/21 16:21	03/17/21 19:51	330-54-1	N3
Surrogates									
Nitrobenzene (S)	42	%.	18-113		1	03/16/21 16:21	03/17/21 19:51		
625.1 MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Dallas								
Nonylphenol	ND	ug/L	333	2.7	1	03/15/21 09:51	03/15/21 19:30	25154-52-3	N3
2-Chlorophenol	ND	ug/L	10.0	0.77	1	03/15/21 09:51	03/15/21 19:30	95-57-8	
2,4-Dichlorophenol	ND	ug/L	10.0	0.77	1	03/15/21 09:51	03/15/21 19:30	120-83-2	
Cresols (Total)	ND	ug/L	10.0	1.4	1	03/15/21 09:51	03/15/21 19:30	1319-77-3	N3
2,4-Dimethylphenol	ND	ug/L	10.0	1.3	1	03/15/21 09:51	03/15/21 19:30	105-67-9	
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0	1.4	1	03/15/21 09:51	03/15/21 19:30	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	1.1	1	03/15/21 09:51	03/15/21 19:30	51-28-5	
2-Nitrophenol	ND	ug/L	20.0	1.6	1	03/15/21 09:51	03/15/21 19:30	88-75-5	
4-Nitrophenol	ND	ug/L	50.0	1.6	1	03/15/21 09:51	03/15/21 19:30	100-02-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	0.72	1	03/15/21 09:51	03/15/21 19:30		N3
4-Chloro-3-methylphenol	ND	ug/L	10.0	0.82	1	03/15/21 09:51	03/15/21 19:30	59-50-7	
Pentachlorophenol	ND	ug/L	4.7	2.0	1	03/15/21 09:51	03/15/21 19:30	87-86-5	
Phenol	ND	ug/L	10.0	0.91	1	03/15/21 09:51	03/15/21 19:30	108-95-2	
2,4,5-Trichlorophenol	ND	ug/L	50.0	1.8	1	03/15/21 09:51	03/15/21 19:30	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1.7	1	03/15/21 09:51	03/15/21 19:30	88-06-2	
Acenaphthene	ND	ug/L	10.0	1.3	1	03/15/21 09:51	03/15/21 19:30	83-32-9	
Acenaphthylene	ND	ug/L	10.0	1.3	1	03/15/21 09:51	03/15/21 19:30	208-96-8	
Anthracene	ND	ug/L	10.0	1.0	1	03/15/21 09:51	03/15/21 19:30	120-12-7	
Benzidine	ND	ug/L	50.0	2.9	1	03/15/21 09:51	03/15/21 19:30	92-87-5	
Benzo(a)anthracene	ND	ug/L	5.0	0.88	1	03/15/21 09:51	03/15/21 19:30	56-55-3	
Benzo(a)pyrene	ND	ug/L	5.0	0.89	1	03/15/21 09:51	03/15/21 19:30	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	0.96	1	03/15/21 09:51	03/15/21 19:30	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	20.0	0.95	1	03/15/21 09:51	03/15/21 19:30	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	2.4	0.88	1	03/15/21 09:51	03/15/21 19:30	207-08-9	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	0.94	1	03/15/21 09:51	03/15/21 19:30	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	0.95	1	03/15/21 09:51	03/15/21 19:30	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	2.4	1.1	1	03/15/21 09:51	03/15/21 19:30	108-60-1	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.0	3.0	1	03/15/21 09:51	03/15/21 19:30	117-81-7	
4-Bromophenylphenyl ether	ND	ug/L	10.0	0.98	1	03/15/21 09:51	03/15/21 19:30	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	1.3	1	03/15/21 09:51	03/15/21 19:30	85-68-7	
2-Chloronaphthalene	ND	ug/L	10.0	1.4	1	03/15/21 09:51	03/15/21 19:30	91-58-7	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	1.3	1	03/15/21 09:51	03/15/21 19:30	7005-72-3	
Chrysene	ND	ug/L	5.0	0.96	1	03/15/21 09:51	03/15/21 19:30	218-01-9	

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 627972
Pace Project No.: 75151537

Sample: 627983 **Lab ID: 75151537010** Collected: 03/09/21 06:00 Received: 03/10/21 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
625.1 MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Dallas								
Dibenz(a,h)anthracene	ND	ug/L	5.0	1.0	1	03/15/21 09:51	03/15/21 19:30	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	5.0	2.5	1	03/15/21 09:51	03/15/21 19:30	91-94-1	
Diethylphthalate	ND	ug/L	10.0	0.86	1	03/15/21 09:51	03/15/21 19:30	84-66-2	
Dimethylphthalate	ND	ug/L	10.0	0.83	1	03/15/21 09:51	03/15/21 19:30	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	1.1	1	03/15/21 09:51	03/15/21 19:30	84-74-2	
2,4-Dinitrotoluene	ND	ug/L	10.0	2.5	1	03/15/21 09:51	03/15/21 19:30	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	1.7	1	03/15/21 09:51	03/15/21 19:30	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	1.6	1	03/15/21 09:51	03/15/21 19:30	117-84-0	
1,2-Diphenylhydrazine	ND	ug/L	20.0	1.2	1	03/15/21 09:51	03/15/21 19:30	122-66-7	
Fluoranthene	ND	ug/L	10.0	1.1	1	03/15/21 09:51	03/15/21 19:30	206-44-0	
Fluorene	ND	ug/L	10.0	1.2	1	03/15/21 09:51	03/15/21 19:30	86-73-7	
Hexachlorobenzene	ND	ug/L	5.0	0.92	1	03/15/21 09:51	03/15/21 19:30	118-74-1	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	1.7	1	03/15/21 09:51	03/15/21 19:30	87-68-3	
Hexachlorocyclopentadiene	ND	ug/L	10.0	1.1	1	03/15/21 09:51	03/15/21 19:30	77-47-4	
Hexachloroethane	ND	ug/L	20.0	1.8	1	03/15/21 09:51	03/15/21 19:30	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	5.0	0.93	1	03/15/21 09:51	03/15/21 19:30	193-39-5	
Isophorone	ND	ug/L	10.0	1.7	1	03/15/21 09:51	03/15/21 19:30	78-59-1	
Naphthalene	ND	ug/L	10.0	1.9	1	03/15/21 09:51	03/15/21 19:30	91-20-3	
Nitrobenzene	ND	ug/L	10.0	1.2	1	03/15/21 09:51	03/15/21 19:30	98-95-3	
N-Nitrosodiethylamine	ND	ug/L	20.0	0.87	1	03/15/21 09:51	03/15/21 19:30	55-18-5	
N-Nitrosodimethylamine	ND	ug/L	50.0	0.61	1	03/15/21 09:51	03/15/21 19:30	62-75-9	
N-Nitroso-di-n-butylamine	ND	ug/L	20.0	0.69	1	03/15/21 09:51	03/15/21 19:30	924-16-3	
N-Nitroso-di-n-propylamine	ND	ug/L	20.0	1.0	1	03/15/21 09:51	03/15/21 19:30	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	20.0	0.78	1	03/15/21 09:51	03/15/21 19:30	86-30-6	
Phenanthrene	ND	ug/L	10.0	1.1	1	03/15/21 09:51	03/15/21 19:30	85-01-8	
Pentachlorobenzene	ND	ug/L	20.0	1.3	1	03/15/21 09:51	03/15/21 19:30	608-93-5	
Pyrene	ND	ug/L	10.0	1.1	1	03/15/21 09:51	03/15/21 19:30	129-00-0	
Pyridine	ND	ug/L	20.0	1.1	1	03/15/21 09:51	03/15/21 19:30	110-86-1	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	1.5	1	03/15/21 09:51	03/15/21 19:30	120-82-1	
1,2,4,5-Tetrachlorobenzene	ND	ug/L	20.0	1.2	1	03/15/21 09:51	03/15/21 19:30	95-94-3	
Surrogates									
Nitrobenzene-d5 (S)	52	%.	15-106		1	03/15/21 09:51	03/15/21 19:30	4165-60-0	
2-Fluorobiphenyl (S)	57	%.	26-102		1	03/15/21 09:51	03/15/21 19:30	321-60-8	
p-Terphenyl-d14 (S)	70	%.	10-120		1	03/15/21 09:51	03/15/21 19:30	1718-51-0	
Phenol-d6 (S)	18	%.	10-54		1	03/15/21 09:51	03/15/21 19:30	13127-88-3	
2-Fluorophenol (S)	28	%.	10-66		1	03/15/21 09:51	03/15/21 19:30	367-12-4	
2,4,6-Tribromophenol (S)	83	%.	29-132		1	03/15/21 09:51	03/15/21 19:30	118-79-6	

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162546
QC Batch Method: EPA 624.1
Analysis Method: EPA 624.1
Analysis Description: 624.1 MSV
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537009

METHOD BLANK: 738043 Matrix: Water
Associated Lab Samples: 75151537009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	10.0	3.4	03/10/21 16:52	
1,1,2,2-Tetrachloroethane	ug/L	ND	10.0	0.60	03/10/21 16:52	
1,1,2-Trichloroethane	ug/L	ND	10.0	1.4	03/10/21 16:52	
1,1-Dichloroethane	ug/L	ND	5.0	2.9	03/10/21 16:52	
1,1-Dichloroethene	ug/L	ND	10.0	3.7	03/10/21 16:52	
1,2-Dibromoethane (EDB)	ug/L	ND	10.0	0.55	03/10/21 16:52	
1,2-Dichlorobenzene	ug/L	ND	10.0	1.7	03/10/21 16:52	
1,2-Dichloroethane	ug/L	ND	10.0	2.0	03/10/21 16:52	
1,2-Dichloropropane	ug/L	ND	10.0	0.80	03/10/21 16:52	
1,3-Dichlorobenzene	ug/L	ND	10.0	4.2	03/10/21 16:52	
1,4-Dichlorobenzene	ug/L	ND	10.0	1.7	03/10/21 16:52	
2-Butanone (MEK)	ug/L	ND	50.0	8.2	03/10/21 16:52	
2-Chloroethylvinyl ether	ug/L	ND	10.0	6.5	03/10/21 16:52	
Acrolein	ug/L	ND	50.0	5.4	03/10/21 16:52	
Acrylonitrile	ug/L	ND	50.0	7.1	03/10/21 16:52	
Benzene	ug/L	ND	10.0	2.1	03/10/21 16:52	
Bromodichloromethane	ug/L	ND	10.0	1.8	03/10/21 16:52	
Bromoform	ug/L	ND	10.0	0.96	03/10/21 16:52	
Bromomethane	ug/L	ND	50.0	3.5	03/10/21 16:52	
Carbon tetrachloride	ug/L	ND	2.0	1.6	03/10/21 16:52	
Chlorobenzene	ug/L	ND	10.0	2.8	03/10/21 16:52	
Chloroethane	ug/L	ND	50.0	3.0	03/10/21 16:52	
Chloroform	ug/L	ND	10.0	2.1	03/10/21 16:52	
Chloromethane	ug/L	ND	50.0	3.6	03/10/21 16:52	
Dibromochloromethane	ug/L	ND	10.0	3.3	03/10/21 16:52	
Ethylbenzene	ug/L	ND	10.0	0.40	03/10/21 16:52	
Methylene Chloride	ug/L	ND	20.0	11.8	03/10/21 16:52	
Tetrachloroethene	ug/L	ND	10.0	4.9	03/10/21 16:52	
Toluene	ug/L	ND	10.0	2.2	03/10/21 16:52	
Total 1,3-Dichloropropene	ug/L	ND	10.0	3.7	03/10/21 16:52	N3
Total Trihalomethanes (Calc.)	ug/L	ND	10.0	3.4	03/10/21 16:52	
trans-1,2-Dichloroethene	ug/L	ND	10.0	5.0	03/10/21 16:52	
Trichloroethene	ug/L	ND	10.0	2.6	03/10/21 16:52	
Vinyl chloride	ug/L	ND	10.0	4.7	03/10/21 16:52	
1,2-Dichloroethane-d4 (S)	%.	100	70-130		03/10/21 16:52	
4-Bromofluorobenzene (S)	%.	100	70-130		03/10/21 16:52	
Toluene-d8 (S)	%.	97	70-130		03/10/21 16:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

LABORATORY CONTROL SAMPLE: 738045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	19.9	19.2	97	70-130	
1,1,2,2-Tetrachloroethane	ug/L	20.1	18.9	94	60-140	
1,1,2-Trichloroethane	ug/L	19.9	18.4	92	70-130	
1,1-Dichloroethane	ug/L	20	16.3	82	70-130	
1,1-Dichloroethene	ug/L	19.8	12.5	63	50-150	
1,2-Dibromoethane (EDB)	ug/L	20	18.4	92	70-130	
1,2-Dichlorobenzene	ug/L	20	19.6	98	65-135	
1,2-Dichloroethane	ug/L	19.9	17.0	85	70-130	
1,2-Dichloropropane	ug/L	19.9	19.6	99	35-165	
1,3-Dichlorobenzene	ug/L	19.9	20.7	104	70-130	
1,4-Dichlorobenzene	ug/L	20	18.8	94	65-135	
2-Butanone (MEK)	ug/L	101	100	99	70-130	
2-Chloroethylvinyl ether	ug/L	20.2	17.1	85	1-225	
Acrolein	ug/L	200	181	90	64-139	
Acrylonitrile	ug/L	199	177	89	67-136	
Benzene	ug/L	20	18.2	91	65-135	
Bromodichloromethane	ug/L	19.9	20.1	101	65-135	
Bromoform	ug/L	19.8	20.0	101	70-130	
Bromomethane	ug/L	20	29J	145	15-185	
Carbon tetrachloride	ug/L	19.8	26.2	132	70-130	L1
Chlorobenzene	ug/L	19.8	19.5	98	65-135	
Chloroethane	ug/L	20	24.5J	122	40-160	
Chloroform	ug/L	19.8	18.1	91	70-135	
Chloromethane	ug/L	20	15.8J	79	1-205	
Dibromochloromethane	ug/L	19.8	21.2	107	70-135	
Ethylbenzene	ug/L	20.1	19.2	96	60-140	
Methylene Chloride	ug/L	20.4	16.6J	82	60-140	
Tetrachloroethene	ug/L	19.9	19.4	98	70-130	
Toluene	ug/L	20	18.9	95	70-130	
Total 1,3-Dichloropropene	ug/L	40.1	35.4	88	70-130	N3
Total Trihalomethanes (Calc.)	ug/L		79.4			
trans-1,2-Dichloroethene	ug/L	20	15.0	75	70-130	
Trichloroethene	ug/L	20	20.1	101	65-135	
Vinyl chloride	ug/L	20	21.5	107	5-195	
1,2-Dichloroethane-d4 (S)	%.			103	70-130	
4-Bromofluorobenzene (S)	%.			102	70-130	
Toluene-d8 (S)	%.			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 738046 738047

Parameter	Units	75151537009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	ND	19.9	19.9	12.7	12.5	64	63	52-162	2	36	
1,1,2,2-Tetrachloroethane	ug/L	ND	20.1	20.1	15.0	16.1	75	80	46-157	7	61	
1,1,2-Trichloroethane	ug/L	ND	19.9	19.9	15.7	14.9	79	75	52-150	5	45	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 738046 738047

Parameter	Units	75151537009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethane	ug/L	ND	20	20	13.4	12.7	67	63	59-155	5	40	
1,1-Dichloroethene	ug/L	ND	19.8	19.8	11.4	11.2	58	57	1-234	2	32	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	14.6	15.5	73	77	70-130	6	20	
1,2-Dichlorobenzene	ug/L	ND	20	20	15.1	15.5	76	78	18-190	3	57	
1,2-Dichloroethane	ug/L	ND	19.9	19.9	13.9	14.1	70	71	49-155	2	49	
1,2-Dichloropropane	ug/L	ND	19.9	19.9	14.5	14.7	73	74	1-210	1	55	
1,3-Dichlorobenzene	ug/L	ND	19.9	19.9	15.1	15.2	76	76	59-156	0	43	
1,4-Dichlorobenzene	ug/L	ND	20	20	15.0	14.9	75	75	18-190	0	57	
2-Butanone (MEK)	ug/L	ND	101	101	118	116	117	115	70-130	2	20	
2-Chloroethylvinyl ether	ug/L	ND	20.2	20.2	14.2	13.6	71	68	1-305	4	71	
Acrolein	ug/L	ND	200	200	168	151	84	76	4-172	11	20	
Acrylonitrile	ug/L	ND	199	199	153	143	77	72	22-189	7	20	
Benzene	ug/L	ND	20	20	14.3	14.3	70	70	37-151	0	61	
Bromodichloromethane	ug/L	ND	19.9	19.9	11.3	11.5	57	58	35-155	1	56	
Bromoform	ug/L	ND	19.8	19.8	8.7J	ND	44	51	70-130		42	M1
Bromomethane	ug/L	ND	20	20	25.5J	21.6J	128	108	15-185	17	61	
Carbon tetrachloride	ug/L	ND	19.8	19.8	3.1	2.6	15	13	70-140	15	41	M0
Chlorobenzene	ug/L	ND	19.8	19.8	14.8	14.8	75	75	37-160	0	53	
Chloroethane	ug/L	ND	20	20	20.6J	21.9J	103	109	14-230	6	78	
Chloroform	ug/L	ND	19.8	19.8	13.7	13.2	69	67	51-138	4	54	
Chloromethane	ug/L	ND	20	20	19.3J	17.9J	97	89	1-273	8	20	
Dibromochloromethane	ug/L	ND	19.8	19.8	11.3	10.7	57	54	53-149	6	50	
Ethylbenzene	ug/L	ND	20.1	20.1	14.6	14.4	73	72	37-162	2	63	
Methylene Chloride	ug/L	ND	20.4	20.4	12.7J	12J	62	59	1-221		28	
Tetrachloroethene	ug/L	ND	19.9	19.9	20.1	19.5	101	98	64-148	3	39	
Toluene	ug/L	ND	20	20	15.5	14.7	77	74	47-150	5	41	
Total 1,3-Dichloropropene	ug/L	ND	40.1	40.1	27.8	27.2	69	68	70-130	2	20	N3
Total Trihalomethanes (Calc.)	ug/L	ND			36.3	35.4				3	20	
trans-1,2-Dichloroethene	ug/L	ND	20	20	13.1	13.4	66	67	54-156	2	45	
Trichloroethene	ug/L	ND	20	20	15.1	16.3	75	81	70-157	7	48	
Vinyl chloride	ug/L	ND	20	20	21.1	18.9	105	95	1-251	11	66	
1,2-Dichloroethane-d4 (S)	%.						95	97	70-130			
4-Bromofluorobenzene (S)	%.						97	101	70-130			
Toluene-d8 (S)	%.						100	99	70-130			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162878
QC Batch Method: EPA 604.1
Analysis Method: EPA 604.1
Analysis Description: 604.1 HPLC Hexachlorophene
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537010

METHOD BLANK: 739661 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Hexachlorophene	ug/L	ND	10.0	3.2	03/17/21 17:57	N3
Nitrobenzene (S)	%.	63	25-108		03/17/21 17:57	

LABORATORY CONTROL SAMPLE: 739662

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hexachlorophene	ug/L	50	36.9	74	28-123	N3
Nitrobenzene (S)	%.			64	25-108	

MATRIX SPIKE SAMPLE: 739663

Parameter	Units	75151539010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Hexachlorophene	ug/L	ND	47.6	24.8	41	22-130	N3
Nitrobenzene (S)	%.				55	25-108	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162782
QC Batch Method: EPA 608.3
Analysis Method: EPA 608.3
Analysis Description: 608.3 GCS PCB
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537010

METHOD BLANK: 739122 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.20	0.18	03/16/21 20:13	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.20	0.19	03/16/21 20:13	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.20	0.20	03/16/21 20:13	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.20	0.14	03/16/21 20:13	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.20	0.048	03/16/21 20:13	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.20	0.17	03/16/21 20:13	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.20	0.14	03/16/21 20:13	
Decachlorobiphenyl (S)	%.	115	40-140		03/16/21 20:13	
Tetrachloro-m-xylene (S)	%.	82	40-140		03/16/21 20:13	

LABORATORY CONTROL SAMPLE: 739123

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	10	9.0	90	50-140	
PCB-1260 (Aroclor 1260)	ug/L	10	10.5	105	8-140	
Decachlorobiphenyl (S)	%.			86	40-140	
Tetrachloro-m-xylene (S)	%.			71	40-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 739127 739128

Parameter	Units	75151632001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/L	ND	9.7	9.6	8.8	8.4	90	88	50-140	4	36	
PCB-1260 (Aroclor 1260)	ug/L	ND	9.7	9.6	9.7	10.2	100	106	8-140	5	38	
Decachlorobiphenyl (S)	%.						74	78	40-140			
Tetrachloro-m-xylene (S)	%.						76	72	40-140			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162781
QC Batch Method: EPA 608.3
Analysis Method: EPA 608.3
Analysis Description: 608.3 GCS Pesticides
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537010

METHOD BLANK: 739115 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
4,4'-DDD	ug/L	ND	0.10	0.0060	03/16/21 20:15	CH
4,4'-DDE	ug/L	ND	0.10	0.0040	03/16/21 20:15	CH
4,4'-DDT	ug/L	ND	0.020	0.0050	03/16/21 20:15	
Aldrin	ug/L	ND	0.010	0.0070	03/16/21 20:15	
alpha-BHC	ug/L	ND	0.050	0.0060	03/16/21 20:15	
beta-BHC	ug/L	ND	0.050	0.011	03/16/21 20:15	
Chlordane (Technical)	ug/L	ND	0.20	0.041	03/16/21 20:15	
delta-BHC	ug/L	ND	0.050	0.0040	03/16/21 20:15	
Dieldrin	ug/L	ND	0.020	0.0040	03/16/21 20:15	
Endosulfan I	ug/L	ND	0.010	0.0040	03/16/21 20:15	
Endosulfan II	ug/L	ND	0.020	0.0040	03/16/21 20:15	
Endosulfan sulfate	ug/L	ND	0.10	0.0040	03/16/21 20:15	
Endrin	ug/L	ND	0.020	0.0040	03/16/21 20:15	
Endrin aldehyde	ug/L	ND	0.10	0.012	03/16/21 20:15	
gamma-BHC (Lindane)	ug/L	ND	0.050	0.0050	03/16/21 20:15	
Heptachlor	ug/L	ND	0.010	0.0060	03/16/21 20:15	
Heptachlor epoxide	ug/L	ND	0.010	0.0040	03/16/21 20:15	
Toxaphene	ug/L	ND	0.30	0.21	03/16/21 20:15	
Decachlorobiphenyl (S)	%.	74	40-140		03/16/21 20:15	
Tetrachloro-m-xylene (S)	%.	82	40-140		03/16/21 20:15	

LABORATORY CONTROL SAMPLE: 739116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/L	0.5	0.49	98	31-141	CH
4,4'-DDE	ug/L	0.5	0.50	99	30-145	CH
4,4'-DDT	ug/L	0.5	0.44	88	25-160	
Aldrin	ug/L	0.5	0.35	70	42-140	
alpha-BHC	ug/L	0.5	0.42	84	37-140	
beta-BHC	ug/L	0.5	0.42	84	17-147	
delta-BHC	ug/L	0.5	0.45	90	19-140	
Dieldrin	ug/L	0.5	0.46	93	36-146	
Endosulfan I	ug/L	0.5	0.44	87	45-153	
Endosulfan II	ug/L	0.5	0.44	88	1-202	
Endosulfan sulfate	ug/L	0.5	0.42	85	26-144	
Endrin	ug/L	0.5	0.48	96	30-147	
Endrin aldehyde	ug/L	0.5	0.41	83	73-146	
gamma-BHC (Lindane)	ug/L	0.5	0.42	85	32-140	
Heptachlor	ug/L	0.5	0.24	48	34-140	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

LABORATORY CONTROL SAMPLE: 739116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Heptachlor epoxide	ug/L	0.5	0.41	82	37-142	
Decachlorobiphenyl (S)	%.			78	40-140	
Tetrachloro-m-xylene (S)	%.			71	40-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 739120 739121

Parameter	Units	50281879002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/L	<0.0057	0.48	0.48	0.62	0.63	130	133	31-141	2	39	CH
4,4'-DDE	ug/L	<0.0038	0.48	0.48	0.60	0.61	126	129	30-145	2	35	CH
4,4'-DDT	ug/L	<0.0047	0.48	0.48	0.55	0.52	116	110	25-160	5	42	
Aldrin	ug/L	<0.0066	0.48	0.48	0.42	0.45	89	96	42-140	7	35	
alpha-BHC	ug/L	<0.0057	0.48	0.48	0.50	0.51	106	107	37-140	1	36	
beta-BHC	ug/L	<0.010	0.48	0.48	0.53	0.54	112	113	17-147	1	44	
delta-BHC	ug/L	<0.0038	0.48	0.48	0.54	0.54	114	113	19-140	2	52	
Dieldrin	ug/L	<0.0038	0.48	0.48	0.60	0.62	125	129	36-146	3	49	
Endosulfan I	ug/L	<0.0038	0.48	0.48	0.57	0.58	119	122	45-153	3	28	
Endosulfan II	ug/L	<0.0038	0.48	0.48	0.54	0.55	113	116	1-202	2	53	
Endosulfan sulfate	ug/L	<0.0038	0.48	0.48	0.50	0.54	106	113	26-144	7	38	
Endrin	ug/L	<0.0038	0.48	0.48	0.57	0.60	120	127	30-147	6	48	
Endrin aldehyde	ug/L	<0.011	0.48	0.48	0.27	0.29	58	62	40-140	7	26	
gamma-BHC (Lindane)	ug/L	<0.0047	0.48	0.48	0.51	0.52	108	109	32-140	1	39	
Heptachlor	ug/L	<0.0057	0.48	0.48	0.33	0.33	69	70	34-140	1	43	
Heptachlor epoxide	ug/L	<0.0038	0.48	0.48	0.51	0.53	108	112	37-142	4	26	
Decachlorobiphenyl (S)	%.						97	111	40-140			
Tetrachloro-m-xylene (S)	%.						87	89	40-140			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162810
QC Batch Method: EPA 615
Analysis Method: EPA 615
Analysis Description: 615 GCS Herbicides
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537010

METHOD BLANK: 739221 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2,4,5-TP (Silvex)	ug/L	ND	0.30	0.074	03/22/21 16:44	
2,4-D	ug/L	ND	0.70	0.071	03/22/21 16:44	
2,4-DCAA (S)	%.	81	44-137		03/22/21 16:44	

LABORATORY CONTROL SAMPLE: 739222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-TP (Silvex)	ug/L	3	2.5	84	57-125	
2,4-D	ug/L	3	2.5	82	49-133	
2,4-DCAA (S)	%.			87	44-137	

MATRIX SPIKE SAMPLE: 739223

Parameter	Units	75151537010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2,4,5-TP (Silvex)	ug/L	ND	3	2.7	89	44-134	
2,4-D	ug/L	ND	3	2.7	90	49-145	
2,4-DCAA (S)	%.				95	44-137	

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162742
QC Batch Method: EPA 625.1
Analysis Method: EPA 625.1
Analysis Description: 625.1 MSS
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537010

METHOD BLANK: 738994 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4,5-Tetrachlorobenzene	ug/L	ND	20.0	1.3	03/15/21 16:33	
1,2,4-Trichlorobenzene	ug/L	ND	10.0	1.6	03/15/21 16:33	
1,2-Diphenylhydrazine	ug/L	ND	20.0	1.2	03/15/21 16:33	
2,4,5-Trichlorophenol	ug/L	ND	50.0	1.9	03/15/21 16:33	
2,4,6-Trichlorophenol	ug/L	ND	10.0	1.8	03/15/21 16:33	
2,4-Dichlorophenol	ug/L	ND	10.0	0.82	03/15/21 16:33	
2,4-Dimethylphenol	ug/L	ND	10.0	1.4	03/15/21 16:33	
2,4-Dinitrophenol	ug/L	ND	50.0	1.1	03/15/21 16:33	
2,4-Dinitrotoluene	ug/L	ND	10.0	2.7	03/15/21 16:33	
2,6-Dinitrotoluene	ug/L	ND	10.0	1.8	03/15/21 16:33	
2-Chloronaphthalene	ug/L	ND	10.0	1.4	03/15/21 16:33	
2-Chlorophenol	ug/L	ND	10.0	0.82	03/15/21 16:33	
2-Nitrophenol	ug/L	ND	20.0	1.7	03/15/21 16:33	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	0.77	03/15/21 16:33	N3
3,3'-Dichlorobenzidine	ug/L	ND	5.0	2.7	03/15/21 16:33	
4,6-Dinitro-2-methylphenol	ug/L	ND	10.0	1.5	03/15/21 16:33	
4-Bromophenylphenyl ether	ug/L	ND	10.0	1.0	03/15/21 16:33	
4-Chloro-3-methylphenol	ug/L	ND	10.0	0.87	03/15/21 16:33	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	1.4	03/15/21 16:33	
4-Nitrophenol	ug/L	ND	50.0	1.6	03/15/21 16:33	
Acenaphthene	ug/L	ND	10.0	1.3	03/15/21 16:33	
Acenaphthylene	ug/L	ND	10.0	1.3	03/15/21 16:33	
Anthracene	ug/L	ND	10.0	1.1	03/15/21 16:33	
Benzidine	ug/L	ND	50.0	3.1	03/15/21 16:33	
Benzo(a)anthracene	ug/L	ND	5.0	0.93	03/15/21 16:33	
Benzo(a)pyrene	ug/L	ND	5.0	0.94	03/15/21 16:33	
Benzo(b)fluoranthene	ug/L	ND	10.0	1.0	03/15/21 16:33	
Benzo(g,h,i)perylene	ug/L	ND	20.0	1.0	03/15/21 16:33	
Benzo(k)fluoranthene	ug/L	ND	2.5	0.93	03/15/21 16:33	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	0.99	03/15/21 16:33	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	1.0	03/15/21 16:33	
bis(2-Chloroisopropyl) ether	ug/L	ND	2.5	1.2	03/15/21 16:33	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	3.2	03/15/21 16:33	
Butylbenzylphthalate	ug/L	ND	10.0	1.4	03/15/21 16:33	
Chrysene	ug/L	ND	5.0	1.0	03/15/21 16:33	
Cresols (Total)	ug/L	ND	10.0	1.5	03/15/21 16:33	N3
Di-n-butylphthalate	ug/L	ND	10.0	1.2	03/15/21 16:33	
Di-n-octylphthalate	ug/L	ND	10.0	1.7	03/15/21 16:33	
Dibenz(a,h)anthracene	ug/L	ND	5.0	1.1	03/15/21 16:33	
Diethylphthalate	ug/L	ND	10.0	0.92	03/15/21 16:33	

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

METHOD BLANK: 738994 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dimethylphthalate	ug/L	ND	10.0	0.88	03/15/21 16:33	
Fluoranthene	ug/L	ND	10.0	1.1	03/15/21 16:33	
Fluorene	ug/L	ND	10.0	1.3	03/15/21 16:33	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	1.8	03/15/21 16:33	
Hexachlorobenzene	ug/L	ND	5.0	0.97	03/15/21 16:33	
Hexachlorocyclopentadiene	ug/L	ND	10.0	1.2	03/15/21 16:33	
Hexachloroethane	ug/L	ND	20.0	1.9	03/15/21 16:33	
Indeno(1,2,3-cd)pyrene	ug/L	ND	5.0	0.98	03/15/21 16:33	
Isophorone	ug/L	ND	10.0	1.8	03/15/21 16:33	
N-Nitroso-di-n-butylamine	ug/L	ND	20.0	0.74	03/15/21 16:33	
N-Nitroso-di-n-propylamine	ug/L	ND	20.0	1.1	03/15/21 16:33	
N-Nitrosodiethylamine	ug/L	ND	20.0	0.93	03/15/21 16:33	
N-Nitrosodimethylamine	ug/L	ND	50.0	0.65	03/15/21 16:33	
N-Nitrosodiphenylamine	ug/L	ND	20.0	0.83	03/15/21 16:33	
Naphthalene	ug/L	ND	10.0	2.0	03/15/21 16:33	
Nitrobenzene	ug/L	ND	10.0	1.2	03/15/21 16:33	
Nonylphenol	ug/L	ND	333	2.9	03/15/21 16:33	N3
Pentachlorobenzene	ug/L	ND	20.0	1.3	03/15/21 16:33	
Pentachlorophenol	ug/L	ND	5.0	2.1	03/15/21 16:33	
Phenanthrene	ug/L	ND	10.0	1.1	03/15/21 16:33	
Phenol	ug/L	ND	10.0	0.97	03/15/21 16:33	
Pyrene	ug/L	ND	10.0	1.2	03/15/21 16:33	
Pyridine	ug/L	ND	20.0	1.2	03/15/21 16:33	
2,4,6-Tribromophenol (S)	%.	105	29-132		03/15/21 16:33	
2-Fluorobiphenyl (S)	%.	94	26-102		03/15/21 16:33	
2-Fluorophenol (S)	%.	50	10-66		03/15/21 16:33	
Nitrobenzene-d5 (S)	%.	88	15-106		03/15/21 16:33	
p-Terphenyl-d14 (S)	%.	97	10-120		03/15/21 16:33	
Phenol-d6 (S)	%.	32	10-54		03/15/21 16:33	

LABORATORY CONTROL SAMPLE: 738995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4,5-Tetrachlorobenzene	ug/L	50	44.0	88	60-140	
1,2,4-Trichlorobenzene	ug/L	50	39.3	79	44-142	
1,2-Diphenylhydrazine	ug/L	50	41.3	83	60-117	
2,4,5-Trichlorophenol	ug/L	50	45.8J	92	50-126	
2,4,6-Trichlorophenol	ug/L	50	44.9	90	37-144	
2,4-Dichlorophenol	ug/L	50	43.3	87	39-135	
2,4-Dimethylphenol	ug/L	50	39.8	80	32-120	
2,4-Dinitrophenol	ug/L	50	32.6J	65	1-191	
2,4-Dinitrotoluene	ug/L	50	47.7	95	39-139	
2,6-Dinitrotoluene	ug/L	50	44.2	88	50-158	
2-Chloronaphthalene	ug/L	50	43.1	86	60-118	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

LABORATORY CONTROL SAMPLE: 738995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Chlorophenol	ug/L	50	42.7	85	23-134	
2-Nitrophenol	ug/L	50	49.0	98	29-182	
3&4-Methylphenol(m&p Cresol)	ug/L	50	33.7	67	36-89	N3
3,3'-Dichlorobenzidine	ug/L	100	101	101	1-262	
4,6-Dinitro-2-methylphenol	ug/L	50	40.2	80	39-128	
4-Bromophenylphenyl ether	ug/L	50	45.8	92	53-127	
4-Chloro-3-methylphenol	ug/L	50	44.7	89	22-147	
4-Chlorophenylphenyl ether	ug/L	50	43.1	86	25-158	
4-Nitrophenol	ug/L	50	21J	42	1-132	
Acenaphthene	ug/L	50	43.1	86	47-145	
Acenaphthylene	ug/L	50	45.0	90	33-145	
Anthracene	ug/L	50	42.8	86	27-133	
Benzidine	ug/L	100	104	104	1-165	
Benzo(a)anthracene	ug/L	50	43.8	88	33-143	
Benzo(a)pyrene	ug/L	50	42.9	86	17-163	
Benzo(b)fluoranthene	ug/L	50	43.4	87	24-159	
Benzo(g,h,i)perylene	ug/L	50	44.0	88	1-219	
Benzo(k)fluoranthene	ug/L	50	43.7	87	11-162	
bis(2-Chloroethoxy)methane	ug/L	50	41.9	84	33-184	
bis(2-Chloroethyl) ether	ug/L	50	42.2	84	12-158	
bis(2-Chloroisopropyl) ether	ug/L	50	39.6	79	36-166	
bis(2-Ethylhexyl)phthalate	ug/L	50	46.8	94	8-158	
Butylbenzylphthalate	ug/L	50	45.6	91	1-152	
Chrysene	ug/L	50	43.6	87	17-168	
Cresols (Total)	ug/L	100	72.5	72	60-140	N3
Di-n-butylphthalate	ug/L	50	45.3	91	1-118	
Di-n-octylphthalate	ug/L	50	46.1	92	4-146	
Dibenz(a,h)anthracene	ug/L	50	46.4	93	1-227	
Diethylphthalate	ug/L	50	44.5	89	1-114	
Dimethylphthalate	ug/L	50	44.2	88	1-112	
Fluoranthene	ug/L	50	42.0	84	26-137	
Fluorene	ug/L	50	42.4	85	59-121	
Hexachloro-1,3-butadiene	ug/L	50	41.8	84	25-98	
Hexachlorobenzene	ug/L	50	46.7	93	1-152	
Hexachlorocyclopentadiene	ug/L	50	39.5	79	14-140	
Hexachloroethane	ug/L	50	37.8	76	40-113	
Indeno(1,2,3-cd)pyrene	ug/L	50	45.1	90	1-171	
Isophorone	ug/L	50	45.4	91	21-196	
N-Nitroso-di-n-butylamine	ug/L	50	43.1	86	60-140	
N-Nitroso-di-n-propylamine	ug/L	50	43.6	87	1-230	
N-Nitrosodiethylamine	ug/L	50	46.4	93	60-140	
N-Nitrosodimethylamine	ug/L	50	28.4J	57	32-76	
N-Nitrosodiphenylamine	ug/L	50	42.6	85	65-111	
Naphthalene	ug/L	50	40.6	81	21-133	
Nitrobenzene	ug/L	50	42.0	84	35-180	
Nonylphenol	ug/L	50	49.1J	98	60-140	N3
Pentachlorobenzene	ug/L	50	43.2	86	60-140	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

LABORATORY CONTROL SAMPLE: 738995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Pentachlorophenol	ug/L	50	22.1	44	14-176	
Phenanthrene	ug/L	50	42.5	85	54-120	
Phenol	ug/L	50	21.2	42	5-112	
Pyrene	ug/L	50	41.3	83	52-115	
Pyridine	ug/L	50	20.0	40	15-55	
2,4,6-Tribromophenol (S)	%.			94	29-132	
2-Fluorobiphenyl (S)	%.			85	26-102	
2-Fluorophenol (S)	%.			57	10-66	
Nitrobenzene-d5 (S)	%.			81	15-106	
p-Terphenyl-d14 (S)	%.			81	10-120	
Phenol-d6 (S)	%.			41	10-54	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 738997 738998

Parameter	Units	75151632001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4,5-Tetrachlorobenzene	ug/L	ND	47.2	47.2	43.2	40.6	92	86	70-130	6	30	
1,2,4-Trichlorobenzene	ug/L	ND	47.2	47.2	37.9	36.4	80	77	44-142	4	50	
1,2-Diphenylhydrazine	ug/L	ND	47.2	47.2	40.4	38.7	86	82	70-130	4	30	
2,4,5-Trichlorophenol	ug/L	ND	47.2	47.2	43.1J	44.1J	91	94	70-130	2	30	
2,4,6-Trichlorophenol	ug/L	ND	47.2	47.2	43.7	43.6	93	92	37-144	0	58	
2,4-Dichlorophenol	ug/L	ND	47.2	47.2	39.7	39.0	84	83	39-135	2	50	
2,4-Dimethylphenol	ug/L	ND	47.2	47.2	33.7	35.2	72	75	32-120	4	58	
2,4-Dinitrophenol	ug/L	ND	47.2	47.2	34.5J	30.9J	73	66	1-191	11	132	
2,4-Dinitrotoluene	ug/L	ND	47.2	47.2	47.7	46.0	101	97	39-139	4	42	
2,6-Dinitrotoluene	ug/L	ND	47.2	47.2	44.6	42.8	95	91	50-158	4	48	
2-Chloronaphthalene	ug/L	ND	47.2	47.2	42.5	40.9	90	87	60-118	4	24	
2-Chlorophenol	ug/L	ND	47.2	47.2	35.7	34.9	76	74	23-134	2	61	
2-Nitrophenol	ug/L	ND	47.2	47.2	46.5	44.6	99	95	29-182	4	131	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	47.2	47.2	27.3	26.3	58	56	70-130	4	30	M1,N3
3,3'-Dichlorobenzidine	ug/L	ND	94.3	94.3	97.3	94.2	103	100	1-262	3	108	
4,6-Dinitro-2-methylphenol	ug/L	ND	47.2	47.2	38.9	39.6	83	84	1-181	2	30	
4-Bromophenylphenyl ether	ug/L	ND	47.2	47.2	43.3	44.0	92	93	53-127	2	43	
4-Chloro-3-methylphenol	ug/L	ND	47.2	47.2	38.7	37.4	82	79	22-147	4	73	
4-Chlorophenylphenyl ether	ug/L	ND	47.2	47.2	42.8	40.8	91	87	25-158	5	61	
4-Nitrophenol	ug/L	ND	47.2	47.2	18.7J	18.5J	40	39	1-132	1	131	
Acenaphthene	ug/L	ND	47.2	47.2	42.1	40.7	89	86	47-145	3	48	
Acenaphthylene	ug/L	ND	47.2	47.2	44.6	42.1	95	89	33-145	6	74	
Anthracene	ug/L	ND	47.2	47.2	40.7	42.1	86	89	27-133	3	66	
Benzidine	ug/L	ND	94.3	94.3	60.6	47.3J	64	50	70-130	25	30	M1
Benzo(a)anthracene	ug/L	ND	47.2	47.2	42.6	42.0	90	89	33-143	1	53	
Benzo(a)pyrene	ug/L	ND	47.2	47.2	42.1	41.4	89	88	17-163	2	72	
Benzo(b)fluoranthene	ug/L	ND	47.2	47.2	42.6	42.6	90	90	24-159	0	71	
Benzo(g,h,i)perylene	ug/L	ND	47.2	47.2	41.8	41.3	89	88	1-219	1	97	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 738997 738998

Parameter	Units	75151632001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzo(k)fluoranthene	ug/L	ND	47.2	47.2	43.3	41.5	92	88	11-162	4	63	
bis(2-Chloroethoxy)methane	ug/L	ND	47.2	47.2	39.5	38.0	84	81	33-184	4	54	
bis(2-Chloroethyl) ether	ug/L	ND	47.2	47.2	39.6	37.9	84	80	12-158	5	108	
bis(2-Chloroisopropyl) ether	ug/L	ND	47.2	47.2	37.8	35.6	80	75	36-166	6	76	
bis(2-Ethylhexyl)phthalate	ug/L	ND	47.2	47.2	46.5	45.9	97	96	8-158	1	82	
Butylbenzylphthalate	ug/L	ND	47.2	47.2	44.2	43.6	94	92	1-152	1	30	
Chrysene	ug/L	ND	47.2	47.2	42.1	42.9	89	91	17-168	2	87	
Cresols (Total)	ug/L	ND	94.3	94.3	57.7	56.9	61	60	70-130	1	30	N3
Di-n-butylphthalate	ug/L	ND	47.2	47.2	44.1	44.4	93	94	1-118	1	47	
Di-n-octylphthalate	ug/L	ND	47.2	47.2	44.5	44.3	94	94	4-146	0	69	
Dibenz(a,h)anthracene	ug/L	ND	47.2	47.2	44.1	43.7	93	93	1-227	1	126	
Diethylphthalate	ug/L	ND	47.2	47.2	44.0	42.9	93	91	1-114	3	100	
Dimethylphthalate	ug/L	ND	47.2	47.2	43.2	41.9	92	89	1-112	3	183	
Fluoranthene	ug/L	ND	47.2	47.2	41.0	42.2	87	89	26-137	3	66	
Fluorene	ug/L	ND	47.2	47.2	42.0	40.0	89	85	59-121	5	38	
Hexachloro-1,3-butadiene	ug/L	ND	47.2	47.2	40.1	37.9	85	80	24-116	6	30	
Hexachlorobenzene	ug/L	ND	47.2	47.2	44.6	44.8	94	95	1-152	1	55	
Hexachlorocyclopentadiene	ug/L	ND	47.2	47.2	36.1	34.7	77	74	70-130	4	30	
Hexachloroethane	ug/L	ND	47.2	47.2	35.2	34.2	75	72	40-113	3	52	
Indeno(1,2,3-cd)pyrene	ug/L	ND	47.2	47.2	43.5	42.7	92	91	1-171	2	99	
Isophorone	ug/L	ND	47.2	47.2	43.3	41.2	92	87	21-196	5	93	
N-Nitroso-di-n-butylamine	ug/L	ND	47.2	47.2	40.2	38.4	85	82	70-130	4	30	
N-Nitroso-di-n-propylamine	ug/L	ND	47.2	47.2	41.2	39.2	87	83	1-230	5	87	
N-Nitrosodiethylamine	ug/L	ND	47.2	47.2	42.2	41.2	89	87	70-130	2	30	
N-Nitrosodimethylamine	ug/L	ND	47.2	47.2	25.8J	25.7J	55	54	70-130	1	30	M1
N-Nitrosodiphenylamine	ug/L	ND	47.2	47.2	42.4	41.3	90	88	70-130	2	30	
Naphthalene	ug/L	ND	47.2	47.2	39.2	36.9	83	78	21-133	6	65	
Nitrobenzene	ug/L	ND	47.2	47.2	39.8	38.0	84	81	35-180	5	62	
Nonylphenol	ug/L	ND	47.2	47.2	45.8J	47J	97	100	70-130	3	30	N3
Pentachlorobenzene	ug/L	ND	47.2	47.2	42.6	40.8	90	87	70-130	4	30	
Pentachlorophenol	ug/L	ND	47.2	47.2	22.2	24.9	47	53	14-176	12	86	
Phenanthrene	ug/L	ND	47.2	47.2	41.2	41.3	87	88	54-120	0	39	
Phenol	ug/L	ND	47.2	47.2	16.9	16.9	36	36	5-112	1	64	
Pyrene	ug/L	ND	47.2	47.2	40.8	41.8	86	89	52-115	2	49	
Pyridine	ug/L	ND	47.2	47.2	14J	13.1J	30	28	70-130	7	30	M1
2,4,6-Tribromophenol (S)	%.						96	96	29-132			
2-Fluorobiphenyl (S)	%.						90	83	26-102			
2-Fluorophenol (S)	%.						51	49	10-66			
Nitrobenzene-d5 (S)	%.						83	79	15-106			
p-Terphenyl-d14 (S)	%.						85	82	10-120			
Phenol-d6 (S)	%.						35	33	10-54			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162879
QC Batch Method: EPA 632
Analysis Method: EPA 632
Analysis Description: 632 HPLC Carbamates
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537010

METHOD BLANK: 739664 Matrix: Water
Associated Lab Samples: 75151537010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Carbaryl	ug/L	ND	4.0	0.61	03/17/21 17:57	
Diuron	ug/L	ND	0.080	0.020	03/17/21 17:57	N3
Nitrobenzene (S)	%.	64	18-113		03/17/21 17:57	

LABORATORY CONTROL SAMPLE: 739665

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Carbaryl	ug/L	10	8.9	89	59-119	
Diuron	ug/L	5	4.8	95	61-114	N3
Nitrobenzene (S)	%.			65	18-113	

MATRIX SPIKE SAMPLE: 739666

Parameter	Units	75151539010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Carbaryl	ug/L	ND	9.5	9.2	96	45-139	
Diuron	ug/L	ND	4.8	4.4	92	54-127	N3
Nitrobenzene (S)	%.				47	18-113	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162839
QC Batch Method: EPA 420.1
Analysis Method: EPA 420.1
Analysis Description: 420.1 Phenolics Chloroform
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537002, 75151537006

METHOD BLANK: 739365 Matrix: Water
Associated Lab Samples: 75151537002, 75151537006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenolics, Total Recoverable	ug/L	ND	10.0	8.0	03/16/21 16:42	

LABORATORY CONTROL SAMPLE: 739366

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	ug/L	200	190	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 739367 739368

Parameter	Units	75151618001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenolics, Total Recoverable	ug/L	329	200	200	495	496	83	84	80-120	0	20	

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Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
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(972)727-1123

QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 163986
QC Batch Method: EPA 420.1
Analysis Method: EPA 420.1
Analysis Description: 420.1 Phenolics Chloroform
Laboratory: Pace Analytical Services - Dallas

Associated Lab Samples: 75151537004, 75151537008

METHOD BLANK: 744677 Matrix: Water
Associated Lab Samples: 75151537004, 75151537008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenolics, Total Recoverable	ug/L	ND	10.0	8.0	04/02/21 16:33	

LABORATORY CONTROL SAMPLE: 744678

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	ug/L	200	187	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 744679 744680

Parameter	Units	75152465005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenolics, Total Recoverable	ug/L	ND	200	200	189	201	93	99	80-120	6	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162672
QC Batch Method: SM 4500-CN-E
Analysis Method: SM 4500-CN-E
Analysis Description: 4500CNE Cyanide, Total
Laboratory: Pace Analytical Services - Dallas
Associated Lab Samples: 75151537001, 75151537003, 75151537005, 75151537007

METHOD BLANK: 738660 Matrix: Water
Associated Lab Samples: 75151537001, 75151537003, 75151537005, 75151537007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cyanide	ug/L	ND	10.0	4.3	03/12/21 15:58	

LABORATORY CONTROL SAMPLE: 738661

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	100	90.2	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 738662 738663

Parameter	Units	75151537003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	100	100	99.9	90.9	98	89	85-115	9	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 738664 738665

Parameter	Units	75151539001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	100	100	93.3	88.8	90	85	85-115	5	20	

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QUALITY CONTROL DATA

Project: 627972
Pace Project No.: 75151537

QC Batch: 162871
QC Batch Method: SM 4500-CN-C
Analysis Method: SM 4500-CN-G
Analysis Description: 4500CNG Cyanide, Amenable
Laboratory: Pace Analytical Services - Dallas
Associated Lab Samples: 75151537001, 75151537003, 75151537005, 75151537007

METHOD BLANK: 739638 Matrix: Water
Associated Lab Samples: 75151537001, 75151537003, 75151537005, 75151537007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Amenable Cyanide	ug/L	ND	10.0	5.0	03/12/21 17:00	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALIFIERS

Project: 627972
Pace Project No.: 75151537

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.

Pace Analytical Services, LLC
400 West Bethany Drive - Suite 190
Allen, TX 75013
(972)727-1123

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 627972
Pace Project No.: 75151537

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
75151537010	**627983**	EPA 608.3	162782	EPA 608.3	162892
75151537010	**627983**	EPA 608.3	162781	EPA 608.3	162891
75151537010	**627983**	EPA 615	162810	EPA 615	163112
75151537010	**627983**	EPA 604.1	162878	EPA 604.1	162997
75151537010	**627983**	EPA 632	162879	EPA 632	162996
75151537010	**627983**	EPA 625.1	162742	EPA 625.1	162789
75151537009	**627980**	EPA 624.1	162546		
75151537002	**627973**	EPA 420.1	162839	EPA 420.1	162881
75151537004	**627975**	EPA 420.1	163986	EPA 420.1	164036
75151537006	**627977**	EPA 420.1	162839	EPA 420.1	162881
75151537008	**627979**	EPA 420.1	163986	EPA 420.1	164036
75151537001	**627972**	SM 4500-CN-E	162672	SM 4500-CN-E	162692
75151537003	**627974**	SM 4500-CN-E	162672	SM 4500-CN-E	162692
75151537005	**627976**	SM 4500-CN-E	162672	SM 4500-CN-E	162692
75151537007	**627978**	SM 4500-CN-E	162672	SM 4500-CN-E	162692
75151537001	**627972**	SM 4500-CN-C	162871	SM 4500-CN-G	162872
75151537003	**627974**	SM 4500-CN-C	162871	SM 4500-CN-G	162872
75151537005	**627976**	SM 4500-CN-C	162871	SM 4500-CN-G	162872
75151537007	**627978**	SM 4500-CN-C	162871	SM 4500-CN-G	162872

Pace Analytical	Document Name: Sample Condition Upon Receipt	Document Revised: 7/27/20 Page 1 of 1
	Document No.: F-DAL-C-001-rev.14	Issuing Authority: Pace Dallas Quality Office

Sample Condition Upon Receipt

☑Dallas ☐Ft Worth ☐Corpus Christi ☐Austin

WO#: 75151537

Client Name: DCS Project Work order

Courier: FedEX ☐ UPS ☐ USPS ☐ Client ☐ LSO ☑ PACE ☐ Other: _____

Tracking #: 2Y03X9EY

Custody Seal on Cooler/Box: Yes ☐ No ☑

Received on ice: Wet ☑ Blue ☐ No ice ☐

Receiving Lab 1 Thermometer Used: IR16 Cooler Temp °C: 3.6 (Recorded) 0 (Correction Factor) 3.6 (Actual)

Receiving Lab 2 Thermometer Used: _____ Cooler Temp °C: _____ (Recorded) _____ (Correction Factor) _____ (Actual)

Temperature should be above freezing to 6°C unless collected same day as receipt in which evidence of cooling is acceptable

Triage Person: CK Date: 3/10/21

Chain of Custody relinquished	Yes ☑ No ☐
Sampler name & signature on COC	Yes ☐ No ☑
Short HT analyses (<72 hrs)	Yes ☑ No ☐

Login Person: CK Date: 3/10/21

Sufficient Volume received	Yes ☑ No ☐
Correct Container used	Yes ☑ No ☐
Container Intact	Yes ☑ No ☐
Sample pH Acceptable pH Strips: 193197 Residual Chlorine Present Cl Strips: 191673 Sulfide Present Lead Acetate Strips: 191672	Yes ☑ No ☐ NA ☐ Yes ☐ No ☑ NA ☐ Yes ☐ No ☑ NA ☐
Are soil samples (volatiles, TPH) received in 5035A Kits (not applicable to TCLP VOA or PST Program TPH)	Yes ☐ No ☐ NA ☑
Unpreserved 5035A soil frozen within 48 hrs	Yes ☐ No ☐ NA ☑
Headspace in VOA (>6mm)	Yes ☐ No ☑ NA ☐ TC 3/10/21
Project sampled in USDA Regulated Area outside of Texas State Sampled: _____	Yes ☐ No ☐ NA ☑
Non-Conformance(s):	Yes ☐ No ☑

Labeling Person (if different than log-in): _____ Date: _____

2600 Dudley Rd. Kilgore, Texas 75662
R: 3306 State Highway 135 N. Kilgore, TX 75662
Office: 903-984-0551 * Fax: 903-984-5914

ANA LAB
Testing the Limits of Science and Service

Project
957073

PCSL-C

PCS Laboratories
Chuck Wallgren
1532 Universal City Blvd.
Suite 100
Universal City, TX 78148

Printed 03/22/2021 11:07

TABLE OF CONTENTS

This report consists of this Table of Contents and the following pages:

Email: projectmanger@ana-lab.com

NELAP-accredited #T104704201-21-18

2600 Dudley Rd. Kilgore, Texas 75662
R: 3306 State Highway 135 N. Kilgore, TX 75662
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Project
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PCS Laboratories
Chuck Wallgren
1532 Universal City Blvd.
Suite 100
Universal City, TX 78148

Printed: 03/22/2021

RESULTS

Sample Results

1968943 627983

Received: 03/10/2021

Non-Potable Water | Collected by: Client | PCS Laboratories | PO:
Taken: 03/09/2021 06:00:00

EPA 1657 Prepared: 942096 03/12/2021 11:00:00 Analyzed 942641 03/15/2021 19:00:00 EMT

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	Azinphos-methyl (Guthion)	<0.0481	ug/L	0.0481		86-50-0	04
z	Chlorpyrifos	<0.0481	ug/L	0.0481		2921-88-2	04
z	Demeton	<0.0481	ug/L	0.0481		8065-48-3	04
z	Diazinon	<0.0481	ug/L	0.0481		333-41-5	04
z	Malathion	<0.0481	ug/L	0.0481		121-75-5	04
z	Parathion, ethyl	<0.0481	ug/L	0.0481	X	56-38-2	04
z	Parathion, methyl	<0.0481	ug/L	0.0481	X	298-00-0	04

EPA 617 Prepared: 942087 03/12/2021 11:00:00 Analyzed 942435 03/15/2021 20:44:00 EMT

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	Kelthane (Dicofol)	<0.0481	ug/L	0.0481	SD	115-32-2	03
z	Methoxychlor	<0.00962	ug/L	0.00962		72-43-5	03
z	Mirex	<0.00962	ug/L	0.00962		2385-85-5	03

Sample Preparation

1968943 627983

Received: 03/10/2021

03/09/2021

Cooler Return Prepared: 03/11/2021 15:30:00 Analyzed 03/11/2021 15:30:00 MG3

z	Return Cooler/No bottles Require	Returned

NELAP-accredited #T104704201-21-18

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Printed: 03/22/2021

1968943 **627983**

Received: 03/10/2021

03/09/2021

EPA 1657	*Prepared:*	*942096*	*03/12/2021*	*11:00:00*	*Analyzed*	*942641*	*03/15/2021*	*19:00:00*	*EMT*
Organophos. Pesticides/1657	**Entered**								04
EPA 608.3	*Prepared:*	*942087*	*03/12/2021*	*11:00:00*	*Analyzed*	*942087*	*03/12/2021*	*11:00:00*	*CRS*
Liquid-Liquid Extr. W/Hex Ex	**1/1039**		**ml**						01
EPA 608.3	*Prepared:*	*942096*	*03/12/2021*	*11:00:00*	*Analyzed*	*942096*	*03/12/2021*	*11:00:00*	*CRS*
Solvent Extraction	**1/1039**		**ml**						01
EPA 617	*Prepared:*	*942087*	*03/12/2021*	*11:00:00*	*Analyzed*	*942435*	*03/15/2021*	*20:44:00*	*EMT*
Dicofol/Methoxychlor/Mirex	**Entered**								03

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Qualifiers:

D - Duplicate RPD was higher than expected
S - Standard reads lower than desired
X - Standard reads higher than desired.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-18-00178, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-21-18, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health Drinking Water Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2020-097, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EOL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager

NELAP-accredited #T104704201-21-18

QUALITY CONTROL

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Analytical Set 942435 — EPA 617

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Kelthane (Dicofol)	942087	ND	3.52	5.00	ug/L	122107027
Methoxychlor	942087	ND	0.897	1.00	ug/L	122107027
Mirex	942087	ND	0.905	1.00	ug/L	122107027

CCV

Parameter	Reading	Known	Units	Recover%	Limits%		File
Kelthane (Dicofol)	86.5	100	ug/L	86.5	70.0 - 130		122107026
Kelthane (Dicofol)	64.6	100	ug/L	64.6	70.0 - 130	*	122107039
Kelthane (Dicofol)	101	100	ug/L	101	70.0 - 130		122107044
Methoxychlor	45.1	50.0	ug/L	90.2	70.0 - 130		122107026
Methoxychlor	39.5	50.0	ug/L	79.1	70.0 - 130		122107039
Methoxychlor	48.4	50.0	ug/L	96.8	70.0 - 130		122107044
Mirex	49.5	50.0	ug/L	99.1	70.0 - 130		122107026
Mirex	48.4	50.0	ug/L	96.8	70.0 - 130		122107039
Mirex	51.6	50.0	ug/L	103	70.0 - 130		122107044

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Kelthane (Dicofol)	942087	74.6	102	200	0.100 - 137	37.3	51.0	ug/L	31.0 *	30.0
Methoxychlor	942087	60.1	80.1	100	21.5 - 151	60.1	80.1	ug/L	28.5	30.0
Mirex	942087	69.8	87.4	100	11.6 - 140	69.8	87.4	ug/L	22.4	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
Decachlorobiphenyl		CCV	47.1	100	ug/L	47.1	10.0 - 150	122107026
Decachlorobiphenyl		CCV	47.3	100	ug/L	47.3	10.0 - 150	122107039
Decachlorobiphenyl		CCV	56.2	100	ug/L	56.2	10.0 - 150	122107044
Tetrachloro-m-Xylene (Surr)		CCV	50.6	100	ug/L	50.6	10.0 - 150	122107026
Tetrachloro-m-Xylene (Surr)		CCV	50.1	100	ug/L	50.1	10.0 - 150	122107039
Tetrachloro-m-Xylene (Surr)		CCV	51.5	100	ug/L	51.5	10.0 - 150	122107044
Decachlorobiphenyl	942087	Blank	47.0	100	ug/L	47.0	10.0 - 150	122107027
Decachlorobiphenyl	942087	LCS	60.4	100	ug/L	60.4	10.0 - 150	122107028
Decachlorobiphenyl	942087	LCS Dup	78.6	100	ug/L	78.6	10.0 - 150	122107029
Tetrachloro-m-Xylene (Surr)	942087	Blank	50.8	100	ug/L	50.8	10.0 - 150	122107027
Tetrachloro-m-Xylene (Surr)	942087	LCS	50.6	100	ug/L	50.6	10.0 - 150	122107028
Tetrachloro-m-Xylene (Surr)	942087	LCS Dup	68.9	100	ug/L	68.9	10.0 - 150	122107029
Decachlorobiphenyl	1968943	UNKNOWN	0.0347	0.0962	ug/L	36.1	10.0 - 150	122107042
Tetrachloro-m-Xylene (Surr)	1968943	UNKNOWN	0.0399	0.0962	ug/L	41.5	10.0 - 150	122107042

Analytical Set 942641 — EPA 1657

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Azinphos-methyl (Guthion)	942096	ND	0.018	0.050	ug/L	122111335

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Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Chlorpyrifos	942096	ND	0.0159	0.050	ug/L	122111335
Demeton	942096	ND	0.0217	0.050	ug/L	122111335
Diazinon	942096	ND	0.0351	0.050	ug/L	122111335
Malathion	942096	ND	0.018	0.050	ug/L	122111335
Parathion, ethyl	942096	ND	0.0164	0.050	ug/L	122111335
Parathion, methyl	942096	ND	0.0168	0.050	ug/L	122111335

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*		*File*
Azinphos-methyl (Guthion)	1030	1000	ug/L	103	80.0 - 120		122111334
Azinphos-methyl (Guthion)	1210	1000	ug/L	121	80.0 - 120	*	122111344
Chlorpyrifos	1000	1000	ug/L	100	80.0 - 120		122111334
Chlorpyrifos	1180	1000	ug/L	118	80.0 - 120		122111344
Demeton	1000	1000	ug/L	100	80.0 - 120		122111334
Demeton	1170	1000	ug/L	117	80.0 - 120		122111344
Diazinon	1020	1000	ug/L	102	80.0 - 120		122111334
Diazinon	1120	1000	ug/L	112	80.0 - 120		122111344
Malathion	1010	1000	ug/L	101	80.0 - 120		122111334
Malathion	1100	1000	ug/L	110	80.0 - 120		122111344
Parathion, ethyl	1030	1000	ug/L	103	80.0 - 120		122111334
Parathion, ethyl	1240	1000	ug/L	124	80.0 - 120	*	122111344
Parathion, methyl	1040	1000	ug/L	104	80.0 - 120		122111334
Parathion, methyl	1360	1000	ug/L	136	80.0 - 120	*	122111344

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Azinphos-methyl (Guthion)	942096	0.339	0.301	1.00	0.100 - 152	33.9	30.1	ug/L	11.9	50.0
Chlorpyrifos	942096	0.369	0.393	1.00	0.100 - 132	36.9	39.3	ug/L	6.30	50.0
Demeton	942096	0.283	0.339	1.00	0.100 - 114	28.3	33.9	ug/L	18.0	50.0
Diazinon	942096	0.383	0.411	1.00	0.100 - 119	38.3	41.1	ug/L	7.05	50.0
Malathion	942096	0.374	0.376	1.00	0.100 - 126	37.4	37.6	ug/L	0.533	50.0
Parathion, ethyl	942096	0.527	0.555	1.00	0.100 - 138	52.7	55.5	ug/L	5.18	50.0
Parathion, methyl	942096	0.416	0.413	1.00	0.100 - 125	41.6	41.3	ug/L	0.724	50.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Tributylphosphate		CCV	1010	2000	ug/L	50.5	0.100 - 106	122111334
Tributylphosphate		CCV	1100	2000	ug/L	55.0	0.100 - 106	122111344
Triphenylphosphate		CCV	1000	2000	ug/L	50.0	0.100 - 172	122111334
Triphenylphosphate		CCV	960	2000	ug/L	48.0	0.100 - 172	122111344
Tributylphosphate	942096	Blank	449	2000	ug/L	22.4	0.100 - 106	122111335
Tributylphosphate	942096	LCS	433	2000	ug/L	21.6	0.100 - 106	122111336
Tributylphosphate	942096	LCS Dup	433	2000	ug/L	21.6	0.100 - 106	122111337
Triphenylphosphate	942096	Blank	516	2000	ug/L	25.8	0.100 - 172	122111335
Triphenylphosphate	942096	LCS	486	2000	ug/L	24.3	0.100 - 172	122111336

NELAP-accredited #T104704201-21-18

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Project
957073

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Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Triphenylphosphate	**942096**	**LCS Dup**	**507**	**2000**	**ug/L**	25.4	**0.100 - 172**	**122111337**
Tributylphosphate	**1968943**	**UNKNOWN**	0.396	1.92	**ug/L**	20.6	**0.100 - 106**	**122111341**
Triphenylphosphate	**1968943**	**UNKNOWN**	0.451	1.92	**ug/L**	23.5	**0.100 - 172**	**122111341**

* Out. RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100% Recover% is Recovery Percent: result / known * 100%

Blank - Method Blank; CCV - Continuing Calibration Verification

957073 CoC Print Group 001 of 001

POLLUTION CONTROL SERVICES
1532 Universal City Blvd, Suite 100
Universal City, TX 78148-3318
Facsimilie 210.658.7903
210.340.0343

CHAIN OF CUSTODY & SUBCONTRACT TRACKING SHEET

TO: ANA-LAB Corp
2600 Dudley Road
Kilgore, TX 75662

Relinquished by: Greg Felux
Date/Time: 03/09/2021 @ 1700 to LSO
3/11/21 ~~Received by:~~ LSO relinquished to Amy Davis Ana-Lab
Date/Time: 3-10-21 0900

PCS#	Date	Time	Analysis Requested	Pres	T. A. T.
627983	03/09/2021	0600	Pesticide 1657 196/643	ICE	Std
627983	----------	------	Pesticides 617	↓	↓

Comments/Special Instructions: 1 project

Unless otherwise requested, send results and invoice to:

Chuck Wallgren
Pollution Control Services
1532 Universal City Blvd, Suite 100
Universal City, TX 78148-3318

See Attached for Tracking # and Temp

Authorized by: _____ Date: 3/9/21

957073 CoC Print Group 001 of 001

LSO
It's all in the delivery

Airbill No. ZY03X9F7

LSO
1-800-800-8984
www.lso.com

SHIP TO:
ANA-LAB CORP
ANA-LAB CORP
2600 DUDLEY ROAD
KILGORE, TX 75662
9039840551

From:
CHUCK WALLGREN
POLLUTION CONTROL SERVICES
1532 UNIVERSAL CITY BLVD
SUITE 100
UNIVERSAL CITY, TX 78148
2103400343

WGGG **LSO GROUND**
END OF BUSINESS DAY DELIVERY

PRINT DATE: 3/9/2021
QUICKCODE: ANALAB
REF 1: 1D00V.0000 REF 2:

REF 3:
WEIGHT: 33.00LBS

3-10-21 0925 CMB
Date Time Tech
Temp: 0.2/0.4 C

Therm#: 6205 Corr Fact: 0.2 C

Fold on above line and place shipping label in pouch on package. Please be sure the barcodes and addresses can be read and scanned. Shipping Instructions

1. Fold this page along the horizontal line above.
2. Place this Airbill in the shipping label pouch on the package you are shipping. Please be sure the barcodes and addresses can be read and scanned.
3. To locate a drop box near you, click on **Find A Drop Box** from the home page main menu.
4. To schedule a pickup, click on **Request Pickup**.

WARNING: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your Lone Star Overnight account number.

This label is valid for use for 3 months from the date printed. Use of expired labels may result in delayed billing and / or additional research charges. LIMIT OF LIABILITY: We are not responsible for claims in excess of $100 for any reason unless you: 1) declare a greater value (not to exceed $25,000); 2) pay an additional fee; 3) and document your actual loss in a timely manner. We will not pay any claim in excess of the actual loss. We are not liable for any special or consequential damages. Additional limitations of liability are contained in our current Service Guide. If you ask us to deliver a package without obtaining a delivery signature, you release us of all liability for claims resulting from such service. NO DELIVERY SIGNATURE WILL BE OBTAINED FOR 8:30 AM DELIVERIES OR RESIDENTIAL DELIVERIES.

Pollution Control Services

Sample Log-In Checklist

PCS Sample No(s) 627972 627987 COC No. 627972

Client/Company Name: NBU Checklist Completed by: CW

Sample Delivery to Lab Via:

Client Drop Off ✓ Commercial Carrier: Bus ____ UPS ____ Lone Star ____ FedEx ____ USPS ____

PCS Field Services: Collection/Pick Up____ Other:____

Sample Kit/Coolers

Sample Kit/Cooler? Yes ✓ No____ Sample Kit/Cooler: Intact? Yes ✓ No___

Custody Seals on Sample Kit/Cooler: Not Present ✓ If Present, Intact ___ Broken ___

Sample Containers Intact; Unbroken and Not Leaking? Yes ✓ No ___

Custody Seals on Sample Bottles: Not Present ✓ If Present, Intact ___ Broken ___

COC Present with Shipment or Delivery or Completed at Drop Off? Yes ✓ No ___

Has COC sample date/time and other pertinent information been provided by client/sampler? Yes: ✓ No: ___

Has COC been properly Signed when Received/Relinquished? Yes ✓ No ___

Does COC agree with Sample Bottle Information, Bottle Types, Preservation, etc.? Yes ✓ No ___

All Samples Received before Hold Time Expiration? Yes ✓ No ___

Sufficient Sample Volumes for Analysis Requested? Yes ✓ No ___

Zero Headspace in VOA Vial if Present? Yes ___ No ___

Sample Preservation:

* *Cooling:* **Not Required** _____ or **Required** ✓

If cooling required, record temperature of submitted samples Observed/Corrected 6 / 4 °C

Is Ice Present in Sample Kit/Cooler? ____ Yes ____ No Samples received same day as collected? ____ Yes ✓ No

Lab Thermometer Make and Serial Number: Vaughan 1807009583 Other: _____

Acid Preserved Sample - If present, is pH <2? **Yes** ✓ **No** ____** ✓ H_2SO_4 ✓ HNO_3 ____ H_3PO_4

Base Preserved Sample - If present, is pH >12? Yes ___ No ___ ✓ NaOH

Other Preservation:_____ If Present, Meets Requirements? Yes____ No____

Sample Preservations Checked by: CWW Date 3/9/21 Time 1047

pH paper used to check sample preservation (PCS log #): 20212 (HEM pH checked at analysis).

Samples Preserved/Adjusted by Lab:	Lab #	Parameters Preserved	Preservative Used	Log #

Adjusted by Tech/Analyst:_____ Date :_____Time:_____

Client Notification/ Documentation for "No" Responses Above/ Discrepancies/ RevisionComments

Person Notified: _____ Contacted by:_____

Notified Date: _____Time: _____

Method of Contact: At Drop Off:____ Phone ___ Left Voice Mail ___ E-Mail ____ Fax ____

Unable to Contact____ Authorized Laboratory to Proceed :_____(Lab Director)

Regarding / Comments:_____

Actions taken to correct problems/discrepancies:_____

Receiving qualifier needed (*requires client notification above*) Temp. ___ Holding Time ___ Initails: _____

Receiving qualifier entered into LIMS at login Initial/Date: _____

Revision Comments: Rev. 1- PCS # 627975 & 627979 - Total Phenol Sample results for these 2 samples changed from previous reports - corrected 4/7/21 - cw

* *Samples submitted for Metals Analysis (except Hex Cr) or Drinking Water for Coliform Bacteria Only are not required to be iced. Samples collected prior day to receipt at the laboratory must meet method specific thermal cooling requirements, "or will be flagged accordingly". Samples delivered the same day as collected may not meet thermal criteria, but shall be considered acceptable if evidence that the chilling process has begun, such as arrival on ice (EPA 815-F-08-006, June 2008). ** Water samples for metals analysis that are not acid preserved prior to shipment may be acceptably preserved by the laboratory on receipt – however, the sample digestion procedure must be delayed for at least 24 hours after preservation by the laboratory.*