



Administrative Package Cover Page

This file contains the following documents:

1. Summary of application (in plain language)
 - English
 - Alternative Language (Spanish)
2. First Notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
 - English
 - Alternative Language (Spanish)
3. Application materials



Portada de Paquete Administrativo

Este archivo contiene los siguientes documentos:

1. Resumen en lenguaje sencillo (PLS, por sus siglas en inglés) de la actividad propuesta
 - Inglés
 - Idioma alternativo (español)
2. Primer aviso (NORI, por sus siglas en inglés)
 - Inglés
 - Idioma alternativo (español)
3. Solicitud original



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by [Title 30, Texas Administrative Code \(30 TAC\), Chapter 39, Subchapter H](#). Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

If you are subject to the alternative language notice requirements in [30 TAC Section 39.426](#), **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS DOMESTIC WASTEWATER/STORMWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

TCCI Sanctuary WWTP LLC (CN606283398) proposes to operate Sanctuary WWTP (RN112007737), a Domestic Wastewater Treatment Plant. The facility will be located at approximately 1.1 miles southwest of the intersection of US Highway 380 and FM 156, in Ponder, Denton County, Texas 76259. The Applicant is currently applying to the Texas Commission on Environmental Quality for a Texas Pollutant Removal System (TPDES) Permit to discharge approximately 1,250,000 gallons per day of treated domestic wastewater from the proposed Wastewater Treatment Facility to be installed at the site.

Discharges from the facility are expected to contain trace amounts of five-day carbonaceous biochemical oxygen demand (CBOD₅), total suspended solids (TSS), phosphorus (P), and ammonia nitrogen (NH₃-N). Removal of bacteria and pathogens through the MBR process is 96% or greater, and E. Coli concentration is reduced to zero through the use of U.V. The effluent will meet the criteria for Type I reclaimed water per 30 TAC §210.33. Domestic wastewater will be treated by Membrane Biological Reactor (MBR) treatment technology. The

facility will be constructed in phases with the first phase being a temporary plant capable of treating 30,000 gpd, a second phase treating 250,000 gpd, and a third phase with two (2) 500,000 gpd treatment facilities. The permanent facility will consist of an influent pumping station, equalization basin, fine screen, two anoxic tanks, aerobic tank, membrane cells, ultraviolet disinfection, a sludge press, and an effluent pumping station.

PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES **Introduzca 'INDUSTRIALES' o 'DOMÉSTICAS' aquí** /AGUAS PLUVIALES

El siguiente resumen se proporciona para esta solicitud de permiso de calidad del agua pendiente que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo requerido por el Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

TCCI Sanctuary WWTP LLC (CN606283398) propone operar Sanctuary WWTP RN112007737, un Planta de tratamiento de aguas residuales domesticas. La instalación estará ubicada en aproximadamente 1.1 millas al suroeste de la interseccion de la autopista US 380 y FM 156, en Ponder, Condado de Denton, Texas 76259. El Solicitante actualmente está solicitando a la Comisión de Calidad Ambiental de Texas un Permiso del Sistema de Eliminación de Contaminantes de Texas (TPDES) para descargar aproximadamente 1.250.000 galones por día de aguas residuales domésticas tratadas de la Instalación de **Tratamiento** de Aguas **Residuales** propuesta que se instalará en el sitio.

Se espera que las descargas de la instalación contengan trazas de demanda bioquímica de oxígeno carbonoso (CBOD₅) de cinco días, sólidos suspendidos totales (SST), fósforo (P) y nitrógeno amoniacal (NH₃-N). La eliminación de bacterias y patógenos mediante el proceso MBR es del 96% o más, y la concentración de E. Coli se reduce a cero mediante el uso de rayos UV. El efluente cumplirá con los criterios para agua recuperada Tipo I según 30 TAC §210.33. **Aguas residuales domésticas** . estará tratado por Tecnología de tratamiento de reactor biológico de membrana (MBR). La instalación se construirá en fases: la primera fase será una planta temporal capaz de tratar 30.000 gpd, una segunda fase tratará 250.000 gpd y una tercera fase con dos (2) instalaciones de tratamiento de 500.000 gpd. La instalación permanente constará de una estación de bombeo de afluentes, estanque de eualización, criba fina, dos tanques anóxicos, tanque aeróbico, celdas de membrana, desinfección ultravioleta, prensa de lodos y estación de bombeo de efluentes.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



NOTICE OF RECEIPT OF APPLICATION AND INTENT TO OBTAIN WATER QUALITY PERMIT

PROPOSED PERMIT NO. WQ0016572001

APPLICATION. TCCI Sanctuary WWTP LLC, 14675 Dallas Parkway, Suite 575, Dallas, Texas 75254, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0016572001 (EPA I.D. No. TX0146315) to authorize the discharge of treated wastewater at a volume not to exceed an annual average flow of 1,250,000 gallons per day. The domestic wastewater treatment facility will be located approximately 1.1 miles southwest of the intersection of Farm-to-Market Road 156 and U.S. Highway 380, near the city of Ponder, in Denton County, Texas 76259. The discharge route will be from the plant site to an unnamed tributary, thence to South Hickory Creek, thence to Hickory Creek, thence to Lewisville Lake. TCEQ received this application on July 12, 2024. The permit application will be available for viewing and copying at Pilot Point Community Library, 324 South Washington Street, Pilot Point, in Denton County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: <https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application.

<https://gisweb.tceq.texas.gov/LocationMapper/?marker=-97.267777,33.227777&level=18>

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at: <https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>.

El aviso de idioma alternativo en español está disponible en

<https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>.

ADDITIONAL NOTICE. TCEQ's Executive Director has determined the application is administratively complete and will conduct a technical review of the application. After technical review of the application is complete, the Executive Director may prepare a draft permit and will issue a preliminary decision on the application. **Notice of the Application and Preliminary Decision will be published and mailed to those who are on the county-wide mailing list and to those who are on the mailing list for this application. That notice will contain the deadline for submitting public comments.**

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting on this application. The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ will hold a public meeting if the Executive Director determines that there is a significant degree of public

interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments. **Unless the application is directly referred for a contested case hearing, the response to comments, and the Executive Director's decision on the application, will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting reconsideration of the Executive Director's decision and for requesting a contested case hearing.** A contested case hearing is a legal proceeding similar to a civil trial in state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period and, the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period.**

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county. If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. All public comments and requests must be submitted either electronically at <https://www14.tceq.texas.gov/epic/eComment/>, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Please be aware that any contact information you provide, including your name, phone number, email address and physical address will become part of the agency's public record. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from TCCI Sanctuary WWTP LLC at the address stated above or by calling Mr. Rane Wilson, P.G., reUse Engineering Inc., at 570-567-4297.

Issuance Date: August 14, 2024

Comisión de Calidad Ambiental del Estado de Texas



AVISO DE RECIBO DE LA SOLICITUD Y EL INTENTO DE OBTENER PERMISO PARA LA CALIDAD DEL AGUA

PERMISO PROPUESTO NO. WQ0016572001

SOLICITUD. TCCI Sanctuary WWTP LLC, 14675 Dallas Parkway, Suite 575, Dallas, Texas 75254, ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para el propuesto Permiso No. WQ0016572001 (EPA I.D. No. TX 0146315) del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas residuales tratadas en un volumen que no sobrepasa un flujo promedio anual de 1.250.000 galones por día. La planta estará ubicada aproximadamente 1,1 millas al suroeste de la intersección de Farm-to-Market Road 156 y U.S. Highway 380 en Ponder en el Condado de Denton, Texas 76259. La ruta de descarga estará del sitio de la planta a un afluente sin nombre, de allí a South Hickory Creek, de allí a Hickory Creek, de allí a Lewisville Lake. La TCEQ recibió esta solicitud el 12 de Julio de 2024. La solicitud para el permiso estará disponible para leerla y copiarla Pilot Point Community Library, 324 South Washington Street, Pilot Point, Texas antes de la fecha de publicación de este aviso en el periódico. La solicitud (cualquier actualización y aviso inclusive) está disponible electrónicamente en la siguiente página web: <https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud.

<https://gisweb.tceq.texas.gov/LocationMapper/?marker=-97.267777,33.227777&level=18>

AVISO DE IDIOMA ALTERNATIVO. El aviso de idioma alternativo en español está disponible en <https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>.

AVISO ADICIONAL. El Director Ejecutivo de la TCEQ ha determinado que la solicitud es administrativamente completa y conducirá una revisión técnica de la solicitud. Después de completar la revisión técnica, el Director Ejecutivo puede preparar un borrador del permiso y emitirá una Decisión Preliminar sobre la solicitud. **El aviso de la solicitud y la decisión preliminar serán publicados y enviado a los que están en la lista de correo de las personas a lo largo del condado que desean recibir los avisos y los que están en la lista de correo que desean recibir avisos de esta solicitud. El aviso dará la fecha límite para someter comentarios públicos.**

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés

público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

OPORTUNIDAD DE UNA AUDIENCIA ADMINISTRATIVA DE LO CONTENCIOSO. Después del plazo para presentar comentarios públicos, el Director Ejecutivo considerará todos los comentarios apropiados y preparará una respuesta a todos los comentarios públicos esenciales, pertinentes, o significativos. **A menos que la solicitud haya sido referida directamente a una audiencia administrativa de lo contencioso, la respuesta a los comentarios y la decisión del Director Ejecutivo sobre la solicitud serán enviados por correo a todos los que presentaron un comentario público y a las personas que están en la lista para recibir avisos sobre esta solicitud. Si se reciben comentarios, el aviso también proveerá instrucciones para pedir una reconsideración de la decisión del Director Ejecutivo y para pedir una audiencia administrativa de lo contencioso.** Una audiencia administrativa de lo contencioso es un procedimiento legal similar a un procedimiento legal civil en un tribunal de distrito del estado.

PARA SOLICITAR UNA AUDIENCIA DE CASO IMPUGNADO, USTED DEBE INCLUIR EN SU SOLICITUD LOS SIGUIENTES DATOS: su nombre, dirección, y número de teléfono; el nombre del solicitante y número del permiso; la ubicación y distancia de su propiedad/actividad con respecto a la instalación; una descripción específica de la forma cómo usted sería afectado adversamente por el sitio de una manera no común al público en general; una lista de todas las cuestiones de hecho en disputa que usted presente durante el período de comentarios; y la declaración "[Yo/nosotros] solicito/solicitamos una audiencia de caso impugnado". Si presenta la petición para una audiencia de caso impugnado de parte de un grupo o asociación, debe identificar una persona que representa al grupo para recibir correspondencia en el futuro; identificar el nombre y la dirección de un miembro del grupo que sería afectado adversamente por la planta o la actividad propuesta; proveer la información indicada anteriormente con respecto a la ubicación del miembro afectado y su distancia de la planta o actividad propuesta; explicar cómo y porqué el miembro sería afectado; y explicar cómo los intereses que el grupo desea proteger son pertinentes al propósito del grupo.

Después del cierre de todos los períodos de comentarios y de petición que aplican, el Director Ejecutivo enviará la solicitud y cualquier petición para reconsideración o para una audiencia de caso impugnado a los Comisionados de la TCEQ para su consideración durante una reunión programada de la Comisión. La Comisión sólo puede conceder una solicitud de una audiencia de caso impugnado sobre los temas que el solicitante haya presentado en sus comentarios oportunos que no fueron retirados posteriormente. Si se concede una audiencia, el tema de la audiencia estará limitado a cuestiones de hecho en disputa o cuestiones mixtas de hecho y de derecho relacionadas a intereses pertinentes y materiales de calidad del agua que se hayan presentado durante el período de comentarios.

LISTA DE CORREO. Si somete comentarios públicos, un pedido para una audiencia administrativa de lo contencioso o una reconsideración de la decisión del Director Ejecutivo, la Oficina del Secretario Principal enviará por correo los avisos públicos en relación con la solicitud. Además, puede pedir que la TCEQ ponga su nombre en una o más de las listas correos siguientes (1) la lista de correo permanente para recibir los avisos de el solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las

solicitudes en un condado específico. Si desea que se agregue su nombre en una de las listas designe cual lista(s) y envía por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

INFORMACIÓN DISPONIBLE EN LÍNEA. Para detalles sobre el estado de la solicitud, favor de visitar la Base de Datos Integrada de los Comisionados en www.tceq.texas.gov/goto/cid. Para buscar en la base de datos, utilizar el número de permiso para esta solicitud que aparece en la parte superior de este aviso.

CONTACTOS E INFORMACIÓN A LA AGENCIA. Todos los comentarios públicos y solicitudes deben ser presentadas electrónicamente vía <http://www14.tceq.texas.gov/epic/eComment/> o por escrito dirigidos a la Comisión de Texas de Calidad Ambiental, Oficial de la Secretaría (Office of Chief Clerk), MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Tenga en cuenta que cualquier información personal que usted proporcione, incluyendo su nombre, número de teléfono, dirección de correo electrónico y dirección física pasarán a formar parte del registro público de la Agencia. Para obtener más información acerca de esta solicitud de permiso o el proceso de permisos, llame al programa de educación pública de la TCEQ, gratis, al 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040.

También se puede obtener información adicional TCCI Sanctuary WWTP LLC a la dirección indicada arriba o llamando a Sr. Rane Wilson, P.G., reUse Engineering, Inc. al 570-567-4297.

Fecha de emisión el 14 de agosto de 2024

Jon Niermann, *Chairman*
Bobby Janecka, *Commissioner*
Catarina R. Gonzales, *Commissioner*
Kelly Keel, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 12, 2024

Dear Applicant:

Re: Confirmation of Submission of the New Private Domestic Wastewater Individual Permit Application

This is an acknowledgement that you have successfully completed Private Domestic Wastewater Individual Permit Application.

ER Account Number: ER105186
Application Reference Number: 665694
Authorization Number: WQ0016572001
Site Name: Sanctuary WWTP
Regulated Entity: RN112007737 - SANCTUARY WWTP
Customer(s): CN606283398 - Tcci Sanctuary WWTP LLC

Please be aware that TCEQ staff may contact your designated contact for any additional information.

If you have any questions, you may contact the Applications Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by telephone at (512) 239-4671.

Sincerely,
Applications Review and Processing Team
Water Quality Division

Texas Commission on Environmental Quality
New Domestic or Industrial Individual Permit

Site Information (Regulated Entity)

| | |
|---|--|
| What is the name of the site to be authorized? | Sanctuary WWTP |
| Does the site have a physical address? | No |
| Because there is no physical address, describe how to locate this site: | Located approximately 1.1 miles southwest of the intersection of US Highway 380 and FM 156 |
| City | Ponder |
| State | TX |
| ZIP | 76259 |
| County | DENTON |
| Latitude (N) (##.#####) | 33.227864 |
| Longitude (W) (-###.#####) | -97.267714 |
| Primary SIC Code | 4952 |
| Secondary SIC Code | |
| Primary NAICS Code | 221320 |
| Secondary NAICS Code | |

Regulated Entity Site Information

| | |
|---|--|
| What is the Regulated Entity's Number (RN)? | |
| What is the name of the Regulated Entity (RE)? | Sanctuary WWTP |
| Does the RE site have a physical address? | No |
| Because there is no physical address, describe how to locate this site: | Located approximately 1.1 miles southwest of the intersection of US Highway 380 and FM 156 |
| City | Ponder |
| State | TX |
| ZIP | 76259 |
| County | DENTON |
| Latitude (N) (##.#####) | 33.227864 |
| Longitude (W) (-###.#####) | -97.267714 |
| Facility NAICS Code | 221320 |
| What is the primary business of this entity? | |

TCCI Sa-Customer (Applicant) Information (Owner)

| | |
|--|-------------|
| How is this applicant associated with this site? | Owner |
| What is the applicant's Customer Number (CN)? | |
| Type of Customer | Corporation |

Full legal name of the applicant:

| | |
|--|-------------------------|
| Legal Name | TCCI Sanctuary WWTP LLC |
| Texas SOS Filing Number | 805340264 |
| Federal Tax ID | 934922626 |
| State Franchise Tax ID | 32092853277 |
| State Sales Tax ID | |
| Local Tax ID | |
| DUNS Number | 084861606 |
| Number of Employees | 0-20 |
| Independently Owned and Operated? | Yes |
| I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. | Yes |

Responsible Authority Contact

| | |
|-------------------|-------------------------|
| Organization Name | TCCI Sanctuary WWTP LLC |
| Prefix | MR |
| First | Tommy |
| Middle | |
| Last | Cansler |
| Suffix | |
| Credentials | |
| Title | President |

Responsible Authority Mailing Address

Enter new address or copy one from list:

| | |
|--|---------------------------|
| Address Type | Domestic |
| Mailing Address (include Suite or Bldg. here, if applicable) | 14675 DALLAS PKWY STE 575 |
| Routing (such as Mail Code, Dept., or Attn:) | |
| City | DALLAS |
| State | TX |
| ZIP | 75254 |
| Phone (###-###-####) | 2147340360 |
| Extension | |
| Alternate Phone (###-###-####) | |
| Fax (###-###-####) | |
| E-mail | 111tcci@att.net |

Billing Contact**Responsible contact for receiving billing statements:**

| | |
|---|-------------------------|
| Select the permittee that is responsible for payment of the annual fee. | TCCI Sanctuary WWTP LLC |
| Organization Name | TCCI Sanctuary WWTP LLC |

| | |
|--|------------------------------|
| Prefix | MR |
| First | Rich |
| Middle | |
| Last | Alberque |
| Suffix | |
| Credentials | |
| Title | Director of Land Development |
| Enter new address or copy one from list: | TCCI Sanctuary WWTP LLC |
| Mailing Address | |
| Address Type | Domestic |
| Mailing Address (include Suite or Bldg. here, if applicable) | 14675 DALLAS PKWY STE 575 |
| Routing (such as Mail Code, Dept., or Attn:) | |
| City | DALLAS |
| State | TX |
| ZIP | 75254 |
| Phone (###-###-####) | 2147340360 |
| Extension | |
| Alternate Phone (###-###-####) | |
| Fax (###-###-####) | |
| E-mail | rich@tccitx.com |

Application Contact

Person TCEQ should contact for questions about this application:

Same as another contact?

| | |
|--|---|
| Organization Name | reUse Engineering Inc |
| Prefix | MRS |
| First | Hilary |
| Middle | |
| Last | Bond |
| Suffix | |
| Credentials | |
| Title | Director of Permitting and Entitlements |
| Enter new address or copy one from list: | |
| Mailing Address | |
| Address Type | Domestic |
| Mailing Address (include Suite or Bldg. here, if applicable) | 4411 S INTERSTATE 35 STE 100 |
| Routing (such as Mail Code, Dept., or Attn:) | |
| City | GEORGETOWN |
| State | TX |

| | |
|--------------------------------|---------------------|
| ZIP | 78626 |
| Phone (###-###-####) | 5122850302 |
| Extension | |
| Alternate Phone (###-###-####) | |
| Fax (###-###-####) | |
| E-mail | hilary@reuseeng.com |

Technical Contact

Person TCEQ should contact for questions about this application:

Same as another contact?

| | |
|-------------------|-----------------------|
| Organization Name | reUse Engineering Inc |
| Prefix | MR |
| First | Rane |
| Middle | |
| Last | Wilson |
| Suffix | |
| Credentials | PG |
| Title | Lead Hydrogeologist |

Enter new address or copy one from list:

Mailing Address

| | |
|--|------------------------------|
| Address Type | Domestic |
| Mailing Address (include Suite or Bldg. here, if applicable) | 4411 S INTERSTATE 35 STE 100 |
| Routing (such as Mail Code, Dept., or Attn:) | |
| City | GEORGETOWN |
| State | TX |
| ZIP | 78626 |
| Phone (###-###-####) | 5705674297 |
| Extension | |
| Alternate Phone (###-###-####) | |
| Fax (###-###-####) | |
| E-mail | rane@reuseeng.com |

DMR Contact

Person responsible for submitting Discharge Monitoring Report

Forms:

| | |
|--------------------------|-------------------------|
| Same as another contact? | Billing Contact |
| Organization Name | TCCI Sanctuary WWTP LLC |
| Prefix | MR |
| First | Rich |

| | |
|--|------------------------------|
| Middle | |
| Last | Alberque |
| Suffix | |
| Credentials | |
| Title | Director of Land Development |
| Enter new address or copy one from list: | |
| Mailing Address: | |
| Address Type | Domestic |
| Mailing Address (include Suite or Bldg. here, if applicable) | 14675 DALLAS PKWY STE 575 |
| Routing (such as Mail Code, Dept., or Attn:) | |
| City | DALLAS |
| State | TX |
| ZIP | 75254 |
| Phone (###-###-####) | 2147340360 |
| Extension | |
| Alternate Phone (###-###-####) | |
| Fax (###-###-####) | |
| E-mail | rich@tccitx.com |

Section 1# Permit Contact

Permit Contact#: 1

Person TCEQ should contact throughout the permit term.

| | |
|--|------------------------------|
| 1) Same as another contact? | Billing Contact |
| 2) Organization Name | TCCI Sanctuary WWTP LLC |
| 3) Prefix | MR |
| 4) First | Rich |
| 5) Middle | |
| 6) Last | Alberque |
| 7) Suffix | |
| 8) Credentials | |
| 9) Title | Director of Land Development |
| Mailing Address | |
| 10) Enter new address or copy one from list | |
| 11) Address Type | Domestic |
| 11.1) Mailing Address (include Suite or Bldg. here, if applicable) | 14675 DALLAS PKWY STE 575 |
| 11.2) Routing (such as Mail Code, Dept., or Attn:) | |
| 11.3) City | DALLAS |
| 11.4) State | TX |
| 11.5) ZIP | 75254 |

| | |
|------------------------------------|-----------------|
| 12) Phone (###-###-####) | 2147340360 |
| 13) Extension | |
| 14) Alternate Phone (###-###-####) | |
| 15) Fax (###-###-####) | |
| 16) E-mail | rich@tccitx.com |

Section 2# Permit Contact

Permit Contact#: 2

Person TCEQ should contact throughout the permit term.

| | |
|-----------------------------|---|
| 1) Same as another contact? | Application Contact |
| 2) Organization Name | reUse Engineering Inc |
| 3) Prefix | MRS |
| 4) First | Hilary |
| 5) Middle | |
| 6) Last | Bond |
| 7) Suffix | |
| 8) Credentials | |
| 9) Title | Director of Permitting and Entitlements |

Mailing Address

| | |
|--|------------------------------|
| 10) Enter new address or copy one from list | |
| 11) Address Type | Domestic |
| 11.1) Mailing Address (include Suite or Bldg. here, if applicable) | 4411 S INTERSTATE 35 STE 100 |
| 11.2) Routing (such as Mail Code, Dept., or Attn:) | |
| 11.3) City | GEORGETOWN |
| 11.4) State | TX |
| 11.5) ZIP | 78626 |
| 12) Phone (###-###-####) | 5122850302 |
| 13) Extension | |
| 14) Alternate Phone (###-###-####) | |
| 15) Fax (###-###-####) | |
| 16) E-mail | hilary@reuseeng.com |

Public Notice Information

Individual Publishing the Notices

| | |
|------------------------|---|
| 1) Prefix | MRS |
| 2) First and Last Name | Hilary Bond |
| 3) Credential | |
| 4) Title | Director of Permitting and Entitlements |

| | |
|--------------------------|------------------------------|
| 5) Organization Name | reUse Engineering Inc |
| 6) Mailing Address | 4411 S INTERSTATE 35 STE 100 |
| 7) Address Line 2 | |
| 8) City | GEORGETOWN |
| 9) State | TX |
| 10) Zip Code | 78626 |
| 11) Phone (###-###-####) | 5122850302 |
| 12) Extension | |
| 13) Fax (###-###-####) | |
| 14) Email | hilary@reuseeng.com |

Contact person to be listed in the Notices

| | |
|--------------------------|-----------------------|
| 15) Prefix | MR |
| 16) First and Last Name | Rane Wilson |
| 17) Credential | PG |
| 18) Title | Lead Hydrogeologist |
| 19) Organization Name | reUse Innovations Inc |
| 20) Phone (###-###-####) | 5705674297 |
| 21) Fax (###-###-####) | |
| 22) Email | rane@reuseeng.com |

Bilingual Notice Requirements

| | |
|--|---------|
| 23) 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 |
| 23.1) Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school? | Yes |
| 23.2) Do the students at these schools attend a bilingual education program at another location? | No |
| 23.3) 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)? | No |
| 23.4) Which language is required by the bilingual program? | Spanish |

Section 1# Public Viewing Information**County#: 1**

| | |
|---------------------------------|-------------------------------|
| 1) County | DENTON |
| 2) Public building name | Pilot Point Community Library |
| 3) Location within the building | |
| 4) Physical Address of Building | 324 S Washington St |
| 5) City | Pilot Point |
| 6) Contact Name | |

| | |
|--|------------|
| 7) Phone (###-###-####) | 9406865004 |
| 8) Extension | |
| 9) Is the location open to the public? | Yes |

Owner Information

Owner of Treatment Facility

| | |
|--|---------------------------|
| 1) Prefix | |
| 2) First and Last Name | |
| 3) Organization Name | TCCI Sanctuary WWTP LLC |
| 4) Mailing Address | 14675 Dallas Pkwy Ste 575 |
| 5) City | Dallas |
| 6) State | TX |
| 7) Zip Code | 75254 |
| 8) Phone (###-###-####) | 2147340360 |
| 9) Extension | |
| 10) Email | 111tcci@att.net |
| 11) What is ownership of the treatment facility? | Private |

Owner of Land (where treatment facility is or will be)

| | |
|---|---------------------------|
| 12) Prefix | MR |
| 13) First and Last Name | Tommy Cansler |
| 14) Organization Name | TCCI Sanctuary WWTP LLC |
| 15) Mailing Address | 14675 Dallas Pkwy Ste 575 |
| 16) City | Dallas |
| 17) State | TX |
| 18) Zip Code | 75254 |
| 19) Phone (###-###-####) | 2147340360 |
| 20) Extension | |
| 21) Email | 111tcci@att.net |
| 22) Is the landowner the same person as the facility owner or co-applicant? | Yes |

Admin General Information

| | |
|--|-----------------------------|
| 1) Is the facility located on or does the treated effluent cross American Indian Land? | No |
| 2) What is the authorization type that you are seeking? | Private Domestic Wastewater |
| 2.1) Is the facility previously authorized under a Water Quality individual permit? | No |
| 2.2) What is the proposed total flow in MGD discharged at the facility? | 1.25 |
| 2.3) Select the applicable fee | >=1.0 MGD - \$2,050 |

| | |
|--|----------|
| 3) What is your facility operational status? | Inactive |
| 4) What is the classification for your authorization? | TPDES |
| 4.1) City nearest the outfall(s): | Ponder |
| 4.2) County where the outfalls are located: | DENTON |
| 4.3) Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch? | No |
| 4.4) Is the daily average discharge at your facility of 5 MGD or more? | No |
| 5) Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application? | No |

Plain Language

1) Plain Language

[File Properties]

| | |
|-----------|---|
| File Name | LANG_10053 XB Plain Language Form.docx |
| Hash | D323B84331A45BA847F925A815EF12514738C04CBF5A3840BB5AE048761FB9FE |
| MIME-Type | application/vnd.openxmlformats-officedocument.wordprocessingml.document |

Supplemental Permit Information Form

1) Supplemental Permit Information Form (SPIF)

[File Properties]

| | |
|-----------|---|
| File Name | SPIF_10053 XH SPIF - Sanctuary.docx |
| Hash | F1775F7870AEEB9B0FE6FEC489CC875592B4948648FBDE23FA9967F1E0CC3BFA |
| MIME-Type | application/vnd.openxmlformats-officedocument.wordprocessingml.document |

[File Properties]

| | |
|-----------|--|
| File Name | SPIF_10053 XH2 Topo Zoom 8.5x11.pdf |
| Hash | 0DF0DE44B4B21166B585EA8D8B74F2178935A0F8719D77FDCB4C0F7645CAA394 |
| MIME-Type | application/pdf |

Domestic Attachments

1) Have you clearly outlined and labeled the required information on the original full size USGS Topographic Map? Yes

1.1) I certify that I have clearly outlined and labeled the required information on the Topographic map and attached here.

[File Properties]

| | |
|-----------|---|
| File Name | MAP_10053 XH1 Topo TX_Ponder_20220517_TM_geo.pdf |
|-----------|---|

Hash 42079569966EB1C2DFE5EA8980C07247492DAC3A06A9B0E5DFB17A5355D6B81D

MIME-Type application/pdf

2) Public Involvement Plan attachment (TCEQ Form 20960)

[File Properties]

File Name PIP_10053 XC PIP Form - Sanctuary.pdf

Hash 3C91346A9A0C05400ED575AB4749DE3E3D0C4406F8B75D76C669E823B75A9A55

MIME-Type application/pdf

3) Administrative Report 1.1

[File Properties]

File Name ARPT_STEERS 10053 Admin RPT 1.1
Sanctuary.pdf

Hash 3D7423E566503E8C3822E0851FC443269670896990D452F6BD0CD2E93CEC3C169

MIME-Type application/pdf

4) I confirm that all required sections of Technical Report 1.0 are complete and will be included in the Technical Attachment. Yes

4.1) I confirm that Technical Report 1.1 is complete and included in the Technical Attachment. Yes

4.2) I confirm that Worksheet 2.0 (Receiving Waters) is complete and included in the Technical Attachment. Yes

4.3) Are you planning to include Worksheet 2.1 (Stream Physical Characteristics) in the Technical Attachment? No

4.4) Are you planning to include Worksheet 4.0 (Pollutant Analyses Requirements) in the Technical Attachment? No

4.5) Are you planning to include Worksheet 5.0 (Toxicity Testing Requirements) in the Technical Attachment? No

4.6) Are you planning to include Worksheet 7.0 (Class V Injection Well Inventory/Authorization Form) in the Technical Attachment? No

4.7) Technical Attachment

[File Properties]

File Name TECH_10054 Technical RPT (New Form)
Sanctuary.docx

Hash 31D51653BD8FFCEDBE4C9C5CC517F8D3A9242B4FC797BD74409F9A643E79E66A

MIME-Type application/vnd.openxmlformats-officedocument.wordprocessingml.document

5) Affected Landowners Map

[File Properties]

File Name LANDMP_10053 XE1 Landowners Map
Sanctuary.pdf

Hash 3B41261F96AA11FD800090003B386C817152235024DB8077A530E680BFBF02ED

MIME-Type application/pdf

6) Landowners Cross Reference List

[File Properties]

File Name LANDCRL_10053 XD2 Landowners List Sanctuary.docx

Hash F610931EE2516E77EEEE5124F0E2FDB03D990B49E12046D9D708CA750D86756B

MIME-Type application/vnd.openxmlformats-officedocument.wordprocessingml.document

7) Landowner Avery Template

[File Properties]

File Name LANDAT_10053 XD3 Landowners Labels Sanctuary.docx

Hash 700D0F96FBDCE9004AAC0586B0306FB6C14359EB784E6F01FC07C76074B06106

MIME-Type application/vnd.openxmlformats-officedocument.wordprocessingml.document

8) Buffer Zone Map

[File Properties]

File Name BUFF_ZM_10053 XG Buffer Zone Map Sanctuary.pdf

Hash 676194666E34AB4A1D5BA87AA3ABF38BCB12D60690625235C2EADD3BFA841FD8

MIME-Type application/pdf

9) Flow Diagram

[File Properties]

File Name FLDIA_10054 X1A Process Flow Diagram 30K.pdf

Hash 048EA91A5244D3F37DD001F8F9E2CF99FAAF5FA1D76F0AF2A22F42CBBB4C7D99

MIME-Type application/pdf

[File Properties]

File Name FLDIA_10054 X1B Process Flow Diagram (250K).pdf

Hash 85E78C25FB0339451120CE6C22A31CC295475151F3234EAADB2FAE09B03B0415

MIME-Type application/pdf

[File Properties]

File Name FLDIA_10054 X1C Process Flow Diagram (500K).pdf

Hash 67459FB024FE0697B73BC3E562BBD2460D7C890A45E0E3CAD1D2AE06016CCA6D

MIME-Type application/pdf

10) Site Drawing

[File Properties]

File Name SITEDR_10054 X2 Site Diagram Sanctuary.pdf
Hash 1E8F8F04352F7D0133D2157EC6EE5FD033CC5E123EF575910F46CADD892DDB95
MIME-Type application/pdf

11) Original Photographs

[File Properties]

File Name ORIGPH_10053 XF Photos - Sanctuary
(reduced).pdf
Hash A601946952DF7C48720D04F7816D1B6B009CE2CA464353D61B4139C4031D0E05
MIME-Type application/pdf

12) Design Calculations

[File Properties]

File Name DES_CAL_10054 X5A BP 160 - 30000 MBR.pdf
Hash B9E6291C6AA1AEEAA1CB9BF16BEE05CF849EC9F7FA0A61E1D94EA3D170D989FB
MIME-Type application/pdf

[File Properties]

File Name DES_CAL_10054 X5B BP982 MBR 250000
gpd.pdf
Hash F026E60DD1DD22CCAD3EA40EC981770867D98DD5630CE1C90C3E2A32AF261FFE
MIME-Type application/pdf

[File Properties]

File Name DES_CAL_10054 X5C BP 815 - 500000 gpd
MBR.pdf
Hash B076A22ECF2B2ECDECC898739FAEF9A38EB58AE0AE8577F372F1E24D79FE4287
MIME-Type application/pdf

13) Solids Management Plan

[File Properties]

File Name SMP_10054 X7 Solids Management Plan
(Sanctuary 30K & 1.25MGD).docx
Hash B4890E99510C33946195D5A1C28D667A0A29922173B243564CC9BF98515BFBD
MIME-Type application/vnd.openxmlformats-
officedocument.wordprocessingml.document

14) Water Balance

[File Properties]

File Name WB_Item NA.docx
Hash 483D2AA3A99F36EBD15DE77317BFB8B1EBB977EDC72770CC1C8C6E15CA6945C2
MIME-Type application/vnd.openxmlformats-

officedocument.wordprocessingml.document

15) Other Attachments

[File Properties]

File Name OTHER_10053 XH2 Topo Zoom 8.5x11.pdf
 Hash 0DF0DE44B4B21166B585EA8D8B74F2178935A0F8719D77FDCB4C0F7645CAA394
 MIME-Type application/pdf

[File Properties]

File Name OTHER_10054 X6 Wind Rose.jpg
 Hash CAA7B733B2918600A6360E898CB2725B24C788C7A641C023571B3310D55B3BED
 MIME-Type image/jpeg

[File Properties]

File Name OTHER_10400 - Authorization Release - TCCI
 Sanctuary.signed.pdf
 Hash 7F2EF4F58062A2A03506EC5F4CAC9ED7F005324FA234CC523DDE09FF4CE17F87
 MIME-Type application/pdf

[File Properties]

File Name OTHER_10054 X4 WW Outfall Map Packet.pdf
 Hash 671117C848759B3C30352A62E5C27AF1863AC669D6829FE88B6E52C6F17307C4
 MIME-Type application/pdf

[File Properties]

File Name OTHER_10054 X3 LUE Dev (1.25MGD - 5
 Years).pdf
 Hash 4366B87E54F7C9CAB7FCED264D9D4DB2FCE0C3C698F606F01C1A0ED2100F610E
 MIME-Type application/pdf

Certification

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

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.

1. I am Randall Nelson, the owner of the STEERS account ER105186.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein,

that this information is true, accurate, and complete.

4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.
8. I am knowingly and intentionally signing New Domestic or Industrial Individual Permit.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OWNER Signature: Randall Nelson OWNER

Customer Number:

Legal Name:

TCCI Sanctuary WWTP LLC

Account Number:

ER105186

Signature IP Address:

75.245.146.112

Signature Date:

2024-07-12

Signature Hash:

38BF6283B2907AF14FA76904D80382CE012C396242A6CD109F25084C755FD49B

Form Hash Code at time
of Signature:

4F4EDFAFBE48924B2D1D3AD437336D791867EC5E4252162946F9A770221D55B3

Fee Payment

Transaction by:

The application fee payment transaction was made by ER105186/Randall Nelson

Paid by:

The application fee was paid by HILARY BOND

Fee Amount:

\$2000.00

Paid Date:

The application fee was paid on 2024-07-12

Transaction/Voucher number:

The transaction number is 582EA000617322 and the voucher number is 712823

Submission

Reference Number:

The application reference number is 665694

Submitted by:

The application was submitted by ER105186/Randall Nelson

Submitted Timestamp:

The application was submitted on 2024-07-12 at 21:06:37 CDT

Submitted From:

The application was submitted from IP address 75.245.146.112

Confirmation Number:

The confirmation number is 550790

Steers Version:

The STEERS version is 6.79

Additional Information

Application Creator: This account was created by Randall Nelson

Friday, April 12, 2024

Authorization Form

This form authorizes reUse to submit the Core Data Form (TCEQ-10400) on your behalf.

| | |
|----------------------------------|-------------------------|
| Name | Tommy Cansler, Pres |
| Title | President |
| Company/Client Legal Name | TCCI Sanctuary WWTP LLC |
| Email | 111tcci@att.net |

I, Tommy Cansler, Pres., hereby authorize reUse Engineering, Inc. to act as Authorized Signatory on the Core Data Form (TCEQ-10400) and submit the form on behalf of TCCI Sanctuary WWTP LLC.

Signature



| | |
|-----------------------|------------------------------|
| TITLE | Core Data Authorization Form |
| DOCUMENT ID | 241025415036040 |
| DOCUMENT PAGES | 1 |
| STATUS | COMPLETED |
| TIME ZONE | America/New York |

DOCUMENT HISTORY

| | | |
|--|--------------------------|-----------------------------|
|  Signed | Apr 12, 2024 02:30 PM | Signed IP: 72.176.247.37 |
|--|--------------------------|-----------------------------|



Texas Commission on Environmental Quality

Public Involvement Plan Form for Permit and Registration Applications

The Public Involvement Plan is intended to provide applicants and the agency with information about how public outreach will be accomplished for certain types of applications in certain geographical areas of the state. It is intended to apply to new activities; major changes at existing plants, facilities, and processes; and to activities which are likely to have significant interest from the public. This preliminary screening is designed to identify applications that will benefit from an initial assessment of the need for enhanced public outreach.

All applicable sections of this form should be completed and submitted with the permit or registration application. For instructions on how to complete this form, see TCEQ-20960-inst.

Section 1. Preliminary Screening

New Permit or Registration Application

New Activity - modification, registration, amendment, facility, etc. (see instructions)

If neither of the above boxes are checked, completion of the form is not required and does not need to be submitted.

Section 2. Secondary Screening

Requires public notice,

Considered to have significant public interest, **and**

Located within any of the following geographical locations:

- Austin
- Dallas
- Fort Worth
- Houston
- San Antonio
- West Texas
- Texas Panhandle
- Along the Texas/Mexico Border
- Other geographical locations should be decided on a case-by-case basis

**If all the above boxes are not checked, a Public Involvement Plan is not necessary.
Stop after Section 2 and submit the form.**

Public Involvement Plan not applicable to this application. Provide **brief** explanation.

Past TPDES Permits pursued for comparable subdivisions in nearby counties in Texas (Denton, Ellis, Kaufman) have not received significant public interest. (I.e. WQ0016219001, WQ0013434002, WQ0016201001, WQ0016242001.)



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by [Title 30, Texas Administrative Code \(30 TAC\), Chapter 39, Subchapter H](#). Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

If you are subject to the alternative language notice requirements in [30 TAC Section 39.426](#), **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS DOMESTIC WASTEWATER/STORMWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

TCCI Sanctuary WWTP LLC (2. Enter Customer Number here (i.e., CN6#####)) proposes to operate Sanctuary WWTP (5. Enter Regulated Entity Number here (i.e., RN1#####)), a Domestic Wastewater Treatment Plant. The facility will be located at approximately 1.1 miles southwest of the intersection of US Highway 380 and FM 156, in Ponder, Denton County, Texas 76259. The Applicant is currently applying to the Texas Commission on Environmental Quality for a Texas Pollutant Removal System (TPDES) Permit to discharge approximately 1,250,000 gallons per day of treated domestic wastewater from the proposed Wastewater Treatment Facility to be installed at the site.

Discharges from the facility are expected to contain no contaminants. Domestic wastewater will be treated by Membrane Biological Reactor (MBR) treatment technology. The facility will be constructed in phases with the first phase being a temporary plant capable of treating 30,000 gpd, a second phase treating 250,000 gpd, and a third phase with two (2) 500,000 gpd treatment facilities. The permanent facility will consist of an influent pumping station,

equalization basin, fine screen, two anoxic tanks, aerobic tank, membrane cells, ultraviolet disinfection, a sludge press, and an effluent pumping station.

PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES **Introduzca 'INDUSTRIALES' o 'DOMÉSTICAS' aquí** /AGUAS PLUVIALES

El siguiente resumen se proporciona para esta solicitud de permiso de calidad del agua pendiente que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo requerido por el Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

TCCI Sanctuary WWTP LLC (2. Introduzca el número de cliente aquí (es decir, CN6#####).) propone operar Sanctuary WWTP 5. Introduzca el número de entidad regulada aquí (es decir, RN1#####), un Planta de tratamiento de aguas residuales domesticas. La instalación estará ubicada en aproximadamente 1.1 millas al suroeste de la interseccion de la autopista US 380 y FM 156, en Ponder, Condado de Denton, Texas 76259. El Solicitante actualmente está solicitando a la Comisión de Calidad Ambiental de Texas un Permiso del Sistema de Eliminación de Contaminantes de Texas (TPDES) para descargar aproximadamente 1.250.000 galones por día de aguas residuales domésticas tratadas de la Instalación de **Tratamiento de Aguas Residuales** propuesta que se instalará en el sitio.

Se espera que las descargas de la instalación contengan no contaminants. **Aguas residuales domésticas** . **estará** tratado por Tecnología de tratamiento de reactor biológico de membrana (MBR). La instalación se construirá en fases: la primera fase será una planta temporal capaz de tratar 30.000 gpd, una segunda fase tratará 250.000 gpd y una tercera fase con dos (2) instalaciones de tratamiento de 500.000 gpd. La instalación permanente constará de una estación de bombeo de afluentes, estanque de eculización, criba fina, dos tanques anóxicos, tanque aeróbico, celdas de membrana, desinfección ultravioleta, prensa de lodos y estación de bombeo de efluentes.

INSTRUCTIONS

1. Enter the name of applicant in this section. The applicant name should match the name associated with the customer number.
2. Enter the Customer Number in this section. Each Individual or Organization is issued a unique 11-digit identification number called a CN (e.g. CN123456789).
3. Choose “operates” in this section for existing facility applications or choose “proposes to operate” for new facility applications.
4. Enter the name of the facility in this section. The facility name should match the name associated with the regulated entity number.
5. Enter the Regulated Entity number in this section. Each site location is issued a unique 11-digit identification number called an RN (e.g. RN123456789).
6. Choose the appropriate article (a or an) to complete the sentence.
7. Enter a description of the facility in this section. For example: steam electric generating facility, nitrogenous fertilizer manufacturing facility, etc.
8. Choose “is” for an existing facility or “will be” for a new facility.
9. Enter the location of the facility in this section.
10. Enter the City nearest the facility in this section.
11. Enter the County nearest the facility in this section.
12. Enter the zip code for the facility address in this section.
13. Enter a summary of the application request in this section. For example: renewal to discharge 25,000 gallons per day of treated domestic wastewater, new application to discharge process wastewater and stormwater on an intermittent and flow-variable basis, or major amendment to reduce monitoring frequency for pH, etc. If more than one outfall is included in the application, provide applicable information for each individual outfall.
14. List all pollutants expected in the discharge from this facility in this section. If applicable, refer to the pollutants from any federal numeric effluent limitations that apply to your facility.
15. Enter the discharge types from your facility in this section (e.g., stormwater, process wastewater, once through cooling water, etc.)
16. Choose the appropriate verb tense to complete the sentence.
17. Enter a description of the wastewater treatment used at your facility. Include a description of each process, starting with initial treatment and finishing with the outfall/point of disposal. Use additional lines for individual discharge types if necessary.

Questions or comments concerning this form may be directed to the Water Quality Division’s Application Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by phone at (512) 239-4671.

Example

Individual Industrial Wastewater Application

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and are not federal enforceable representations of the permit application.

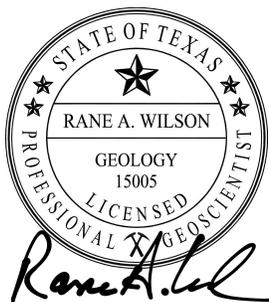
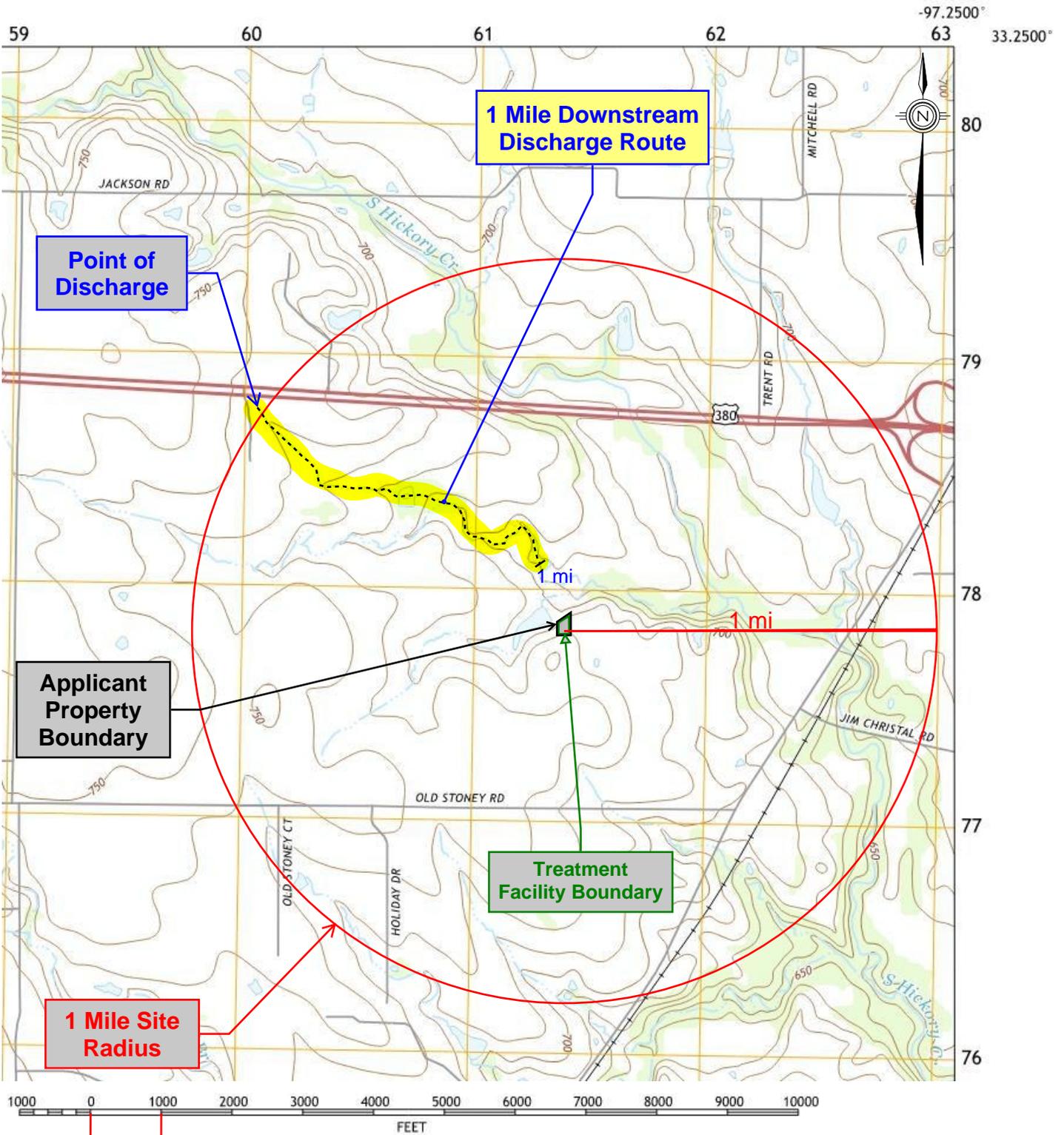
ABC Corporation (CN600000000) operates the Starr Power Station (RN10000000000), a two-unit gas-fired electric generating facility. Unit 1 has a generating capacity of 393 megawatts (MWs) and Unit 2 has a generating capacity of 528 MWs. The facility is located at 1356 Starr Street, near the City of Austin, Travis County, Texas 78753.

This application is for a renewal to discharge 870,000,000 gallons per day of once through cooling water, auxiliary cooling water, and also authorizes the following waste streams monitored inside the facility (internal outfalls) before it is mixed with the other wastewaters authorized for discharge via main Outfall 001, referred to as “previously monitored effluents” (low-volume wastewater, metal-cleaning waste, and stormwater (from diked oil storage area yards and storm drains)) via Outfall 001. Low-volume waste sources, metal-cleaning waste, and stormwater drains on a continuous and flow-variable basis via internal Outfall 101.

The discharge of once through cooling water via Outfall 001 and low-volume waste and metal-cleaning waste via Outfall 101 from this facility is subject to federal effluent limitation guidelines at 40 CFR Part 423. The pollutants expected from these discharges based on 40 CFR Part 423 are: free available chlorine, total residual chlorine, total suspended solids, oil and grease, total iron, total copper, and pH. Temperature is also expected from these discharges. Additional potential pollutants are included in the Industrial Wastewater Application Technical Report, Worksheet 2.0.

Cooling water and boiler make-up water are supplied by Lake Starr Reservoir. The City of Austin municipal water plant (CN600000000, PWS 00000) supplies the facility’s potable water and serves as an alternate source of boiler make-up water. Water from the Lake Starr Reservoir is withdrawn at the intake structure and treated with sodium hypochlorite to prevent biofouling and sodium bromide as a chlorine enhancer to improve efficacy and then passed through condensers and auxiliary equipment on a once-through basis to cool equipment and condense exhaust steam.

Low-volume wastewater from blowdown of boiler Units 1 and 2 and metal-cleaning wastes receive no treatment prior to discharge via Outfall 101. Plant floor and equipment drains and stormwater runoff from diked oil storage areas, yards, and storm drains are routed through an oil and water separator prior to discharge via Outfall 101. Domestic wastewater, blowdown, and backwash water from the service water filter, clarifier, and sand filter are routed to the Starr Creek Domestic Sewage Treatment Plant, TPDES Permit No. WQ0010000001, for treatment and disposal. Metal-cleaning waste from equipment cleaning is generally disposed of off-site.



06/24/2024

reUse
 reUse Engineering
 4411 SH 35, Suite 100
 Georgetown, TX 78626
 TX Firm No. 21880

TC CI SANCTUARY WWTP LLC
 TPDES PERMIT APPLICATION
 DENTON COUNTY, TEXAS

U.S.G.S TOPOGRAPHIC MAP
 (SPIF REDUCED PORTION)
Attachment H2

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)**

**FOR AGENCIES REVIEWING DOMESTIC OR INDUSTRIAL
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)

Complete this form as a separate document. TCEQ will mail a copy to each agency as required by our agreement with EPA. If any of the items are not completely addressed or further information is needed, we will contact you to provide the information before issuing the permit. Address each item completely.

Do not refer to your response to any item in the permit application form. Provide each attachment for this form separately from the Administrative Report of the application. The application will not be declared administratively complete without this SPIF form being completed in its entirety including all attachments. Questions or comments concerning this form may be directed to the Water Quality Division's Application Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by phone at (512) 239-4671.

The following applies to all applications:

1. Permittee: TCCI Sanctuary WWTP LLC

Permit No. WQ00 _____

EPA ID No. TX _____

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

The WWTF site is located approximately 1.1 miles southwest of the intersection of US Highway 380 and FM 156 in Ponder, Denton County, Texas (33.227891, -97.267695).

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: Rane Wilson

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

Title: Hydrogeologist Lead

Mailing Address: 4411 S Interstate 35, Suite 100

City, State, Zip Code: Georgetown, TX 78626

Phone No.: 570-567-4297 Ext.: [REDACTED]

Fax No.: [REDACTED]

E-mail Address: rane@reuseeng.com

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

N/A

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.

Point of discharge is located at (33.232015, -97.289130). Discharge is into an unnamed tributary, thence into South Hickory Creek, thence into Hickory Creek located approximately 3.4 miles southeast of the WWTF site ultimately discharging into Lewisville Lake.

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

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

Approximately 2 acres will be disturbed to construct the WWTF with additional acreage disturbed for the pressurized discharge line. No wetlands, caves, or karst features will be impacted by the proposed WWTF construction.

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

Existing WWTF location is agricultural land immediately adjacent to an operating natural gas well and pad.

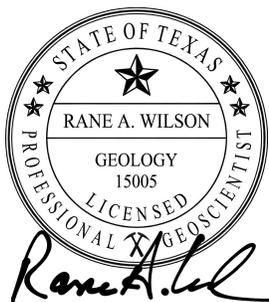
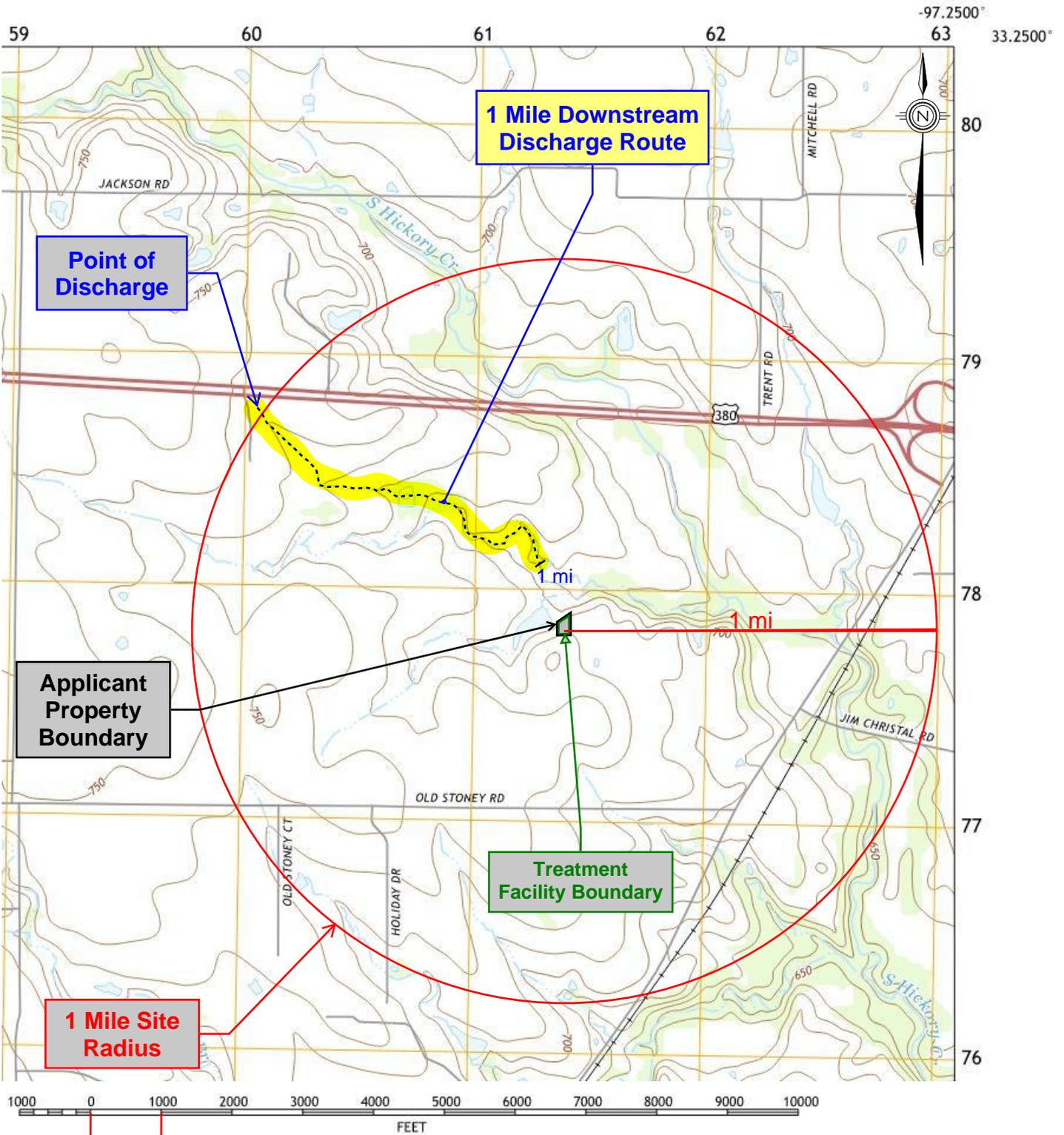
THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS

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

Subdivision is proposed to be constructed on the property adjacent to the Applicants property; completion date unknown. Structures, individual homes, will be subject to individual property owners. No structures other than those related to the WWTF will be constructed on the Applicants property.

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

There are no buildings or structures on the property. No architect/builder.



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 TPDES PERMIT APPLICATION
 DENTON COUNTY, TEXAS

U.S.G.S TOPOGRAPHIC MAP
 (SPIF REDUCED PORTION)
Attachment H2

DOMESTIC WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.0

The following information is required for new and amendment applications.

Section 1. Affected Landowner Information (Instructions Page 36)

- A. Indicate by a check mark that the landowners map or drawing, with scale, includes the following information, as applicable:
- The applicant's property boundaries
 - The facility site boundaries within the applicant's property boundaries
 - The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
 - The property boundaries of all landowners surrounding the applicant's property (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)
 - The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream
 - The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge
 - The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides
 - The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property
 - The property boundaries of all landowners surrounding the effluent disposal site
 - The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
 - The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located
- B. Indicate by a check mark that a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.
- C. Indicate by a check mark in which format the landowners list is submitted:
- USB Drive
 - Four sets of labels
- D. Provide the source of the landowners' names and mailing addresses:
<https://gis.bisclient.com/dentoncad>
- E. As required by *Texas Water Code § 5.115*, is any permanent school fund land affected by this application?
- Yes
 - No

If **yes**, provide the location and foreseeable impacts and effects this application has on the land(s):

Click to enter text.

Section 2. Original Photographs (Instructions Page 38)

Provide original ground level photographs. Indicate with checkmarks that the following information is provided.

- At least one original photograph of the new or expanded treatment unit location
- At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.
- At least one photograph of the existing/proposed effluent disposal site
- A plot plan or map showing the location and direction of each photograph

Section 3. Buffer Zone Map (Instructions Page 38)

A. Buffer zone map. Provide a buffer zone map on 8.5 x 11-inch paper with all of the following information. The applicant's property line and the buffer zone line may be distinguished by using dashes or symbols and appropriate labels.

- The applicant's property boundary;
- The required buffer zone; and
- Each treatment unit; and
- The distance from each treatment unit to the property boundaries.

B. Buffer zone compliance method. Indicate how the buffer zone requirements will be met. Check all that apply.

- Ownership
- Restrictive easement
- Nuisance odor control
- Variance

C. Unsuitable site characteristics. Does the facility comply with the requirements regarding unsuitable site characteristic found in 30 TAC § 309.13(a) through (d)?

- Yes No

DOMESTIC WASTEWATER PERMIT APPLICATION

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

This form applies to TPDES permit applications only. Complete and attach the Supplemental Permit information Form (SPIF) (TCEQ Form 20971).

Attachment: H Supplemental Permit Information Form

TCCI SANCTUARY LLC
3930 GLADE RD STE 103-322
COLLEYVILLE TX 76034

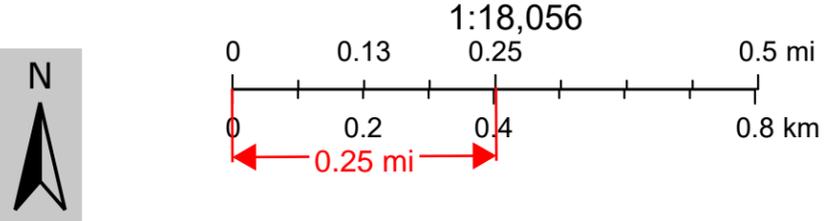
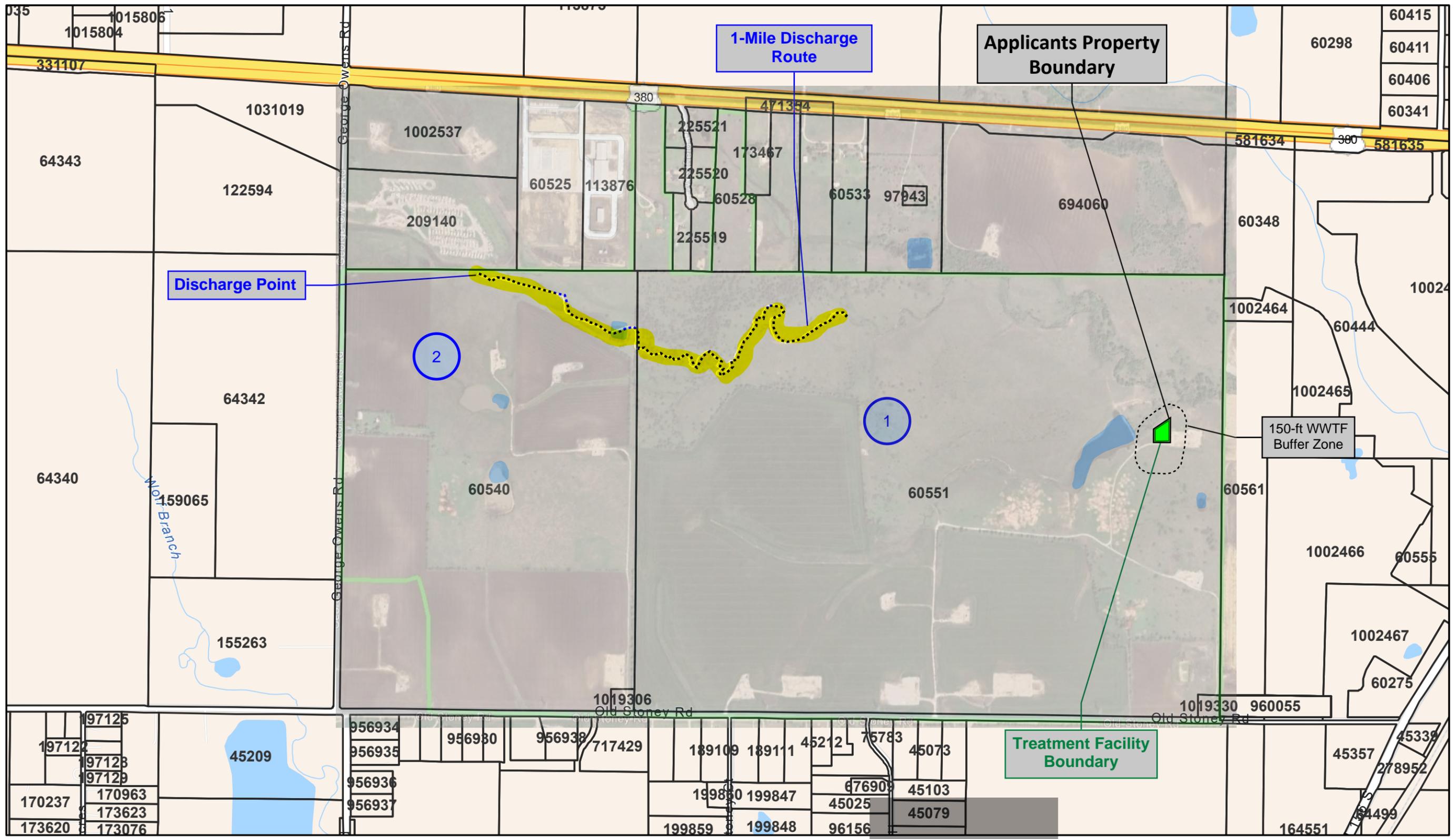
Landowner's Cross Reference List

1. Parcel 60551

TCCI Sanctuary LLC
3930 GLADE RD STE 103-322
COLLEYVILLE, TX 76034

2. Parcel 60540

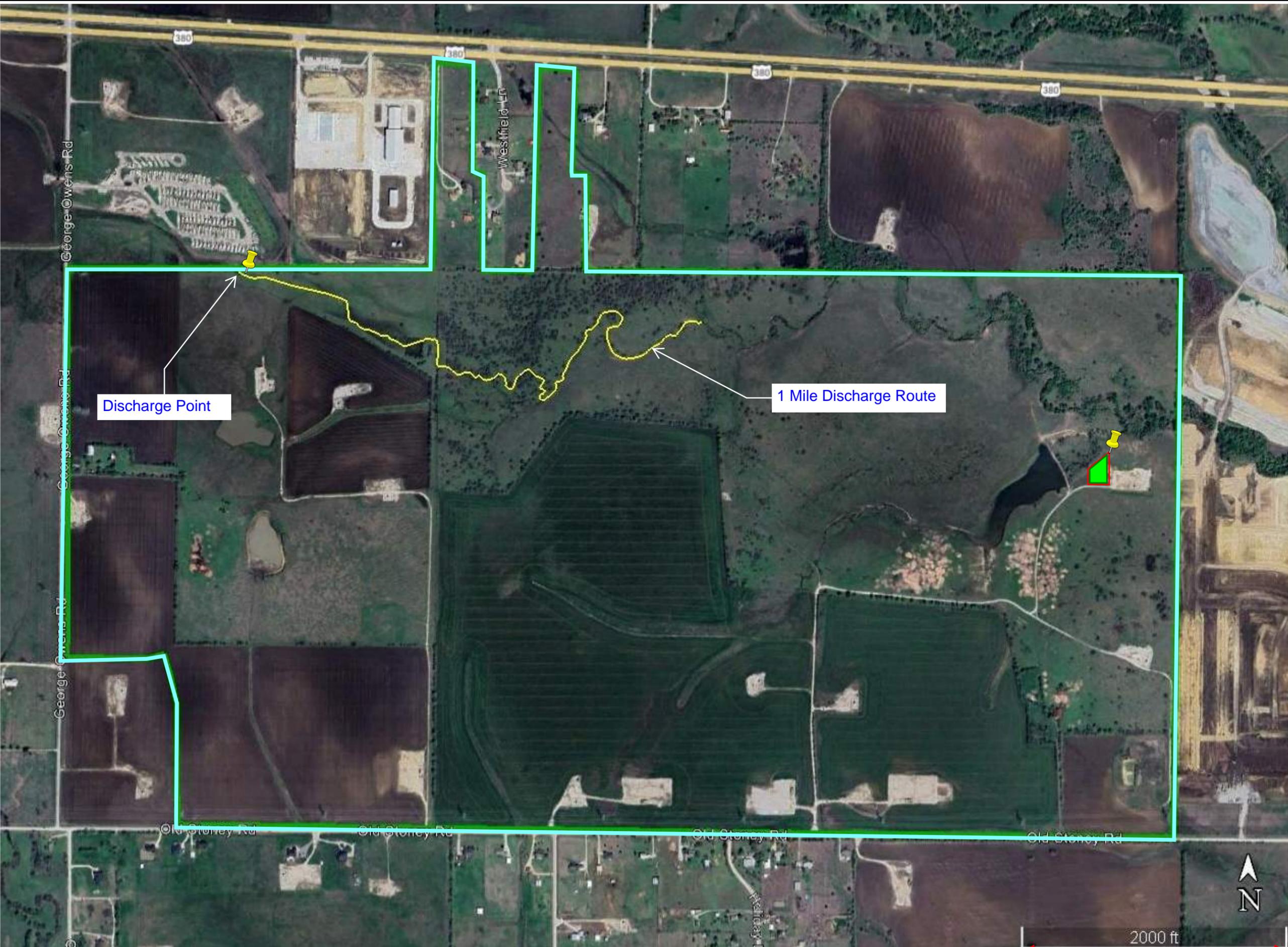
TCCI Sanctuary LLC
3930 GLADE RD STE 103-322
COLLEYVILLE, TX 76034



THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSE.
 ENGINEER: Lauren B. Wahl, P.E.
 P.E. LICENSE NUMBER: Texas 141050
 TEXAS ENGR FIRM: F-21880 ReUse Engineering, Inc.
 DATE: 21 FEB 2023



TCCI SANCTUARY WWTP LLC
 TPDES PERMIT APPLICATION
 DENTON COUNTY, TEXAS
 LANDOWNERS MAP
 Attachment E



- Applicant's Property Boundary
- Treatment Facility Boundary
- Area Served By WWTF
- 📌 Photo Location

Discharge Point

1 Mile Discharge Route



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Georgetown, TX 78626
TX Firm No. 21880

TCCI SANCTUARY WWTP LLC
TPDES PERMIT APPLICATION
DENTON COUNTY, TEXAS

ORIGINAL PHOTOGRAPHS
Attachment F



WWTF

VIEW TO NORTH



WWTF

VIEW TO WEST



DISCHARGE POINT

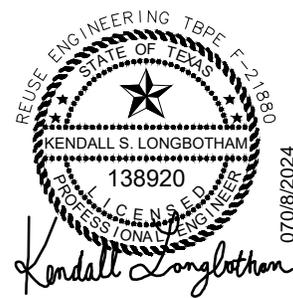
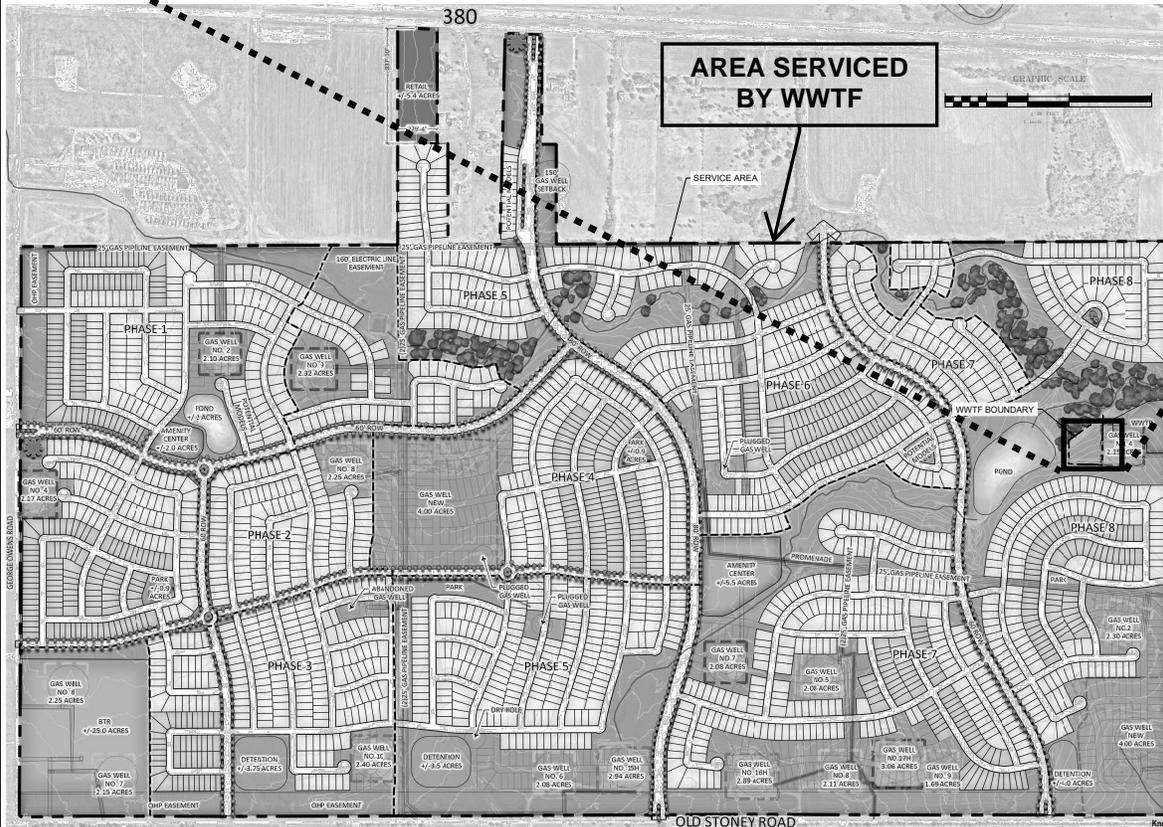
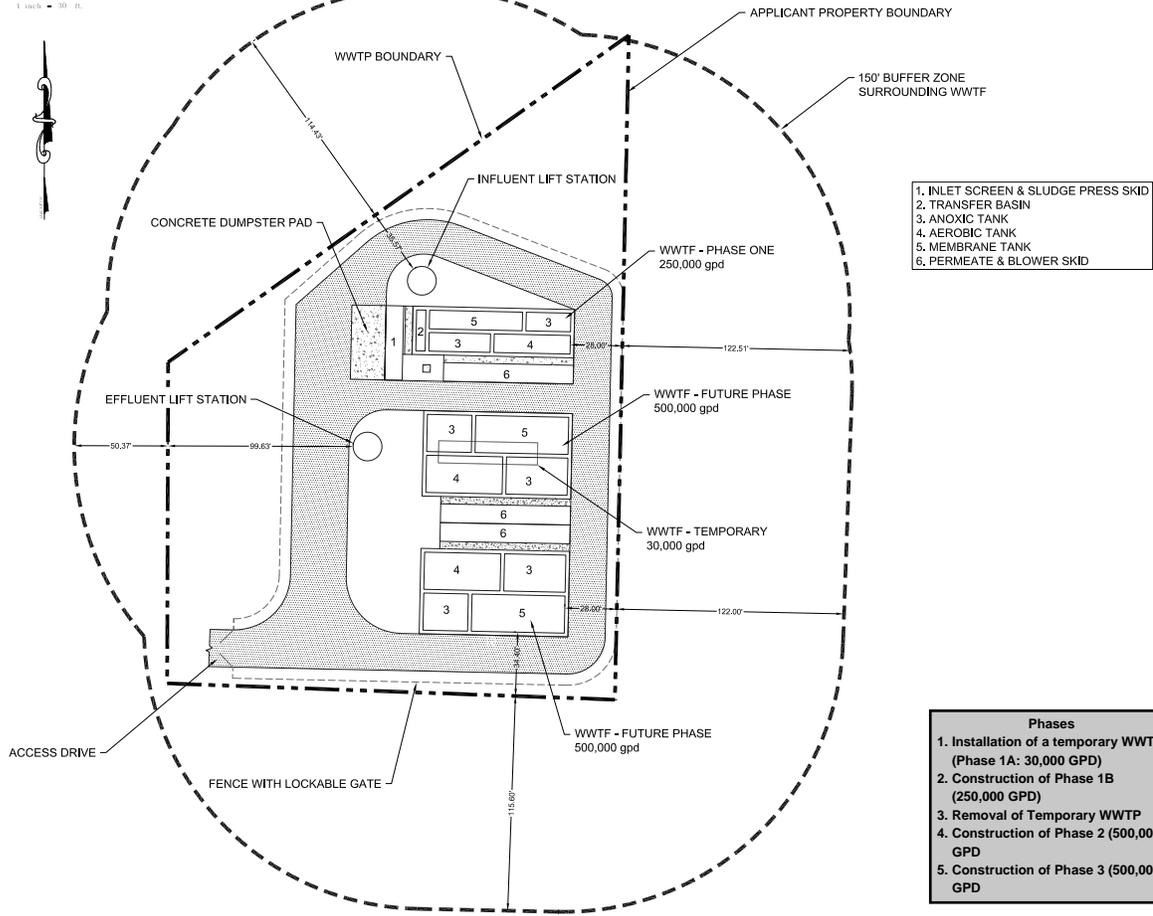
UPSTREAM - VIEW TO
NORTHWEST



DISCHARGE POINT

DOWNSTREAM - VIEW TO
SOUTHEAST





THE APPLICANT WILL HAVE AN ODOR & ABATEMENT EASEMENT WITH THE ADJACENT PROPERTY OWNER INTO WHICH THE 150-FT BUFFER ZONE FALLS

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ENGINEERING
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 Georgetown, TX 78626
 TX Firm No. 21880

TCCI SANCTUARY WWTP LLC
TPDES PERMIT APPLICATION
 DENTON COUNTY, TEXAS

BUFFER ZONE MAP
Attachment G



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

For any questions about this form, please contact the Domestic Wastewater Permitting Team at 512-239-4671.

The following information is required for all renewal, new, and amendment applications.

Section 1. Permitted or Proposed Flows (Instructions Page 43)

A. Existing/Interim I Phase

Design Flow (MGD): 0.03

2-Hr Peak Flow (MGD): 0.12

Estimated construction start date: Calendar Year 2025

Estimated waste disposal start date: Calendar Year 2025

B. Interim II Phase

Design Flow (MGD): 0.25

2-Hr Peak Flow (MGD): 1.0

Estimated construction start date: Calendar Year 2025

Estimated waste disposal start date: Calendar Year 2026

C. Final Phase

Design Flow (MGD): +0.50+0.50 = 1.25

2-Hr Peak Flow (MGD): 5.0

Estimated construction start date: Calendar Year 2028

Estimated waste disposal start date: Calendar Year 2029

D. Current Operating Phase

Provide the startup date of the facility: Click to enter text.

Section 2. Treatment Process (Instructions Page 43)

A. Current Operating Phase

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, a description of *each phase* must be provided.**

The plant is a Membrane Bio-Reactor (MBR) facility, including influent pump station, fine screen, two anoxic tanks, aerobic, and membrane cells with ultraviolet disinfection, a sludge press, and an effluent pump station. Phase I will include a 30,000 gpd temporary plant, which will be removed upon the installation of the permanent facility which includes one (1) 250,000 gpd treatment train followed by two (2) 500,000 gpd treatment trains for a total of 1,250,000 gpd treated effluent to be discharged in the final phase.

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)(A) - Treatment Units for 30K GPD Treatment Train

| Treatment Unit Type | Number of Units | Dimensions (L x W x D) |
|--------------------------|-----------------|------------------------|
| Fine Screen | 2 | N/A |
| Anoxic Tank I | 1 | 10'x10'x12' |
| Aerobic Tank | 1 | 10'x10'x12' |
| Membrane Cell | 1 | 10'x10'x12' |
| Ultraviolet Disinfection | 2 | N/A |
| Sludge Press | 1 | N/A |

Table 1.0(1)(B) – Treatment Units for 250K GPD Treatment Train

| | | |
|--------------------------|---|---------------|
| Fine Screen | 2 | N/A |
| Anoxic Tank I | 1 | 33'x10'x17.5' |
| Aerobic Tank | 1 | 41'x10'x17.5' |
| Anoxic Tank II | 1 | 24'x10'x17.5' |
| Membrane Cell | 1 | 50'x10'x17.5' |
| Ultraviolet Disinfection | 2 | N/A |
| Sludge Press | 1 | N/A |

Table 1.0(1)(C) – Treatment Units for 500K GPD Treatment Train

| | | |
|--------------------------|---|---------------|
| Fine Screen | 4 | N/A |
| Anoxic Tank I | 2 | 20'x40'x21' |
| Aerobic Tank | 2 | 20'x40'x21' |
| Anoxic Tank II | 2 | 20'x40'x21' |
| Membrane Cell | 4 | 16'x19.5'x21' |
| Ultraviolet Disinfection | 4 | N/A |
| Sludge Press | 2 | N/A |

C. Process Flow Diagram

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

Attachment: [1. Process Flow Diagram](#)

Section 3. Site Information and Drawing (Instructions Page 44)

Provide the TPDES discharge outfall latitude and longitude. Enter N/A if not applicable.

- Latitude: [33.232015](#)
- Longitude: [-97.289130](#)

Provide the TLAP disposal site latitude and longitude. Enter N/A if not applicable.

- Latitude: [N/A](#)
- Longitude: [N/A](#)

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: [Click to enter text.](#)

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

Sanctuary WWTP will serve a residential development with proposed 3,333 Living Units Equivalents (LUEs). Additional LUEs are anticipated to developed and their wastewater directed to the proposed 1.25 MGD WWTF.

Collection System Information **for wastewater TPDES permits only:** Provide information for each **uniquely owned** collection system, existing and new, served by this facility, including satellite collection systems. **Please see the instructions for a detailed explanation and examples.**

Collection System Information

| Collection System Name | Owner Name | Owner Type | Population Served |
|------------------------|-------------------------|---------------------------------|-------------------|
| Sanctuary WWTP | TCCI Sanctuary WWTP LLC | Privately Owned | 3,333 LUEs |
| | | Choose an item. | |
| | | Choose an item. | |
| | | Choose an item. | |

Section 4. Unbuilt Phases (Instructions Page 45)

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.**

Click to enter text.

Section 5. Closure Plans (Instructions Page 45)

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.

Click to enter text.

Section 6. Permit Specific Requirements (Instructions Page 45)

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: [Click to enter text.](#)

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 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.

See Attachment G of the 10053 Administrative Report. The wastewater treatment facility is either located 150 feet from the nearest property line or an easement (Odor and Noise Abatement) has been/will be created between the Applicant and the neighboring property into which the buffer zone falls.

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*.

[Click to enter text.](#)

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 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 512-239-2335. 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 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 512-239-2335.

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

Click 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 [Click to enter text.](#) or TXRNE [Click 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:

[Click to enter text.](#)

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 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 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 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, attach a Sewage Sludge Solids Management Plan. See Example 5 in the instructions.

[Click to enter text.](#)

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

1. Acceptance of sludge from other WWTPs

Does or will the facility accept sludge from other treatment plants at the facility site?

Yes No

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

In addition, provide the date the plant started or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD₅ concentration of the sludge, and the design BOD₅ concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Click 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 the date the plant started or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD₅ concentration of the septic waste, and the design BOD₅ concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

Click 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 or will the facility 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 to enter text.

Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 50)

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). **Water treatment facilities** discharging filter backwash water, complete Table 1.0(3). Provide copies of the laboratory results sheets. **These tables are not applicable for a minor amendment without renewal.** See the instructions for guidance.

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 | | | | | |
| Total Suspended Solids, mg/l | | | | | |
| Ammonia Nitrogen, mg/l | | | | | |
| Nitrate Nitrogen, mg/l | | | | | |
| Total Kjeldahl Nitrogen, mg/l | | | | | |
| Sulfate, mg/l | | | | | |
| Chloride, mg/l | | | | | |
| Total Phosphorus, mg/l | | | | | |
| pH, standard units | | | | | |
| Dissolved Oxygen*, mg/l | | | | | |
| Chlorine Residual, mg/l | | | | | |
| <i>E.coli</i> (CFU/100ml) freshwater | | | | | |
| Enterococci (CFU/100ml) saltwater | | | | | |
| Total Dissolved Solids, mg/l | | | | | |
| Electrical Conductivity, µmohs/cm, † | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| Oil & Grease, mg/l | | | | | |
| Alkalinity (CaCO ₃)*, mg/l | | | | | |

*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 50)

Facility Operator Name: Not yet contracted.

Facility Operator's License Classification and Level: Click to enter text.

Facility Operator's License Number: Click to enter text.

Section 9. Sludge and Biosolids Management and Disposal (Instructions Page 51)

A. WWTP's Biosolids Management Facility Type

Check all that apply. See instructions for guidance

- Design flow >= 1 MGD
- Serves >= 10,000 people
- Class I Sludge Management Facility (per 40 CFR § 503.9)
- Biosolids generator
- Biosolids end user - land application (onsite)
- Biosolids end user - surface disposal (onsite)
- Biosolids end user - incinerator (onsite)

B. WWTP's Biosolids Treatment Process

Check all that apply. See instructions for guidance.

- Aerobic Digestion
- Air Drying (or sludge drying beds)
- Lower Temperature Composting
- Lime Stabilization
- Higher Temperature Composting

- Heat Drying
- Thermophilic Aerobic Digestion
- Beta Ray Irradiation
- Gamma Ray Irradiation
- Pasteurization
- Preliminary Operation (e.g. grinding, de-gritting, blending)
- Thickening (e.g. gravity thickening, centrifugation, filter press, vacuum filter)
- Sludge Lagoon
- Temporary Storage (< 2 years)
- Long Term Storage (>= 2 years)
- Methane or Biogas Recovery
- Other Treatment Process: Dewatering using screw press will produce dry sludge cakes.

C. Biosolids Management

Provide information on the *intended* biosolids management practice. Do not enter every management practice that you want authorized in the permit, as the permit will authorize all biosolids management practices listed in the instructions. Rather indicate the management practice the facility plans to use.

Biosolids Management

| Management Practice | Handler or Preparer Type | Bulk or Bag Container | Amount (dry metric tons) | Pathogen Reduction Options | Vector Attraction Reduction Option |
|----------------------|---------------------------|-----------------------|--------------------------|----------------------------|---|
| Disposal in Landfill | On-Site Owner or Operator | Bulk | 371 | Class B: PSRP Air Drying | Option 11: Biosolids covered at end of each day |
| Choose an item. | Choose an item. | Choose an item. | | Choose an item. | Choose an item. |
| Choose an item. | Choose an item. | Choose an item. | | Choose an item. | Choose an item. |

If “Other” is selected for Management Practice, please explain (e.g. monofill or transport to another WWTP): [Click to enter text.](#)

D. Disposal site

Disposal site name: **City of Denton Landfill**
 TCEQ permit or registration number: **1590B**
 County where disposal site is located: **Denton**

E. Transportation method

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

Name of the hauler: Texas Rural Waste (Integrity Septic Service)

Hauler registration number: 25759

Sludge is transported as a:

Liquid semi-liquid semi-solid solid

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 53)

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 53)

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 to enter text.](#)
- USDA Natural Resources Conservation Service Soil Map:
Attachment: [Click to enter text.](#)
- Federal Emergency Management Map:
Attachment: [Click to enter text.](#)
- Site map:
Attachment: [Click 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 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 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 to enter text.](#)

Total Kjeldahl Nitrogen, mg/kg: [Click to enter text.](#)

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

Phosphorus, mg/kg: [Click to enter text.](#)

Potassium, mg/kg: [Click to enter text.](#)

pH, standard units: [Click to enter text.](#)

Ammonia Nitrogen mg/kg: [Click to enter text.](#)

Arsenic: [Click to enter text.](#)

Cadmium: [Click to enter text.](#)

Chromium: [Click to enter text.](#)

Copper: [Click to enter text.](#)

Lead: [Click to enter text.](#)

Mercury: [Click to enter text.](#)

Molybdenum: [Click to enter text.](#)

Nickel: [Click to enter text.](#)

Selenium: [Click to enter text.](#)

Zinc: [Click to enter text.](#)

Total PCBs: [Click to enter text.](#)

Provide the following information:

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

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

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

C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of 1×10^{-7} cm/sec?

Yes No

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

[Click to enter text.](#)

D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the lagoon(s):

[Click to enter text.](#)

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)
Attachment: [Click to enter text.](#)
- Copy of the closure plan
Attachment: [Click to enter text.](#)
- Copy of deed recordation for the site
Attachment: [Click to enter text.](#)

- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons
Attachment: [Click to enter text.](#)
- Description of the method of controlling infiltration of groundwater and surface water from entering the site
Attachment: [Click to enter text.](#)
- Procedures to prevent the occurrence of nuisance conditions
Attachment: [Click 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 to enter text.](#)

Section 12. Authorizations/Compliance/Enforcement (Instructions Page 55)

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 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 to enter text.](#)

Section 13. RCRA/CERCLA Wastes (Instructions Page 55)

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 to enter text.](#)

Section 14. Laboratory Accreditation (Instructions Page 56)

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: N/A, no laboratory tests submitted with New Application.

Title: Click to enter text.

Signature: _____

Date: _____

DOMESTIC WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.1

The following information is required for new and amendment major applications.

Section 1. Justification for Permit (Instructions Page 57)

A. Justification of permit need

Provide a detailed discussion regarding the need for any phase(s) not currently permitted. Failure to provide sufficient justification may result in the Executive Director recommending denial of the proposed phase(s) or permit.

There is not currently a central (public or private) wastewater service that is willing to provide service to the proposed development. Sewer treatment per individual lot is not practical and connection to nearby systems is not a viable option. See Attachment 3 for the Projection of LUEs & Wastewater Flow to WWTF Capacity Over Time of Development. The plot shows that the WWTF capacity will increase prior to development and occupation of LUEs (Living Unit Equivalents). Year 0 represents the start of operation, when LUEs are occupied, and wastewater flow begins.

B. Regionalization of facilities

For additional guidance, please review [TCEQ's Regionalization Policy for Wastewater Treatment](#)¹.

Provide the following information concerning the potential for regionalization of domestic wastewater treatment facilities:

1. Municipally incorporated areas

If the applicant is a city, then Item 1 is not applicable. Proceed to Item 2 Utility CCN areas.

Is any portion of the proposed service area located in an incorporated city?

Yes No Not Applicable

If yes, within the city limits of: [Click to enter text.](#)

If yes, attach correspondence from the city.

Attachment: [Click to enter text.](#)

If consent to provide service is available from the city, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the city versus the cost of the proposed facility or expansion attached.

Attachment: [Click to enter text.](#)

2. Utility CCN areas

Is any portion of the proposed service area located inside another utility's CCN area?

Yes No

¹ <https://www.tceq.texas.gov/permitting/wastewater/tceq-regionalization-for-wastewater>

If **yes**, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the CCN facilities versus the cost of the proposed facility or expansion.

Attachment: [Click to enter text.](#)

3. *Nearby WWTPs or collection systems*

Are there any domestic permitted wastewater treatment facilities or collection systems located within a three-mile radius of the proposed facility?

Yes No

If **yes**, attach a list of these facilities and collection systems that includes each permittee's name and permit number, and an area map showing the location of these facilities and collection systems.

Attachment: [4. Wastewater Outfall Map](#)

If **yes**, attach proof of mailing a request for service to each facility and collection system, the letters requesting service, and correspondence from each facility and collection system.

Attachment: [Letters and responses included in Attachment 4.](#)

If the facility or collection system agrees to provide service, attach a justification for the proposed facility and a cost analysis of expenditures that includes the cost of connecting to the facility or collection system versus the cost of the proposed facility or expansion.

Attachment: [Click to enter text.](#)

Section 2. Proposed Organic Loading (Instructions Page 59)

Is this facility in operation?

Yes No

If **no**, proceed to Item B, Proposed Organic Loading.

If **yes**, provide organic loading information in Item A, Current Organic Loading

A. Current organic loading

Facility Design Flow (flow being requested in application): [Click to enter text.](#)

Average Influent Organic Strength or BOD₅ Concentration in mg/l: [Click to enter text.](#)

Average Influent Loading (lbs/day = total average flow X average BOD₅ conc. X 8.34): [Click to enter text.](#)

Provide the source of the average organic strength or BOD₅ concentration.

[Click to enter text.](#)

B. Proposed organic loading

This table must be completed if this application is for a facility that is not in operation or if this application is to request an increased flow that will impact organic loading.

Table 1.1(1) – Design Organic Loading

| Source | Total Average Flow (MGD) | Influent BOD5 Concentration (mg/l) |
|---|--------------------------|------------------------------------|
| Municipality | | |
| Subdivision | 1.25 | 350 |
| Trailer park - transient | | |
| Mobile home park | | |
| School with cafeteria and showers | | |
| School with cafeteria, no showers | | |
| Recreational park, overnight use | | |
| Recreational park, day use | | |
| Office building or factory | | |
| Motel | | |
| Restaurant | | |
| Hospital | | |
| Nursing home | | |
| Other | | |
| TOTAL FLOW from all sources | 1.50 | |
| AVERAGE BOD ₅ from all sources | | 350 |

Section 3. Proposed Effluent Quality and Disinfection (Instructions Page 59)

A. Existing/Interim I Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: 10.0

Total Suspended Solids, mg/l: 10.0

Ammonia Nitrogen, mg/l: 5.0

Total Phosphorus, mg/l: 1.0

Dissolved Oxygen, mg/l: 5.0

Other: Click to enter text.

B. Interim II Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: 10.0

Total Suspended Solids, mg/l: 10.0

Ammonia Nitrogen, mg/l: 5.0

Total Phosphorus, mg/l: 1.0

Dissolved Oxygen, mg/l: 5.0

Other: Click to enter text.

C. Final Phase Design Effluent Quality

Biochemical Oxygen Demand (5-day), mg/l: 10.0

Total Suspended Solids, mg/l: 10.0

Ammonia Nitrogen, mg/l: 5.0

Total Phosphorus, mg/l: 1.0

Dissolved Oxygen, mg/l: 5.0

Other: Click to enter text.

D. Disinfection Method

Identify the proposed method of disinfection.

Chlorine: Click to enter text. mg/l after Click to enter text. minutes detention time at peak flow

Dechlorination process: Click to enter text.

Ultraviolet Light: 1.0 seconds contact time at peak flow

Other: Click to enter text.

Section 4. Design Calculations (Instructions Page 59)

Attach design calculations and plant features for each proposed phase. Example 4 of the instructions includes sample design calculations and plant features.

Attachment: 5. Design Calculations

Section 5. Facility Site (Instructions Page 60)

A. 100-year floodplain

Will the proposed facilities be located above the 100-year frequency flood level?

Yes No

If no, describe measures used to protect the facility during a flood event. Include a site map showing the location of the treatment plant within the 100-year frequency flood level. If applicable, provide the size and types of protective structures.

Click to enter text.

Provide the source(s) used to determine 100-year frequency flood plain.

FEMA Flood Map Service Center (<https://msc.fema.gov/portal/home>)

For a new or expansion of a facility, will a wetland or part of a wetland be filled?

Yes No

If **yes**, has the applicant applied for a US Corps of Engineers 404 Dredge and Fill Permit?

Yes No

If **yes**, provide the permit number: [Click to enter text.](#)

If **no**, provide the approximate date you anticipate submitting your application to the Corps: [Click to enter text.](#)

B. Wind rose

Attach a wind rose: [Attachment 6 Wind Rose](#)

Section 6. Permit Authorization for Sewage Sludge Disposal (Instructions Page 60)

A. Beneficial use authorization

Are you requesting to include authorization to land apply sewage sludge for beneficial use on property located adjacent to the wastewater treatment facility under the wastewater permit?

Yes No

If **yes**, attach the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)**: [Click to enter text.](#)

B. Sludge processing authorization

Identify the sludge processing, storage or disposal options that will be conducted at the wastewater treatment facility:

- Sludge Composting
- Marketing and Distribution of sludge
- Sludge Surface Disposal or Sludge Monofill

If **any of the above**, sludge options are selected, attach the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)**: [Click to enter text.](#)

Section 7. Sewage Sludge Solids Management Plan (Instructions Page 61)

Attach a solids management plan to the application.

Attachment: [7. Solids Management Plan](#)

The sewage sludge solids management plan must contain the following information:

- Treatment units and processes dimensions and capacities

- Solids generated at 100, 75, 50, and 25 percent of design flow
- Mixed liquor suspended solids operating range at design and projected actual flow
- Quantity of solids to be removed and a schedule for solids removal
- Identification and ownership of the ultimate sludge disposal site
- For facultative lagoons, design life calculations, monitoring well locations and depths, and the ultimate disposal method for the sludge from the facultative lagoon

An example of a sewage sludge solids management plan has been included as Example 5 of the instructions.

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 2.0: RECEIVING WATERS

The following information is required for all TPDES permit applications.

Section 1. Domestic Drinking Water Supply (Instructions Page 64)

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 **no**, proceed to Section 2. If **yes**, provide the following:

Owner of the drinking water supply: [Click to enter text.](#)

Distance and direction to the intake: [Click to enter text.](#)

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

Attachment: [Click to enter text.](#)

Section 2. Discharge into Tidally Affected Waters (Instructions Page 64)

Does the facility discharge into tidally affected waters?

Yes No

If **no**, proceed to Section 3. 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 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 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 to enter text.](#)

Section 3. Classified Segments (Instructions Page 64)

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 65)

Name of the immediate receiving waters: Unnamed intermittent stream

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 to enter text.

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

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

- Man-made Channel or Ditch
 Open Bay
 Tidal Stream, Bayou, or Marsh
 Other, specify: Click 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 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.

South Hickory Creek, thence into Hickory Creek with ultimate discharge to Lewisville Lake.

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 to enter text.](#)

E. Normal dry weather characteristics

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

Intermittent stream with some small perennial polls and impoundments. No significant aquatic life uses and no recreational uses.

Date and time of observation: April 1, 2024, at approximately 1100 HRS

Was the water body influenced by stormwater runoff during observations?

Yes No

Section 5. General Characteristics of the Waterbody (Instructions Page 66)

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 to enter text.](#)

B. Waterbody uses

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

- | | |
|--|--|
| <input checked="" type="checkbox"/> Livestock watering | <input type="checkbox"/> Contact recreation |
| <input type="checkbox"/> Irrigation withdrawal | <input type="checkbox"/> Non-contact recreation |
| <input type="checkbox"/> Fishing | <input type="checkbox"/> Navigation |
| <input type="checkbox"/> Domestic water supply | <input type="checkbox"/> Industrial water supply |
| <input type="checkbox"/> Park activities | <input type="checkbox"/> Other(s), specify: Click to enter text. |

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 WASTEWATER PERMIT APPLICATION WORKSHEET 2.1: STREAM PHYSICAL CHARACTERISTICS

Required for new applications, major facilities, and applications adding an outfall.

Worksheet 2.1 is not required for discharges to intermittent streams or discharges directly to (or within 300 feet of) a classified segment.

Section 1. General Information (Instructions Page 66)

Date of study: [Click to enter text.](#) Time of study: [Click to enter text.](#)

Stream name: [Click to enter text.](#)

Location: [Click to enter text.](#)

Type of stream upstream of existing discharge or downstream of proposed discharge (check one).

- Perennial Intermittent with perennial pools

Section 2. Data Collection (Instructions Page 66)

Number of stream bends that are well defined: [Click to enter text.](#)

Number of stream bends that are moderately defined: [Click to enter text.](#)

Number of stream bends that are poorly defined: [Click to enter text.](#)

Number of riffles: [Click to enter text.](#)

Evidence of flow fluctuations (check one):

- Minor moderate severe

Indicate the observed stream uses and if there is evidence of flow fluctuations or channel obstruction/modification.

[Click to enter text.](#)

Stream transects

In the table below, provide the following information for each transect downstream of the existing or proposed discharges. Use a separate row for each transect.

Table 2.1(1) - Stream Transect Records

| Stream type at transect Select riffle, run, glide, or pool. See Instructions, Definitions section. | Transect location | Water surface width (ft) | Stream depths (ft) at 4 to 10 points along each transect from the channel bed to the water surface. Separate the measurements with commas. |
|---|-------------------|--------------------------|---|
| Choose an item. | | | |

Section 3. Summarize Measurements (Instructions Page 66)

Streambed slope of entire reach, from USGS map in feet/feet: [Click to enter text.](#)

Approximate drainage area above the most downstream transect (from USGS map or county highway map, in square miles): [Click to enter text.](#)

Length of stream evaluated, in feet: [Click to enter text.](#)

Number of lateral transects made: [Click to enter text.](#)

Average stream width, in feet: [Click to enter text.](#)

Average stream depth, in feet: [Click to enter text.](#)

Average stream velocity, in feet/second: [Click to enter text.](#)

Instantaneous stream flow, in cubic feet/second: [Click to enter text.](#)

Indicate flow measurement method (type of meter, floating chip timed over a fixed distance, etc.): [Click to enter text.](#)

Size of pools (large, small, moderate, none): [Click to enter text.](#)

Maximum pool depth, in feet: [Click to enter text.](#)

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 3.0: LAND DISPOSAL OF EFFLUENT

The following is required for renewal, new, and amendment permit applications.

Section 1. Type of Disposal System (Instructions Page 68)

Identify the method of land disposal:

- | | |
|---|--|
| <input type="checkbox"/> Surface application | <input type="checkbox"/> Subsurface application |
| <input type="checkbox"/> Irrigation | <input type="checkbox"/> Subsurface soils absorption |
| <input type="checkbox"/> Drip irrigation system | <input type="checkbox"/> Subsurface area drip dispersal system |
| <input type="checkbox"/> Evaporation | <input type="checkbox"/> Evapotranspiration beds |
| <input type="checkbox"/> Other (describe in detail): Click to enter text. | |

NOTE: All applicants without authorization or proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0.

For existing authorizations, provide Registration Number: [Click to enter text.](#)

Section 2. Land Application Site(s) (Instructions Page 68)

In table 3.0(1), provide the requested information for the land application sites. Include the agricultural or cover crop type (wheat, cotton, alfalfa, bermuda grass, native grasses, etc.), land use (golf course, hayland, pastureland, park, row crop, etc.), irrigation area, amount of effluent applied, and whether or not the public has access to the area. Specify the amount of land area and the amount of effluent that will be allotted to each agricultural or cover crop, if more than one crop will be used.

Table 3.0(1) – Land Application Site Crops

| Crop Type & Land Use | Irrigation Area (acres) | Effluent Application (GPD) | Public Access? Y/N |
|----------------------|-------------------------|----------------------------|--------------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Section 3. Storage and Evaporation Lagoons/Ponds (Instructions Page 68)

Table 3.0(2) – Storage and Evaporation Ponds

| Pond Number | Surface Area (acres) | Storage Volume (acre-feet) | Dimensions | Liner Type |
|-------------|----------------------|----------------------------|------------|------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Attach a copy of a liner certification that was prepared, signed, and sealed by a Texas licensed professional engineer for each pond.

Attachment: [Click to enter text.](#)

Section 4. Flood and Runoff Protection (Instructions Page 68)

Is the land application site within the 100-year frequency flood level?

Yes No

If yes, describe how the site will be protected from inundation.

[Click to enter text.](#)

Provide the source used to determine the 100-year frequency flood level:

[Click to enter text.](#)

Provide a description of tailwater controls and rainfall run-on controls used for the land application site.

[Click to enter text.](#)

Section 5. Annual Cropping Plan (Instructions Page 68)

Attach an Annual Cropping Plan which includes a discussion of each of the following items. If not applicable, provide a detailed explanation indicating why. **Attachment:** [Click to enter text.](#)

- Soils map with crops
- Cool and warm season plant species
- Crop yield goals
- Crop growing season
- Crop nutrient requirements
- Additional fertilizer requirements
- Minimum/maximum harvest height (for grass crops)
- Supplemental watering requirements
- Crop salt tolerances
- Harvesting method/number of harvests
- Justification for not removing existing vegetation to be irrigated

Section 6. Well and Map Information (Instructions Page 69)

Attach a USGS map with the following information shown and labeled. If not applicable, provide a detailed explanation indicating why. **Attachment:** [Click to enter text.](#)

- The boundaries of the land application site(s)
- Waste disposal or treatment facility site(s)
- On-site buildings
- Buffer zones
- Effluent storage and tailwater control facilities
- All water wells within 1-mile radius of the disposal site or property boundaries
- All springs and seeps onsite and within 500 feet of the property boundaries
- All surface waters in the state onsite and within 500 feet of the property boundaries
- All faults and sinkholes onsite and within 500 feet of the property

List and cross reference all water wells located within a half-mile radius of the disposal site or property boundaries shown on the USGS map in the following table. Attach additional pages as necessary to include all of the wells.

Table 3.0(3) – Water Well Data

| Well ID | Well Use | Producing? Y/N | Open, cased, capped, or plugged? | Proposed Best Management Practice |
|---------|----------|-------------------|-------------------------------------|--------------------------------------|
| | | | Choose an item. | |
| | | | Choose an item. | |
| | | | Choose an item. | |
| | | | Choose an item. | |
| | | | Choose an item. | |

If water quality data or well log information is available please include the information in an attachment listed by Well ID.

Attachment: [Click to enter text.](#)

Section 7. Groundwater Quality (Instructions Page 69)

Attach a Groundwater Quality Technical Report which assesses the impact of the wastewater disposal system on groundwater. This report shall include an evaluation of the water wells (including the information in the well table provided in Item 6. above), the wastewater application rate, and pond liners. Indicate by a check mark that this report is provided.

Attachment: [Click to enter text.](#)

Are groundwater monitoring wells available onsite? Yes No

Do you plan to install ground water monitoring wells or lysimeters around the land application site? Yes No

If yes, provide the proposed location of the monitoring wells or lysimeters on a site map.

Attachment: [Click to enter text.](#)

Section 8. Soil Map and Soil Analyses (Instructions Page 70)

A. Soil map

Attach a USDA Soil Survey map that shows the area to be used for effluent disposal.

Attachment: [Click to enter text.](#)

B. Soil analyses

Attach the laboratory results sheets from the soil analyses. **Note:** for renewal applications, the current annual soil analyses required by the permit are acceptable as long as the test date is less than one year prior to the submission of the application.

Attachment: [Click to enter text.](#)

List all USDA designated soil series on the proposed land application site. Attach additional pages as necessary.

Table 3.0(4) – Soil Data

| Soil Series | Depth from Surface | Permeability | Available Water Capacity | Curve Number |
|-------------|--------------------|--------------|--------------------------|--------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Provide a discussion of all persistent excursions above the permitted limits and any corrective actions taken.

Click to enter text.

DOMESTIC WASTEWATER PERMIT APPLICATION

WORKSHEET 3.1: SURFACE LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment permit applications. Renewal and minor amendment permit applications may be asked for this worksheet on a case by case basis.

Section 1. Surface Disposal (Instructions Page 72)

Complete the item that applies for the method of disposal being used.

A. Irrigation

Area under irrigation, in acres: [Click to enter text.](#)

Design application frequency:

hours/day [Click to enter text.](#) **And** days/week [Click to enter text.](#)

Land grade (slope):

average percent (%): [Click to enter text.](#)

maximum percent (%): [Click to enter text.](#)

Design application rate in acre-feet/acre/year: [Click to enter text.](#)

Design total nitrogen loading rate, in lbs N/acre/year: [Click to enter text.](#)

Soil conductivity (mmhos/cm): [Click to enter text.](#)

Method of application: [Click to enter text.](#)

Attach a separate engineering report with the water balance and storage volume calculations, method of application, irrigation efficiency, and nitrogen balance.

Attachment: [Click to enter text.](#)

B. Evaporation ponds

Daily average effluent flow into ponds, in gallons per day: [Click to enter text.](#)

Attach a separate engineering report with the water balance and storage volume calculations.

Attachment: [Click to enter text.](#)

C. Evapotranspiration beds

Number of beds: [Click to enter text.](#)

Area of bed(s), in acres: [Click to enter text.](#)

Depth of bed(s), in feet: [Click to enter text.](#)

Void ratio of soil in the beds: [Click to enter text.](#)

Storage volume within the beds, in acre-feet: [Click to enter text.](#)

Attach a separate engineering report with the water balance and storage volume calculations, and a description of the lining.

Attachment: [Click to enter text.](#)

D. Overland flow

Area used for application, in acres: [Click to enter text.](#)

Slopes for application area, percent (%): [Click to enter text.](#)

Design application rate, in gpm/foot of slope width: [Click to enter text.](#)

Slope length, in feet: [Click to enter text.](#)

Design BOD₅ loading rate, in lbs BOD₅/acre/day: [Click to enter text.](#)

Design application frequency:

hours/day: [Click to enter text.](#) **And** days/week: [Click to enter text.](#)

Attach a separate engineering report with the method of application and design requirements according to *30 TAC Chapter 217*.

Attachment: [Click to enter text.](#)

Section 2. Edwards Aquifer (Instructions Page 73)

Is the facility subject to *30 TAC Chapter 213*, Edwards Aquifer Rules?

Yes No

If **yes**, is the facility located on the Edwards Aquifer Recharge Zone?

Yes No

If **yes**, attach a geological report addressing potential recharge features.

Attachment: [Click to enter text.](#)

DOMESTIC WASTEWATER PERMIT APPLICATION

WORKSHEET 3.2: SURFACE LAND DISPOSAL OF EFFLUENT

The following **is required** for **new and major amendment** permit applications. Renewal and minor amendments applicants may be asked for the worksheet on a case by case basis.

NOTE: All applicants proposing new/amended subsurface disposal **MUST** complete and submit Worksheet 7.0. This worksheet applies to any subsurface disposal system that **does not meet** the definition of a subsurface area drip dispersal system as defined in *30 TAC Chapter 222, Subsurface Area Drip Dispersal System*.

Section 1. Subsurface Application (Instructions Page 74)

Identify the type of system:

- Conventional Gravity Drainfield, Beds, or Trenches (new systems must be less than 5,000 GPD)
- Low Pressure Dosing
- Other, specify: [Click to enter text.](#)

Application area, in acres: [Click to enter text.](#)

Area of drainfield, in square feet: [Click to enter text.](#)

Application rate, in gal/square foot/day: [Click to enter text.](#)

Depth to groundwater, in feet: [Click to enter text.](#)

Area of trench, in square feet: [Click to enter text.](#)

Dosing duration per area, in hours: [Click to enter text.](#)

Number of beds: [Click to enter text.](#)

Dosing amount per area, in inches/day: [Click to enter text.](#)

Infiltration rate, in inches/hour: [Click to enter text.](#)

Storage volume, in gallons: [Click to enter text.](#)

Area of bed(s), in square feet: [Click to enter text.](#)

Soil Classification: [Click to enter text.](#)

Attach a separate engineering report with the information required in *30 TAC § 309.20*, excluding the requirements of § 309.20 b(3)(A) and (B) design analysis which may be asked for on a case by case basis. Include a description of the schedule of dosing basin rotation.

Attachment: [Click to enter text.](#)

Section 2. Edwards Aquifer (Instructions Page 74)

Is the subsurface system over the Edwards Aquifer Recharge Zone as mapped by TCEQ?

- Yes No

Is the subsurface system over the Edwards Aquifer Transition Zone as mapped by TCEQ?

- Yes No

If yes to either question, the subsurface system may be prohibited by *30 TAC §213.8*. Please call the Municipal Permits Team, at 512-239-4671, to schedule a pre-application meeting.

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 3.3: SUBSURFACE AREA DRIP DISPERSAL (SADDS) LAND DISPOSAL OF EFFLUENT

The following is **required** for **new and major amendment** subsurface area drip dispersal system permit applications. Renewal and minor amendments applicants may be asked for the worksheet on a case by case basis.

NOTE: All applicants proposing new/amended subsurface disposal **MUST** complete and submit Worksheet 7.0. This worksheet applies to any subsurface disposal system that **meets** the definition of a subsurface area drip dispersal system as defined in *30 TAC Chapter 222, Subsurface Area Drip Dispersal System*.

Section 1. Administrative Information (Instructions Page 75)

A. Provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the treatment facility:

B. [Click to enter text.](#) Is the owner of the land where the treatment facility is located the same as the owner of the treatment facility?

Yes No

If **no**, provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the land where the treatment facility is located.

[Click to enter text.](#)

C. Owner of the subsurface area drip dispersal system: [Click to enter text.](#)

D. Is the owner of the subsurface area drip dispersal system the same as the owner of the wastewater treatment facility or the site where the wastewater treatment facility is located?

Yes No

If **no**, identify the names of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in Item 1.C.

[Click to enter text.](#)

E. Owner of the land where the subsurface area drip dispersal system is located: [Click to enter text.](#)

F. Is the owner of the land where the subsurface area drip dispersal system is located the same as owner of the wastewater treatment facility, the site where the wastewater treatment facility is located, or the owner of the subsurface area drip dispersal system?

Yes No

If **no**, identify the name of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in item 1.E.

[Click to enter text.](#)

Section 2. Subsurface Area Drip Dispersal System (Instructions Page 75)

A. Type of system

- Subsurface Drip Irrigation
- Surface Drip Irrigation
- Other, specify: [Click to enter text.](#)

B. Irrigation operations

Application area, in acres: [Click to enter text.](#)

Infiltration Rate, in inches/hour: [Click to enter text.](#)

Average slope of the application area, percent (%): [Click to enter text.](#)

Maximum slope of the application area, percent (%): [Click to enter text.](#)

Storage volume, in gallons: [Click to enter text.](#)

Major soil series: [Click to enter text.](#)

Depth to groundwater, in feet: [Click to enter text.](#)

C. Application rate

Is the facility located **west** of the boundary shown in *30 TAC § 222.83* **and** also using a vegetative cover of non-native grasses over seeded with cool season grasses during the winter months (October-March)?

- Yes No

If **yes**, then the facility may propose a hydraulic application rate not to exceed 0.1 gal/square foot/day.

Is the facility located **east** of the boundary shown in *30 TAC § 222.83* **or** in any part of the state when the vegetative cover is any crop other than non-native grasses?

- Yes No

If **yes**, the facility must use the formula in *30 TAC §222.83* to calculate the maximum hydraulic application rate.

Do you plan to submit an alternative method to calculate the hydraulic application rate for approval by the executive director?

- Yes No

Hydraulic application rate, in gal/square foot/day: [Click to enter text.](#)

Nitrogen application rate, in lbs/gal/day: [Click to enter text.](#)

D. Dosing information

Number of doses per day: [Click to enter text.](#)

Dosing duration per area, in hours: [Click to enter text.](#)

Rest period between doses, in hours: [Click to enter text.](#)

Dosing amount per area, in inches/day: [Click to enter text.](#)

Number of zones: [Click to enter text.](#)

Does the proposed subsurface drip irrigation system use tree vegetative cover as a crop?

Yes No

If **yes**, provide a vegetation survey by a certified arborist. Please call the Water Quality Assessment Team at (512) 239-4671 to schedule a pre-application meeting.

Attachment: [Click to enter text.](#)

Section 3. Required Plans (Instructions Page 75)

A. Recharge feature plan

Attach a Recharge Feature Plan with all information required in *30 TAC §222.79*.

Attachment: [Click to enter text.](#)

B. Soil evaluation

Attach a Soil Evaluation with all information required in *30 TAC §222.73*.

Attachment: [Click to enter text.](#)

C. Site preparation plan

Attach a Site Preparation Plan with all information required in *30 TAC §222.75*.

Attachment: [Click to enter text.](#)

D. Soil sampling/testing

Attach soil sampling and testing that includes all information required in *30 TAC §222.157*.

Attachment: [Click to enter text.](#)

Section 4. Floodway Designation (Instructions Page 76)

A. Site location

Is the existing/proposed land application site within a designated floodway?

Yes No

B. Flood map

Attach either the FEMA flood map or alternate information used to determine the floodway.

Attachment: [Click to enter text.](#)

Section 5. Surface Waters in the State (Instructions Page 76)

A. Buffer Map

Attach a map showing appropriate buffers on surface waters in the state, water wells, and springs/seeps.

Attachment: [Click to enter text.](#)

B. Buffer variance request

Do you plan to request a buffer variance from water wells or waters in the state?

Yes No

If yes, then attach the additional information required in *30 TAC § 222.81(c)*.

Attachment: [Click to enter text.](#)

Section 6. Edwards Aquifer (Instructions Page 76)

A. Is the SADDs located over the Edwards Aquifer Recharge Zone as mapped by TCEQ?

Yes No

B. Is the SADDs located over the Edwards Aquifer Transition Zone as mapped by TCEQ?

Yes No

If yes to either question, then the SADDs may be prohibited by *30 TAC §213.8*. Please call the Municipal Permits Team at 512-239-4671 to schedule a pre-application meeting.

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 4.0: POLLUTANT ANALYSIS 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 minor amendments without renewal.

Section 1. Toxic Pollutants (Instructions Page 78)

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

Grab Composite

Date and time sample(s) collected: [Click to enter text.](#)

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 |
| Aldrin | | | | 0.01 |
| Aluminum | | | | 2.5 |
| Anthracene | | | | 10 |
| Antimony | | | | 5 |
| Arsenic | | | | 0.5 |
| Barium | | | | 3 |
| Benzene | | | | 10 |
| Benzidine | | | | 50 |
| Benzo(a)anthracene | | | | 5 |
| Benzo(a)pyrene | | | | 5 |
| Bis(2-chloroethyl)ether | | | | 10 |
| Bis(2-ethylhexyl)phthalate | | | | 10 |
| Bromodichloromethane | | | | 10 |
| Bromoform | | | | 10 |
| Cadmium | | | | 1 |
| Carbon Tetrachloride | | | | 2 |
| Carbaryl | | | | 5 |
| Chlordane* | | | | 0.2 |
| Chlorobenzene | | | | 10 |
| Chlorodibromomethane | | | | 10 |

| Pollutant | AVG Effluent Conc. (µg/l) | MAX Effluent Conc. (µg/l) | Number of Samples | MAL (µg/l) |
|------------------------|----------------------------------|----------------------------------|--------------------------|-------------------|
| Chloroform | | | | 10 |
| Chlorpyrifos | | | | 0.05 |
| Chromium (Total) | | | | 3 |
| Chromium (Tri) (*1) | | | | N/A |
| Chromium (Hex) | | | | 3 |
| Copper | | | | 2 |
| Chrysene | | | | 5 |
| p-Chloro-m-Cresol | | | | 10 |
| 4,6-Dinitro-o-Cresol | | | | 50 |
| p-Cresol | | | | 10 |
| Cyanide (*2) | | | | 10 |
| 4,4'- DDD | | | | 0.1 |
| 4,4'- DDE | | | | 0.1 |
| 4,4'- DDT | | | | 0.02 |
| 2,4-D | | | | 0.7 |
| Demeton (O and S) | | | | 0.20 |
| Diazinon | | | | 0.5/0.1 |
| 1,2-Dibromoethane | | | | 10 |
| m-Dichlorobenzene | | | | 10 |
| o-Dichlorobenzene | | | | 10 |
| p-Dichlorobenzene | | | | 10 |
| 3,3'-Dichlorobenzidine | | | | 5 |
| 1,2-Dichloroethane | | | | 10 |
| 1,1-Dichloroethylene | | | | 10 |
| Dichloromethane | | | | 20 |
| 1,2-Dichloropropane | | | | 10 |
| 1,3-Dichloropropene | | | | 10 |
| Dicofol | | | | 1 |
| Dieldrin | | | | 0.02 |
| 2,4-Dimethylphenol | | | | 10 |
| Di-n-Butyl Phthalate | | | | 10 |
| Diuron | | | | 0.09 |
| Endosulfan I (alpha) | | | | 0.01 |

| Pollutant | AVG Effluent Conc. (µg/l) | MAX Effluent Conc. (µg/l) | Number of Samples | MAL (µg/l) |
|---------------------------------------|----------------------------------|----------------------------------|--------------------------|-------------------|
| Endosulfan II (beta) | | | | 0.02 |
| Endosulfan Sulfate | | | | 0.1 |
| Endrin | | | | 0.02 |
| Ethylbenzene | | | | 10 |
| Fluoride | | | | 500 |
| Guthion | | | | 0.1 |
| Heptachlor | | | | 0.01 |
| Heptachlor Epoxide | | | | 0.01 |
| Hexachlorobenzene | | | | 5 |
| Hexachlorobutadiene | | | | 10 |
| Hexachlorocyclohexane (alpha) | | | | 0.05 |
| Hexachlorocyclohexane (beta) | | | | 0.05 |
| gamma-Hexachlorocyclohexane (Lindane) | | | | 0.05 |
| Hexachlorocyclopentadiene | | | | 10 |
| Hexachloroethane | | | | 20 |
| Hexachlorophene | | | | 10 |
| Lead | | | | 0.5 |
| Malathion | | | | 0.1 |
| Mercury | | | | 0.005 |
| Methoxychlor | | | | 2 |
| Methyl Ethyl Ketone | | | | 50 |
| Mirex | | | | 0.02 |
| Nickel | | | | 2 |
| Nitrate-Nitrogen | | | | 100 |
| Nitrobenzene | | | | 10 |
| N-Nitrosodiethylamine | | | | 20 |
| N-Nitroso-di-n-Butylamine | | | | 20 |
| Nonylphenol | | | | 333 |
| Parathion (ethyl) | | | | 0.1 |
| Pentachlorobenzene | | | | 20 |
| Pentachlorophenol | | | | 5 |
| Phenanthrene | | | | 10 |

| Pollutant | AVG Effluent Conc. (µg/l) | MAX Effluent Conc. (µg/l) | Number of Samples | MAL (µg/l) |
|--|--|--|------------------------------|-----------------------|
| Polychlorinated Biphenyls (PCB's) (*3) | | | | 0.2 |
| Pyridine | | | | 20 |
| Selenium | | | | 5 |
| Silver | | | | 0.5 |
| 1,2,4,5-Tetrachlorobenzene | | | | 20 |
| 1,1,2,2-Tetrachloroethane | | | | 10 |
| Tetrachloroethylene | | | | 10 |
| Thallium | | | | 0.5 |
| Toluene | | | | 10 |
| Toxaphene | | | | 0.3 |
| 2,4,5-TP (Silvex) | | | | 0.3 |
| Tributyltin (see instructions for explanation) | | | | 0.01 |
| 1,1,1-Trichloroethane | | | | 10 |
| 1,1,2-Trichloroethane | | | | 10 |
| Trichloroethylene | | | | 10 |
| 2,4,5-Trichlorophenol | | | | 50 |
| TTHM (Total Trihalomethanes) | | | | 10 |
| Vinyl Chloride | | | | 10 |
| Zinc | | | | 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: [Click to enter text.](#)

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

| Pollutant | AVG Effluent Conc. (µg/l) | MAX Effluent Conc. (µg/l) | Number of Samples | MAL (µg/l) |
|---------------------|---------------------------|---------------------------|-------------------|------------|
| Antimony | | | | 5 |
| Arsenic | | | | 0.5 |
| Beryllium | | | | 0.5 |
| Cadmium | | | | 1 |
| Chromium (Total) | | | | 3 |
| Chromium (Hex) | | | | 3 |
| Chromium (Tri) (*1) | | | | N/A |
| Copper | | | | 2 |
| Lead | | | | 0.5 |
| Mercury | | | | 0.005 |
| Nickel | | | | 2 |
| Selenium | | | | 5 |
| Silver | | | | 0.5 |
| Thallium | | | | 0.5 |
| Zinc | | | | 5 |
| Cyanide (*2) | | | | 10 |
| Phenols, Total | | | | 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 |
| Acrylonitrile | | | | 50 |
| Benzene | | | | 10 |
| Bromoform | | | | 10 |
| Carbon Tetrachloride | | | | 2 |
| Chlorobenzene | | | | 10 |
| Chlorodibromomethane | | | | 10 |
| Chloroethane | | | | 50 |
| 2-Chloroethylvinyl Ether | | | | 10 |
| Chloroform | | | | 10 |
| Dichlorobromomethane [Bromodichloromethane] | | | | 10 |
| 1,1-Dichloroethane | | | | 10 |
| 1,2-Dichloroethane | | | | 10 |
| 1,1-Dichloroethylene | | | | 10 |
| 1,2-Dichloropropane | | | | 10 |
| 1,3-Dichloropropylene [1,3-Dichloropropene] | | | | 10 |
| 1,2-Trans-Dichloroethylene | | | | 10 |
| Ethylbenzene | | | | 10 |
| Methyl Bromide | | | | 50 |
| Methyl Chloride | | | | 50 |
| Methylene Chloride | | | | 20 |
| 1,1,2,2-Tetrachloroethane | | | | 10 |
| Tetrachloroethylene | | | | 10 |
| Toluene | | | | 10 |
| 1,1,1-Trichloroethane | | | | 10 |
| 1,1,2-Trichloroethane | | | | 10 |
| Trichloroethylene | | | | 10 |
| Vinyl Chloride | | | | 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 |
| 2,4-Dichlorophenol | | | | 10 |
| 2,4-Dimethylphenol | | | | 10 |
| 4,6-Dinitro-o-Cresol | | | | 50 |
| 2,4-Dinitrophenol | | | | 50 |
| 2-Nitrophenol | | | | 20 |
| 4-Nitrophenol | | | | 50 |
| P-Chloro-m-Cresol | | | | 10 |
| Pentachlorophenol | | | | 5 |
| Phenol | | | | 10 |
| 2,4,6-Trichlorophenol | | | | 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 |
| Acenaphthylene | | | | 10 |
| Anthracene | | | | 10 |
| Benzidine | | | | 50 |
| Benzo(a)Anthracene | | | | 5 |
| Benzo(a)Pyrene | | | | 5 |
| 3,4-Benzofluoranthene | | | | 10 |
| Benzo(ghi)Perylene | | | | 20 |
| Benzo(k)Fluoranthene | | | | 5 |
| Bis(2-Chloroethoxy)Methane | | | | 10 |
| Bis(2-Chloroethyl)Ether | | | | 10 |
| Bis(2-Chloroisopropyl)Ether | | | | 10 |
| Bis(2-Ethylhexyl)Phthalate | | | | 10 |
| 4-Bromophenyl Phenyl Ether | | | | 10 |
| Butyl benzyl Phthalate | | | | 10 |
| 2-Chloronaphthalene | | | | 10 |
| 4-Chlorophenyl phenyl ether | | | | 10 |
| Chrysene | | | | 5 |
| Dibenzo(a,h)Anthracene | | | | 5 |
| 1,2-(o)Dichlorobenzene | | | | 10 |
| 1,3-(m)Dichlorobenzene | | | | 10 |
| 1,4-(p)Dichlorobenzene | | | | 10 |
| 3,3-Dichlorobenzidine | | | | 5 |
| Diethyl Phthalate | | | | 10 |
| Dimethyl Phthalate | | | | 10 |
| Di-n-Butyl Phthalate | | | | 10 |
| 2,4-Dinitrotoluene | | | | 10 |
| 2,6-Dinitrotoluene | | | | 10 |
| Di-n-Octyl Phthalate | | | | 10 |
| 1,2-Diphenylhydrazine (as Azo-benzene) | | | | 20 |
| Fluoranthene | | | | 10 |

| Pollutant | AVG Effluent Conc. (µg/l) | MAX Effluent Conc. (µg/l) | Number of Samples | MAL (µg/l) |
|----------------------------|----------------------------------|----------------------------------|--------------------------|-------------------|
| Fluorene | | | | 10 |
| Hexachlorobenzene | | | | 5 |
| Hexachlorobutadiene | | | | 10 |
| Hexachlorocyclo-pentadiene | | | | 10 |
| Hexachloroethane | | | | 20 |
| Indeno(1,2,3-cd)pyrene | | | | 5 |
| Isophorone | | | | 10 |
| Naphthalene | | | | 10 |
| Nitrobenzene | | | | 10 |
| N-Nitrosodimethylamine | | | | 50 |
| N-Nitrosodi-n-Propylamine | | | | 20 |
| N-Nitrosodiphenylamine | | | | 20 |
| Phenanthrene | | | | 10 |
| Pyrene | | | | 10 |
| 1,2,4-Trichlorobenzene | | | | 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 |
| alpha-BHC (Hexachlorocyclohexane) | | | | 0.05 |
| beta-BHC (Hexachlorocyclohexane) | | | | 0.05 |
| gamma-BHC (Hexachlorocyclohexane) | | | | 0.05 |
| delta-BHC (Hexachlorocyclohexane) | | | | 0.05 |
| Chlordane | | | | 0.2 |
| 4,4-DDT | | | | 0.02 |
| 4,4-DDE | | | | 0.1 |
| 4,4,-DDD | | | | 0.1 |
| Dieldrin | | | | 0.02 |
| Endosulfan I (alpha) | | | | 0.01 |
| Endosulfan II (beta) | | | | 0.02 |
| Endosulfan Sulfate | | | | 0.1 |
| Endrin | | | | 0.02 |
| Endrin Aldehyde | | | | 0.1 |
| Heptachlor | | | | 0.01 |
| Heptachlor Epoxide | | | | 0.01 |
| PCB-1242 | | | | 0.2 |
| PCB-1254 | | | | 0.2 |
| PCB-1221 | | | | 0.2 |
| PCB-1232 | | | | 0.2 |
| PCB-1248 | | | | 0.2 |
| PCB-1260 | | | | 0.2 |
| PCB-1016 | | | | 0.2 |
| Toxaphene | | | | 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 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 to enter text.](#)

C. 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 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 PeCDD | 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 HpCDFs | 0.01 | | | | | 50 |
| OCDD | 0.0003 | | | | | 100 |
| OCDF | 0.0003 | | | | | 100 |
| PCB 77 | 0.0001 | | | | | 0.5 |
| PCB 81 | 0.0003 | | | | | 0.5 |
| PCB 126 | 0.1 | | | | | 0.5 |
| PCB 169 | 0.03 | | | | | 0.5 |
| Total | | | | | | |

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 5.0: TOXICITY TESTING REQUIREMENTS

The following **is required** for facilities with a current operating design flow of **1.0 MGD or greater**, with an EPA-approved **pretreatment** program (or those required to have one under 40 CFR Part 403), or are required to perform Whole Effluent Toxicity testing. See instructions for further details.

This worksheet is not required for minor amendments without renewal.

Section 1. Required Tests (Instructions Page 88)

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: [Click to enter text.](#)

48-hour Acute: [Click 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.

[Click to enter text.](#)

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 6.0: INDUSTRIAL WASTE CONTRIBUTION

The following is required for all publicly owned treatment works.

Section 1. All POTWs (Instructions Page 89)

A. Industrial users (IUs)

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: [Click to enter text.](#)

Average Daily Flows, in MGD: [Click to enter text.](#)

Significant IUs - non-categorical:

Number of IUs: [Click to enter text.](#)

Average Daily Flows, in MGD: [Click to enter text.](#)

Other IUs:

Number of IUs: [Click to enter text.](#)

Average Daily Flows, in MGD: [Click to enter text.](#)

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.

[Click to enter text.](#)

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.

Click to enter text.

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 90)

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.

Click to enter text.

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.

Click to enter text.

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 |
|-----------|---------------|-----|-------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

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.

Click to enter text.

Section 3. Significant Industrial User (SIU) Information and Categorical Industrial User (CIU) (Instructions Page 90)

A. General information

Company Name: [Click to enter text.](#)

SIC Code: [Click to enter text.](#)

Contact name: [Click to enter text.](#)

Address: [Click to enter text.](#)

City, State, and Zip Code: [Click to enter text.](#)

Telephone number: [Click to enter text.](#)

Email address: [Click to enter text.](#)

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).

[Click to enter text.](#)

C. Product and service information

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

[Click to enter text.](#)

D. Flow rate information

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

Process Wastewater:

Discharge, in gallons/day: [Click to enter text.](#)

Discharge Type: Continuous Batch Intermittent

Non-Process Wastewater:

Discharge, in gallons/day: [Click to enter text.](#)

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: Subcategories: [Click to enter text.](#)

[Click or tap here to enter text.](#) [Click to enter text.](#)

Category: [Click to enter text.](#)

Subcategories: [Click to enter text.](#)

Category: [Click to enter text.](#)

Subcategories: [Click to enter text.](#)

Category: [Click to enter text.](#)

Subcategories: [Click to enter text.](#)

Category: [Click to enter text.](#)

Subcategories: [Click 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 to enter text. |
|--------------------------------------|

WORKSHEET 7.0

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

CLASS V INJECTION WELL INVENTORY/AUTHORIZATION FORM

Submit the completed form to:

TCEQ
IUC Permits Team
Radioactive Materials Division
MC-233
PO Box 13087
Austin, Texas 78711-3087
512-239-6466

| |
|---|
| For TCEQ Use Only Reg. No. _____ Date Received _____ Date Authorized _____ |
|---|

Section 1. General Information (Instructions Page 92)

1. TCEQ Program Area

Program Area (PST, VCP, IHW, etc.): [Click to enter text.](#)

Program ID: [Click to enter text.](#)

Contact Name: [Click to enter text.](#)

Phone Number: [Click to enter text.](#)

2. Agent/Consultant Contact Information

Contact Name: [Click to enter text.](#)

Address: [Click to enter text.](#)

City, State, and Zip Code: [Click to enter text.](#)

Phone Number: [Click to enter text.](#)

3. Owner/Operator Contact Information

Owner Operator

Owner/Operator Name: [Click to enter text.](#)

Contact Name: [Click to enter text.](#)

Address: [Click to enter text.](#)

City, State, and Zip Code: [Click to enter text.](#)

Phone Number: [Click to enter text.](#)

4. Facility Contact Information

Facility Name: [Click to enter text.](#)

Address: [Click to enter text.](#)

City, State, and Zip Code: [Click to enter text.](#)

Location description (if no address is available): [Click to enter text.](#)

Facility Contact Person: [Click to enter text.](#)

Phone Number: [Click to enter text.](#)

5. **Latitude and Longitude, in degrees-minutes-seconds**

Latitude: [Click to enter text.](#)

Longitude: [Click to enter text.](#)

Method of determination (GPS, TOPO, etc.): [Click to enter text.](#)

Attach topographic quadrangle map as attachment A.

6. **Well Information**

Type of Well Construction, select one:

- Vertical Injection
- Subsurface Fluid Distribution System
- Infiltration Gallery
- Temporary Injection Points
- Other, Specify: [Click to enter text.](#)

Number of Injection Wells: [Click to enter text.](#)

7. **Purpose**

Detailed Description regarding purpose of Injection System:

[Click to enter text.](#)

Attach a Site Map as Attachment B (Attach the Approved Remediation Plan, if appropriate.)

8. **Water Well Driller/Installer**

Water Well Driller/Installer Name: [Click to enter text.](#)

City, State, and Zip Code: [Click to enter text.](#)

Phone Number: [Click to enter text.](#)

License Number: [Click to enter text.](#)

Section 2. Proposed Down Hole Design

Attach a diagram signed and sealed by a licensed engineer as Attachment C.

Table 7.0(1) – Down Hole Design Table

| Name of String | Size | Setting Depth | Sacks Cement/Grout – Slurry Volume – Top of Cement | Hole Size | Weight (lbs/ft) PVC/Steel |
|----------------|------|---------------|--|-----------|---------------------------|
| Casing | | | | | |
| Tubing | | | | | |
| Screen | | | | | |

Section 3. Proposed Trench System, Subsurface Fluid Distribution System, or Infiltration Gallery

Attach a diagram signed and sealed by a licensed engineer as Attachment D.

System(s) Dimensions: [Click to enter text.](#)

System(s) Construction: [Click to enter text.](#)

Section 4. Site Hydrogeological and Injection Zone Data

1. Name of Contaminated Aquifer: [Click to enter text.](#)
2. Receiving Formation Name of Injection Zone: [Click to enter text.](#)
3. Well/Trench Total Depth: [Click to enter text.](#)
4. Surface Elevation: [Click to enter text.](#)
5. Depth to Ground Water: [Click to enter text.](#)
6. Injection Zone Depth: [Click to enter text.](#)
7. Injection Zone vertically isolated geologically? Yes No
Impervious Strata between Injection Zone and nearest Underground Source of Drinking Water:
Name: [Click to enter text.](#)
Thickness: [Click to enter text.](#)
8. Provide a list of contaminants and the levels (ppm) in contaminated aquifer
Attach as Attachment E.
9. Horizontal and Vertical extent of contamination and injection plume
Attach as Attachment F.
10. Formation (Injection Zone) Water Chemistry (Background levels) TDS, etc.
Attach as Attachment G.
11. Injection Fluid Chemistry in PPM at point of injection
Attach as Attachment H.
12. Lowest Known Depth of Ground Water with < 10,000 PPM TDS: [Click to enter text.](#)
13. Maximum injection Rate/Volume/Pressure: [Click to enter text.](#)
14. Water wells within 1/4 mile radius (attach map as Attachment I): [Click to enter text.](#)
15. Injection wells within 1/4 mile radius (attach map as Attachment J): [Click to enter text.](#)
16. Monitor wells within 1/4 mile radius (attach drillers logs and map as Attachment K): [Click to enter text.](#)
17. Sampling frequency: [Click to enter text.](#)
18. Known hazardous components in injection fluid: [Click to enter text.](#)

Section 5. Site History

1. Type of Facility: [Click to enter text.](#)
2. Contamination Dates: [Click to enter text.](#)
3. Original Contamination (VOCs, TPH, BTEX, etc.) and Concentrations (attach as Attachment L): [Click to enter text.](#)
4. Previous Remediation (attach results of any previous remediation as attachment M): [Click to enter text.](#)

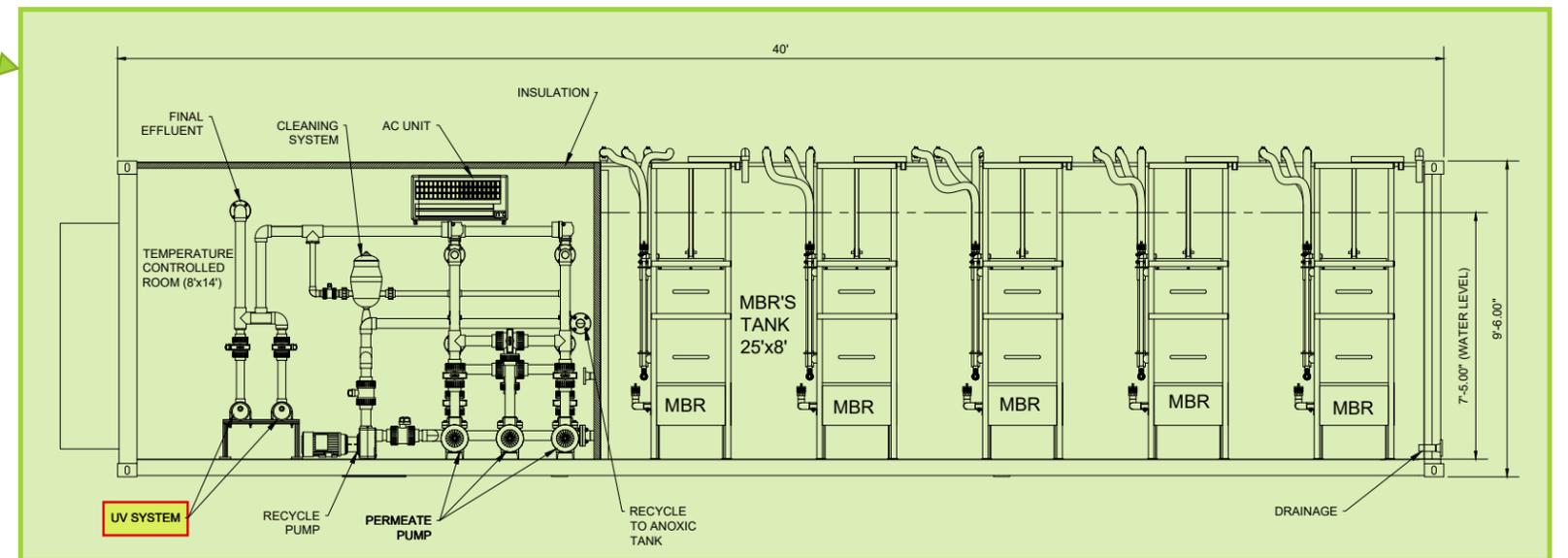
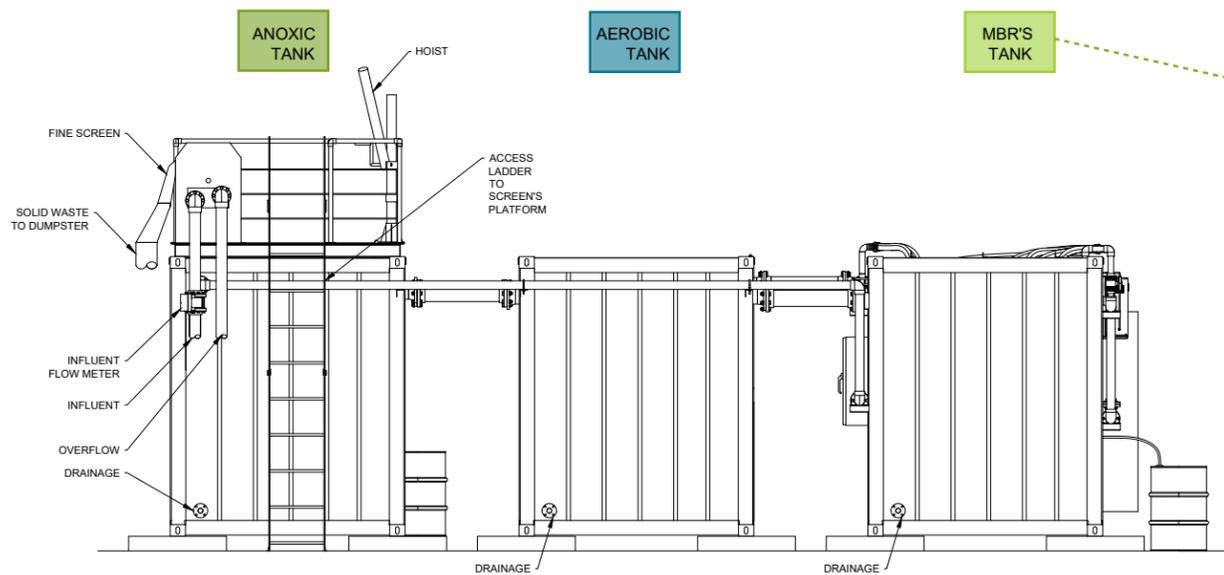
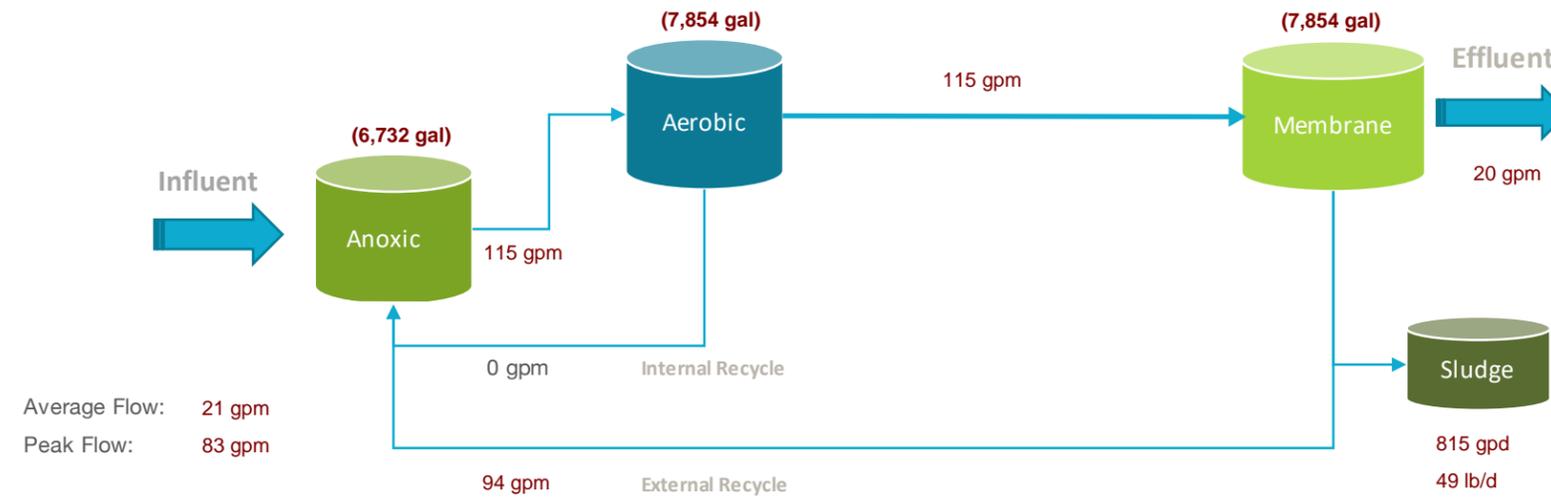
NOTE: Authorization Form should be completed in detail and authorization given by the TCEQ before construction, operation, and/or conversion can begin. Attach additional pages as necessary.

Class V Injection Well Designations

- 5A07 Heat Pump/AC return (IW used for groundwater to heat and/or cool buildings)
- 5A19 Industrial Cooling Water Return Flow (IW used to cool industrial process equipment)
- 5B22 Salt Water Intrusion Barrier (IW used to inject fluids to prevent the intrusion of salt water into an aquifer)
- 5D02 Storm Water Drainage (IW designed for the disposal of rain water)
- 5D04 Industrial Stormwater Drainage Wells (IW designed for the disposal of rain water associated with industrial facilities)
- 5F01 Agricultural Drainage (IW that receive agricultural runoff)
- 5R21 Aquifer Recharge (IW used to inject fluids to recharge an aquifer)
- 5S23 Subsidence Control Wells (IW used to control land subsidence caused by ground water withdrawal)
- 5W09 Untreated Sewage
- 5W10 Large Capacity Cesspools (Cesspools that are designed for 5,000 gpd or greater)
- 5W11 Large Capacity Septic systems (Septic systems designed for 5,000 gpd or greater)
- 5W12 WTPP disposal
- 5W20 Industrial Process Waste Disposal Wells
- 5W31 Septic System (Well Disposal method)
- 5W32 Septic System Drainfield Disposal
- 5X13 Mine Backfill (IW used to control subsidence, dispose of mining byproducts, and/or fill sections of a mine)
- 5X25 Experimental Wells (Pilot Test) (IW used to test new technologies or tracer dye studies)
- 5X26 Aquifer Remediation (IW used to clean up, treat, or prevent contamination of a USDW)
- 5X27 Other Wells
- 5X28 Motor Vehicle Waste Disposal Wells (IW used to dispose of waste from a motor vehicle site - These are currently banned)
- 5X29 Abandoned Drinking Water Wells (waste disposal)

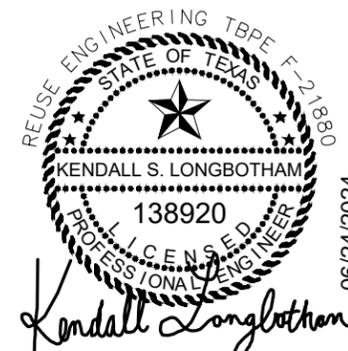
See Technical Report
Attachment 5B
Design Calculations
for 30,000 GPD
Treatment

(1 x 30,000 GPD Temp Treatment Train = 0.03 MGD)



Example of Process Flow/Treatment Process (provided from
design for 80,000 gpd Treatment Plant)

Disclaimer
This drawing was created by A3-USA
for a separate project. It is presented
here for illustrative purposes only.
Sizes and dimensions will vary.



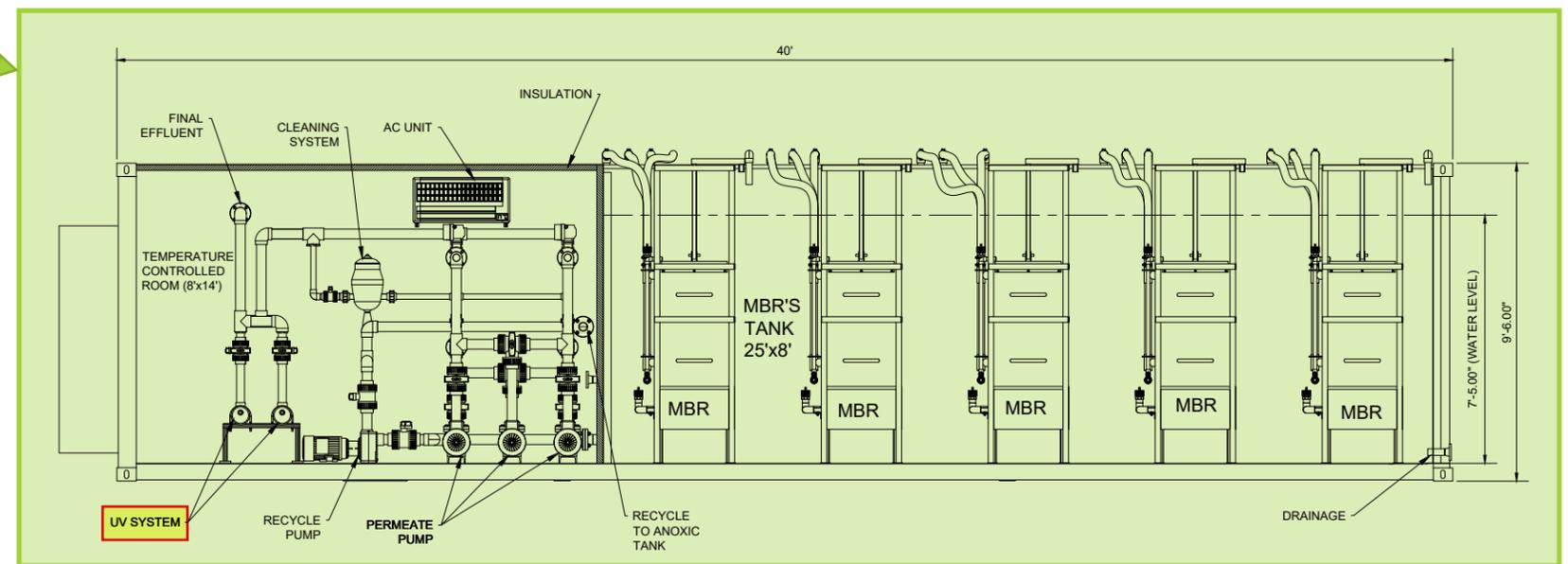
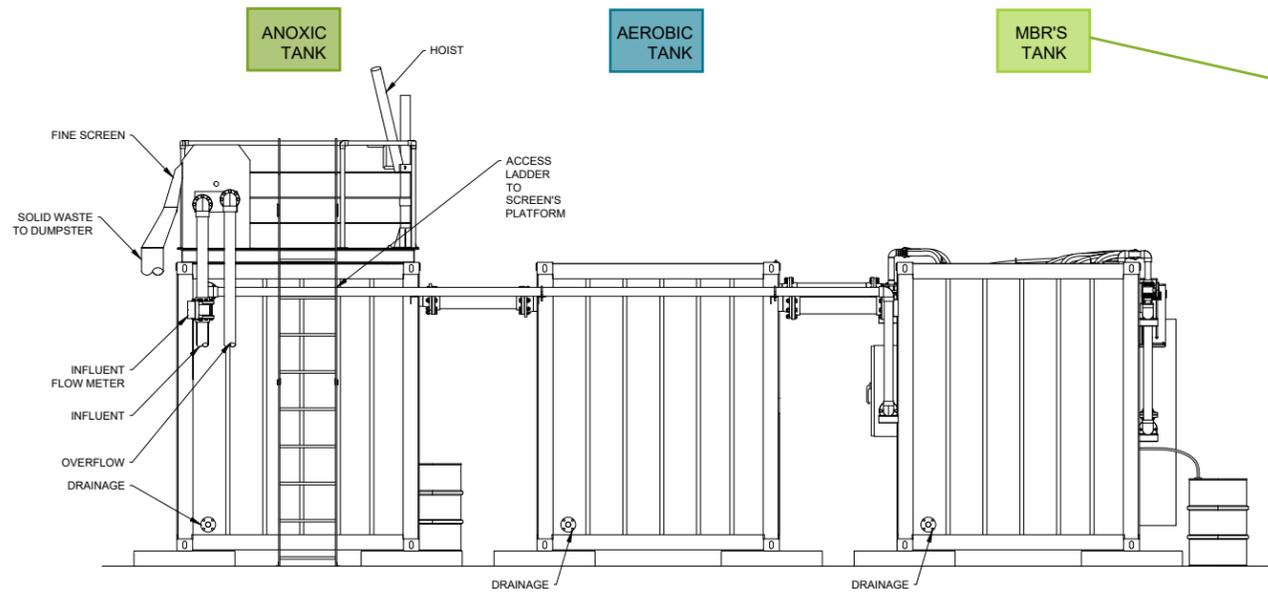
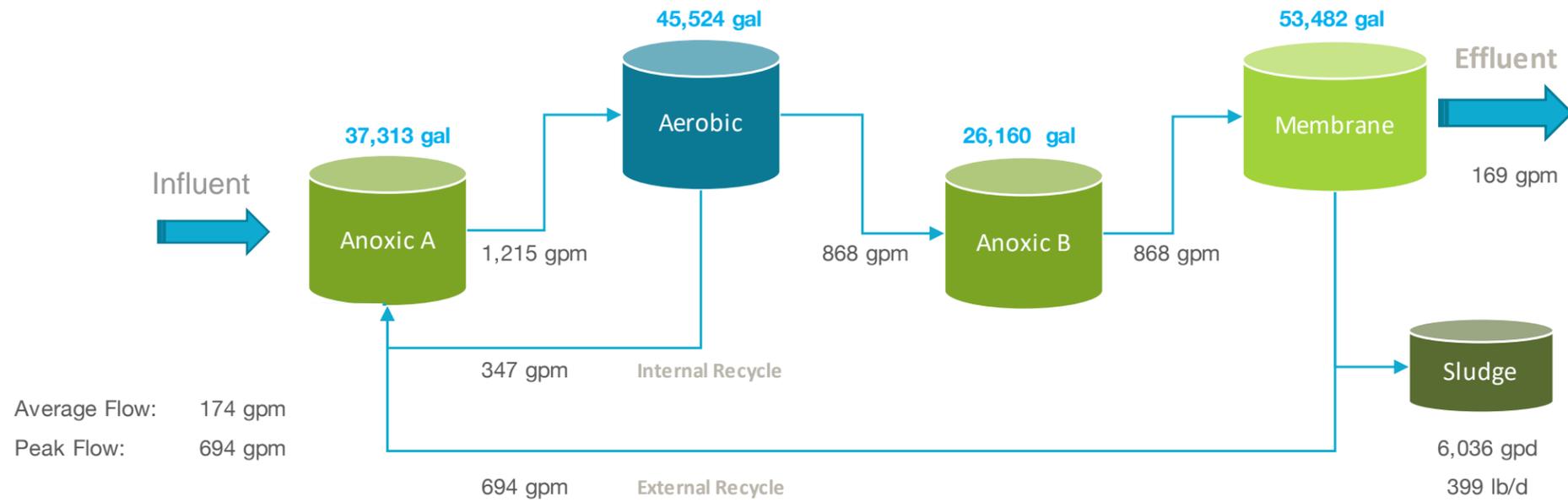
TCCI SANCTUARY WWTP, LLC
TPDES PERMIT APPLICATION
DENTON COUNTY, TEXAS

PROCESS FLOW DIAGRAM
30,000 GPD UNIT

Attachment 1A

The 1,250,000 GPD Treatment Facility will be comprised of one (1) 250,000 GPD treatment train and two (2) 500,000 GPD treatment trains

250,000 GPD Treatment Train:
See 10054 Technical Report Attachment 5- Design Calculations



Example of Process Flow/Treatment Process (provided from design for 80,000 gpd Treatment Plant)

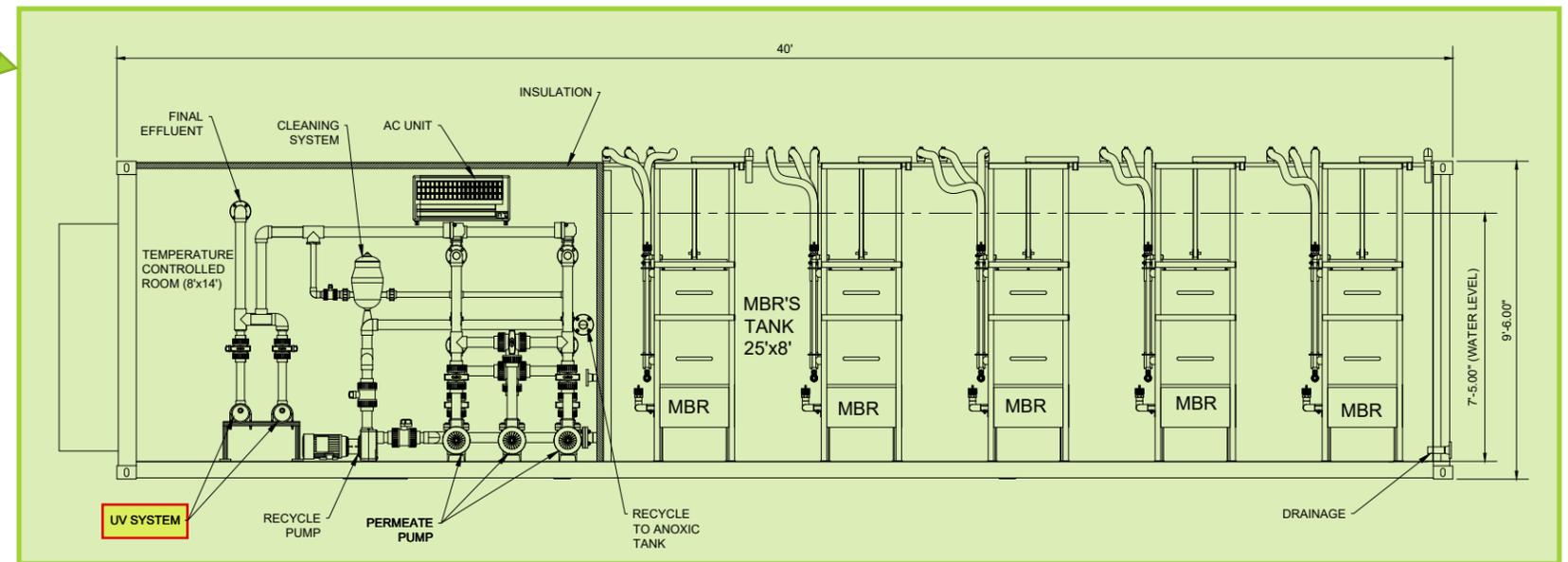
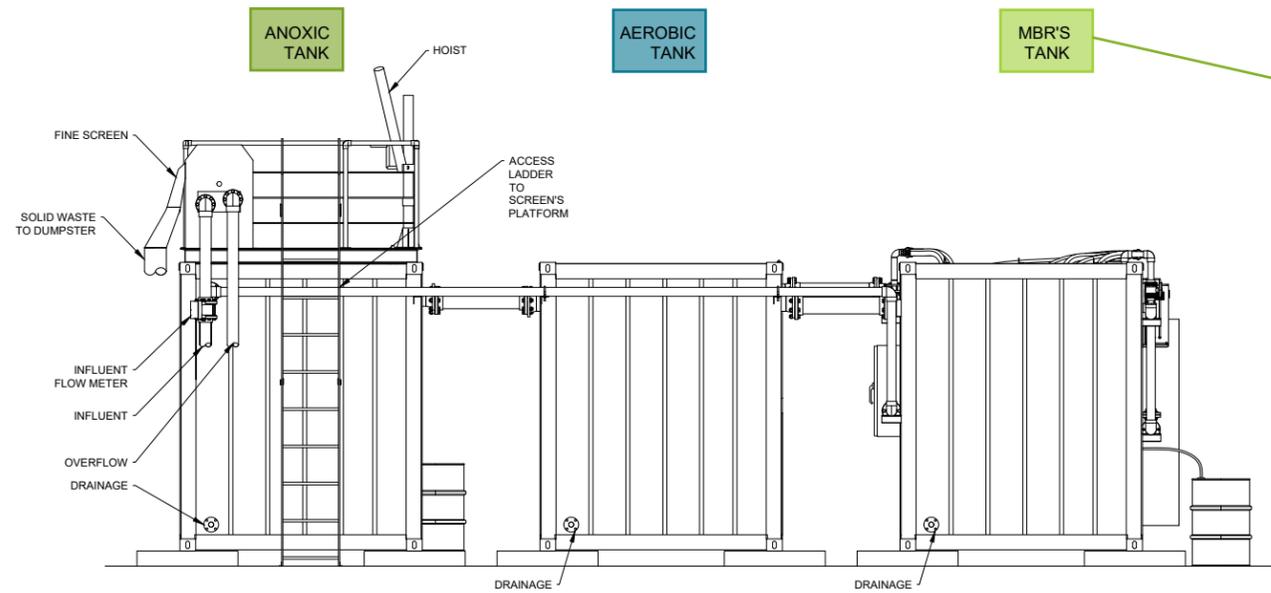
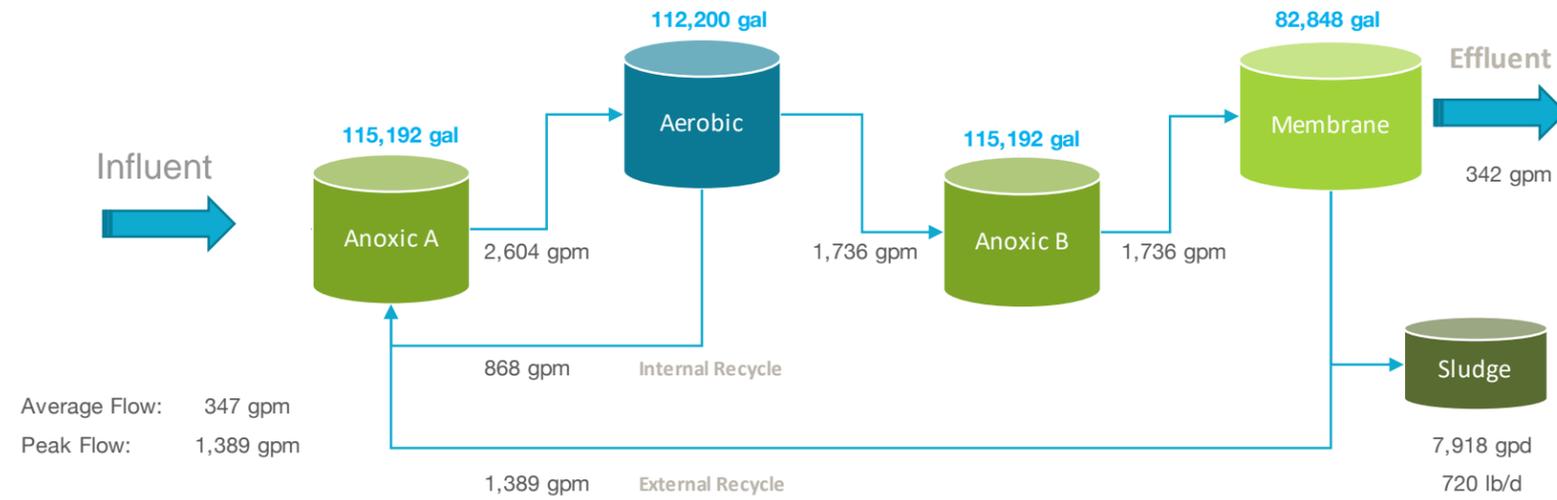
Disclaimer
This drawing was created by A3-USA for a separate project. It is presented here for illustrative purposes only. Sizes and dimensions will vary.



TCCI SANCTUARY WWTP, LLC
TPDES PERMIT APPLICATION
DENTON COUNTY, TEXAS
PROCESS FLOW DIAGRAM
Attachment 1B

The 1,250,000 GPD Treatment Facility will be comprised of one (1) 250,000 GPD treatment train and two (2) 500,000 GPD treatment trains

500,000 GPD Treatment Train:
See 10054 Technical Report Attachment 5- Design Calculations



Example of Process Flow/Treatment Process (provided from design for 80,000 gpd Treatment Plant)

Disclaimer
This drawing was created by A3-USA for a separate project. It is presented here for illustrative purposes only. Sizes and dimensions will vary.

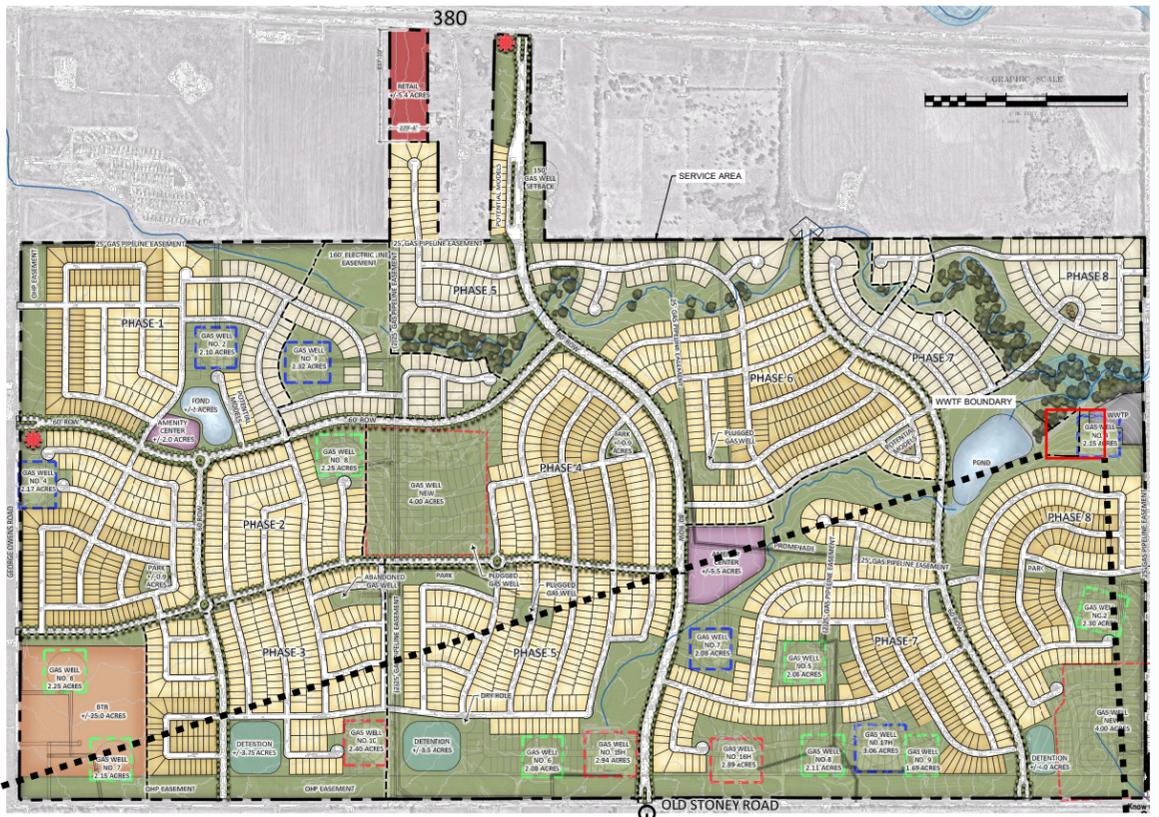


reUse
ENGINEERING
4411 SIH 35, Suite 100
Georgetown, TX 78626
TX Firm No. 21880

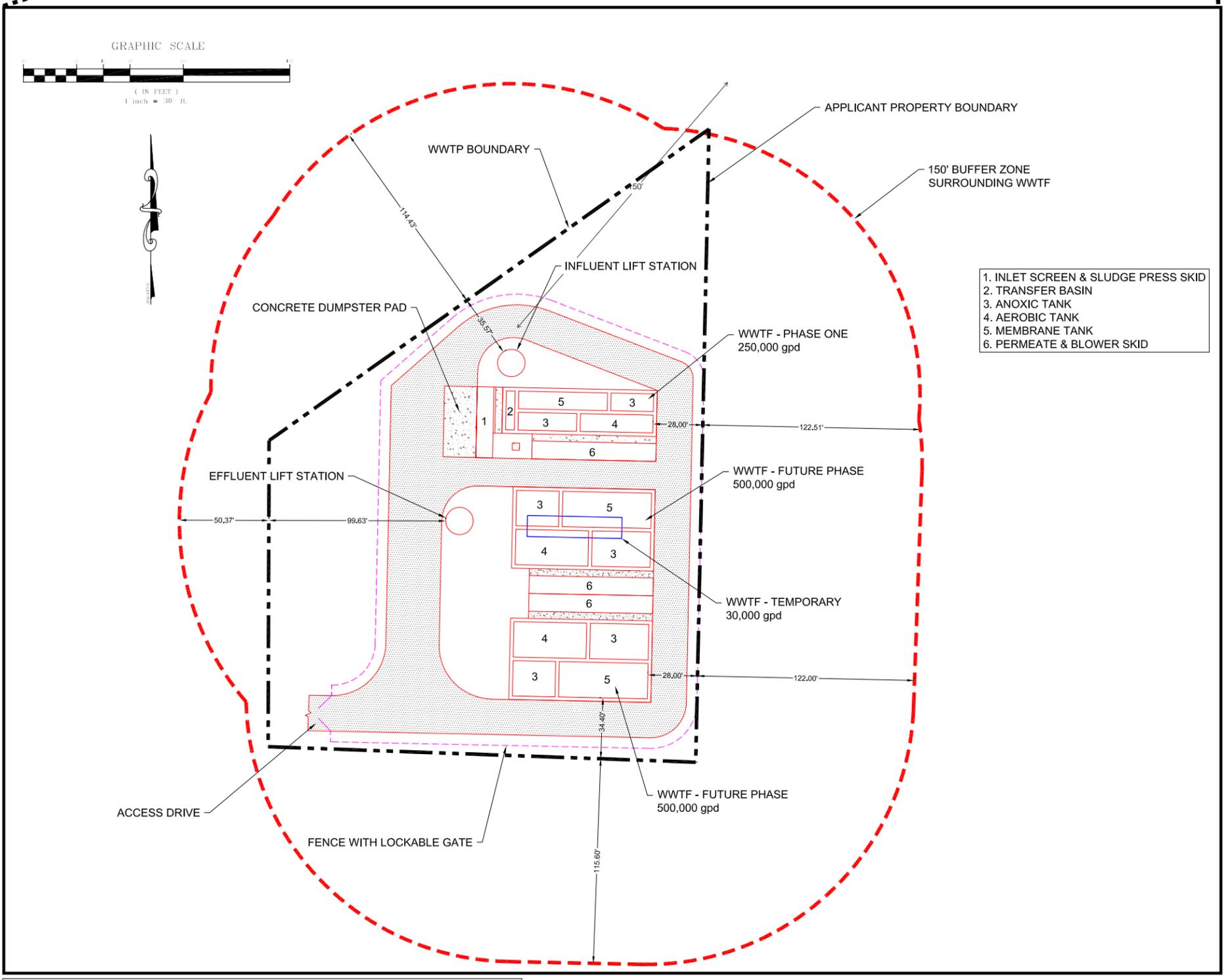
TCCI SANCTUARY WWTP, LLC
TPDES PERMIT APPLICATION
DENTON COUNTY, TEXAS
PROCESS FLOW DIAGRAM
Attachment 1C



Denton County, TX



AREA SERVED BY WWTF



Note: Drawing is for layout only. No work to begin without Geotech and Structural Reports and Designs Available!

THE APPLICANT WILL HAVE AN ODOR & ABATEMENT EASEMENT WITH THE ADJACENT PROPERTY OWNER INTO WHICH THE 150-FT BUFFER ZONE FALLS



TCCI SANCTUARY WWTP LLC
 TPDES PERMIT APPLICATION
 DENTON COUNTY, TEXAS
SITE DRAWING
Attachment 2

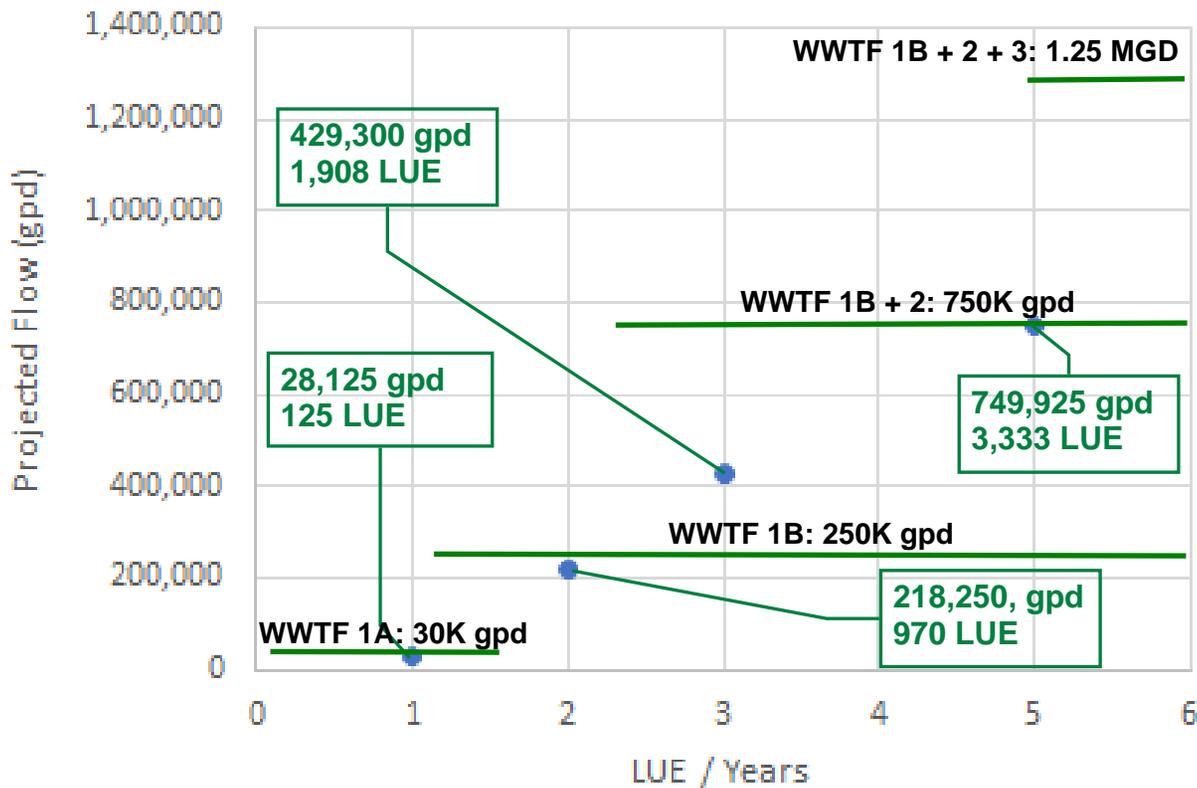
| | | <u>Design Flow</u> gpd | <u>Cumulative</u> <u>Flow</u> gpd |
|---------------------------|-----------|---------------------------|---|
| Interim Ph 1 Temp WWTF | 1A | 30,000 | 30,000 |
| WWTF | 1B | 250,000 | 250,000 |
| WWTF | 2 | 500,000 | 750,000 |
| WWTF | 3 | 500,000 | 1,250,000 |

| | | <u>Development</u> <u>per Year</u> <u>LUE</u> | <u>Cumulative</u> <u>Development</u> <u>LUE</u> | <u>Projected</u> <u>Flow</u> <u>gpd</u> |
|------|----------|---|---|---|
| Year | 1 | 125 | 125 | 28,125 |
| Year | 2 | 845 | 970 | 218,250 |
| Year | 3 | 938 | 1,908 | 429,300 |
| Year | 5 | 1,425 | 3,333 | 749,925 |

LUE (Living Unit Equivalents)

225

gpd/LUE



4411 SIH 35, Suite 100
Georgetown, TX 78626
TX Firm No. 21880

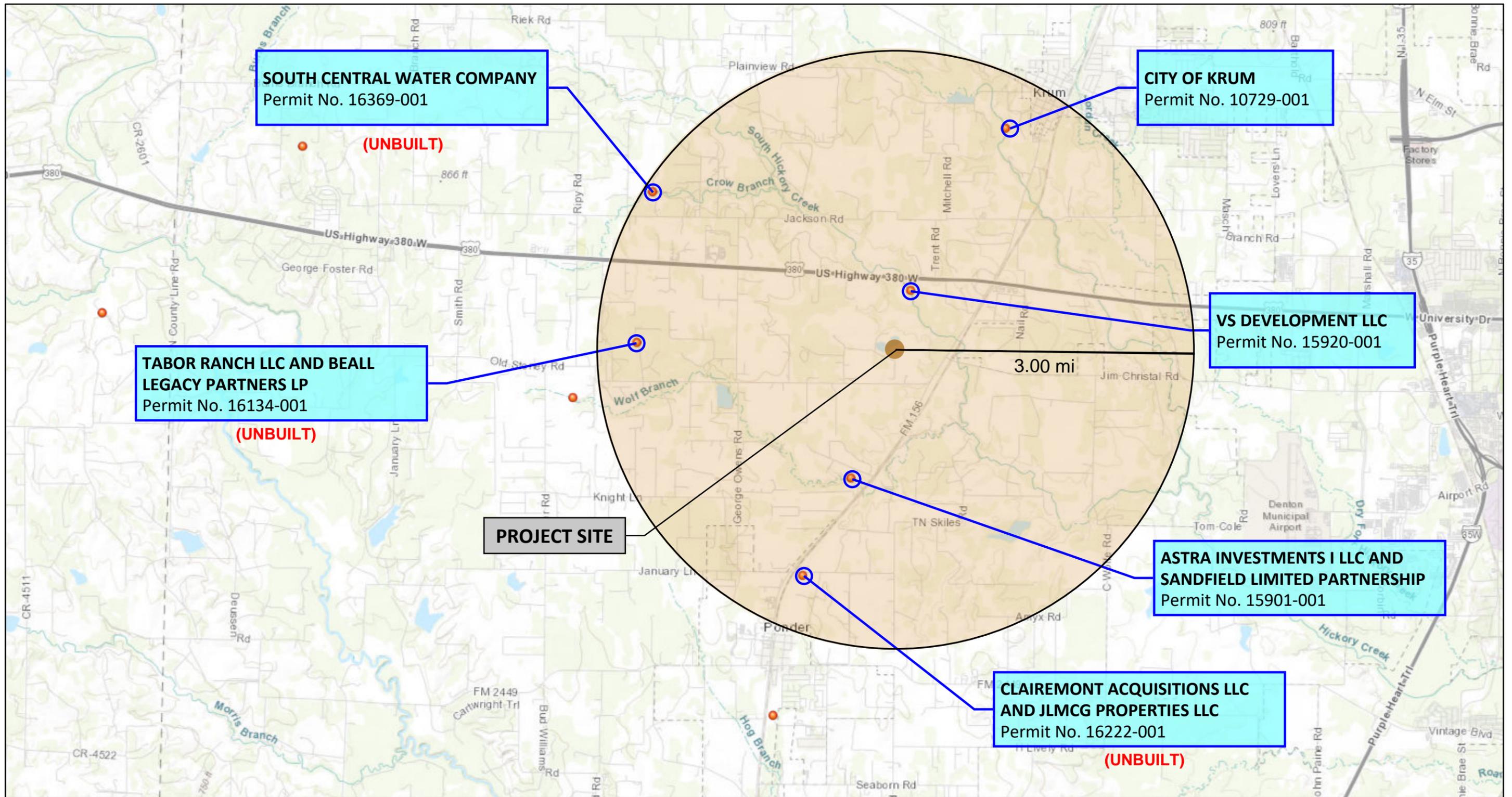
TCCI SANCTUARY WWTP, LLC
TPDES PERMIT APPLICATION
DENTON COUNTY, TEXAS

PROJECTION OF LUES &
WASTEWATER FLOW

Attachment 3

ATTACHMENT 4
REGIONALIZATION OF FACILITIES

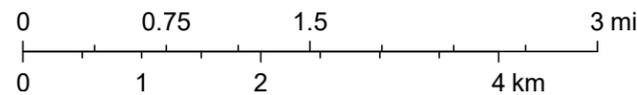
INCLUDES:
OUTFALL MAP
REQUEST FOR SERVICES LETTERS
RESPONSES AND/OR CERTIFIED MAIL
PROOF



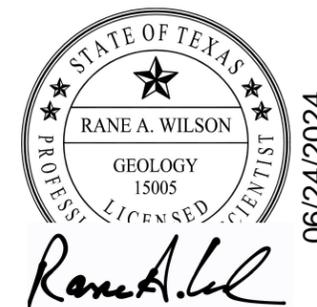
6/4/2024, 1:39:41 PM

1:72,224

● Wastewater Outfalls



<https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=d47b9419f42c49dea592203aeda99da1>



TCCI SANCTUARY WWTP LLC
TPDES PERMIT APPLICATION
DENTON COUNTY, TEXAS

**WASTEWATER OUTFALL
MAP**

Attachment 4

June 5, 2024

Mr. Justin Bona, President
Astra Investments I LLC
3625 North Hall Street, Suite 720
Dallas, TX 75219-5110
214-662-5530

RE: Request for Service Denial
Proposed Wastewater Treatment Plant
Located approx. 1.1 miles southwest of the intersection of US Highway 380 and FM 156 in Ponder, Denton County, Texas (33.227891, -97.26769)

Mr. Bona:

On behalf of our client, TCCI Sanctuary WWTP, LLC, reUse Engineering, Inc. is in the process of submitting a request to the Texas Commission on Environmental Quality (TCEQ) for a Domestic Wastewater Discharge Permit for a proposed Wastewater Treatment Plant at the above referenced location. See attached Wastewater Outfall Map. The client's property is located:

- Outside City of Denton's Sewer CCN
- Approx. 1.4 mi northeast of Astra Investments I LLC's Wastewater Outfall (Permit #15901-001)

As part of the Discharge Permit Application, we are required by TCEQ to provide a Denial of Service for any sewer service within 3 miles of the site, provided said service is operational. We are requesting that the Astra Investments I LLC provide us a letter of Denial of Service, stating that it cannot/will not provide wastewater service to this site. A response is requested within 30 days of receipt of this letter, though an expedited response is greatly appreciated if at all possible.

Please contact me if you have any questions.

Respectfully Submitted,



Rane A. Wilson, P.G.
reUse Engineering, Inc.
Hydrogeologist Lead
4411 S IH-35 Suite 100
Georgetown, TX 78626
(570) 567-4297

June 5, 2024

Mr. Nate Winchester
Water/Wastewater Superintendent
City of Krum
410 North First Street
Krum, TX 76249-0217
940-482-3491

RE: Request for Service Denial
Proposed Wastewater Treatment Plant
Located approx. 1.1 miles southwest of the intersection of US Highway 380 and FM 156 in Ponder, Denton County, Texas (33.227891, -97.26769)

Mr. Winchester:

On behalf of our client, TCCI Sanctuary WWTP, LLC, reUse Engineering, Inc. is in the process of submitting a request to the Texas Commission on Environmental Quality (TCEQ) for a Domestic Wastewater Discharge Permit for a proposed Wastewater Treatment Plant at the above referenced location. See attached Wastewater Outfall Map. The client's property is located:

- Outside City of Denton's Sewer CCN
- Approx. 2.5 mi southwest of the City of Krum's Wastewater Outfall (Permit #10729-001)

As part of the Discharge Permit Application, we are required by TCEQ to provide a Denial of Service for any sewer service within 3 miles of the site, provided said service is operational. We are requesting that the City of Krum provide us a letter of Denial of Service, stating that it cannot/will not provide wastewater service to this site. A response is requested within 30 days of receipt of this letter, though an expedited response is greatly appreciated if at all possible.

Please contact me if you have any questions.

Respectfully Submitted,



NATE A. WILSON, P.E.
reUse Engineering, Inc.
Hydrogeologist Lead
4411 S IH-35 Suite 100
Georgetown, TX 78626
(570) 567-4297

June 7, 2024

Mr. Bob Shelton
VS Development LLC
2925 Country Club Road, Suite 105
Denton, TX 76210-8603
817-996-2746

RE: Request for Service Denial
Proposed Wastewater Treatment Plant
Located approx. 1.1 miles southwest of the intersection of US Highway 380 and FM 156 in Ponder, Denton County, Texas (33.227891, -97.26769)

Mr. Shelton:

On behalf of our client, TCCI Sanctuary WWTP, LLC, reUse Engineering, Inc. is in the process of submitting a request to the Texas Commission on Environmental Quality (TCEQ) for a Domestic Wastewater Discharge Permit for a proposed Wastewater Treatment Plant at the above referenced location. See attached Wastewater Outfall Map. The client's property is located:

- Outside City of Denton's Sewer CCN
- Approx. 0.65 mi southwest of VS Development LLC's Wastewater Outfall (Permit #15920-001)

As part of the Discharge Permit Application, we are required by TCEQ to provide a Denial of Service for any sewer service within 3 miles of the site, provided said service is operational. We are requesting that the VS Development LLC provide us a letter of Denial of Service, stating that it cannot/will not provide wastewater service to this site. A response is requested within 30 days of receipt of this letter, though an expedited response is greatly appreciated if at all possible.

Please contact me if you have any questions.

Respectfully Submitted,



Rane A. Wilson, P.G.
reUse Engineering, Inc.
Hydrogeologist Lead
4411 S IH-35 Suite 100
Georgetown, TX 78626
(570) 567-4297

PC: Mr. Chad Vose



NEW BRAUNFELS
651 N BUSINESS IH 35 STE 420
NEW BRAUNFELS, TX 78130-9808
(800)275-8777

06/07/2024 10:42 AM

| Product | Qty | Unit Price | Price |
|-----------------------------|-----|------------|----------------|
| Priority Mail® | 1 | | \$9.60 |
| Dallas, TX 75205 | | | |
| Weight: 0 lb 0.80 oz | | | |
| Expected Delivery Date | | | |
| Mon 06/10/2024 | | | |
| Insurance | | \$0.00 | |
| Up to \$100.00 included | | | |
| Certified Mail® | | \$4.40 | |
| Tracking #: | | | |
| 9589 0710 5270 1998 7451 61 | | | |
| Total | | | \$14.00 |

| | | | |
|-----------------------------|---|--------|----------------|
| Priority Mail® | 1 | | \$9.80 |
| Denton, TX 76210 | | | |
| Weight: 0 lb 0.80 oz | | | |
| Expected Delivery Date | | | |
| Mon 06/10/2024 | | | |
| Insurance | | \$0.00 | |
| Up to \$100.00 included | | | |
| Certified Mail® | | \$4.40 | |
| Tracking #: | | | |
| 9589 0710 5270 1998 7451 54 | | | |
| Total | | | \$14.20 |

Grand Total: \$28.20

Credit Card Remit \$28.20

Card Name: AMEX
Account #: XXXXXXXXXX1048
Approval #: 853702
Transaction #: 746
AID: A000000025010801 Chip
AL: AMERICAN EXPRESS
PIN: Not Required

In a hurry? Self-service kiosks offer quick and easy check-out. Any Retail Associate can show you how.

Text your tracking number to 28777 (2USPS) to get the latest status. Standard Message and Data rates may apply. You may also visit www.usps.com USPS Tracking or call 1-800-222-1811.

Save this receipt as evidence of insurance. For information on filing an insurance claim go to <https://www.usps.com/help/claims.htm> or call 1-800-222-1811

Preview your Mail
Track your Packages
Sign up for FREE @
<https://informedelivery.usps.com>

All sales final on stamps and postage. Refunds for guaranteed services only. Thank you for your business.

Tell us about your experience. Go to: <https://postalexperience.com/Pos> or scan this code with your mobile device.



U.S. Postal Service™
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For delivery information, visit our website at www.usps.com®.

Denton, TX 76210

Certified Mail Fee \$4.40

Extra Services & Fees (check box, add fee as appropriate)

| | |
|--|--------|
| <input type="checkbox"/> Return Receipt (hardcopy) | \$0.00 |
| <input type="checkbox"/> Return Receipt (electronic) | \$0.00 |
| <input type="checkbox"/> Certified Mail Restricted Delivery | \$0.00 |
| <input type="checkbox"/> Adult Signature Required | \$0.00 |
| <input type="checkbox"/> Adult Signature Restricted Delivery | \$0.00 |

Postage \$9.80

Total Postage and Fees \$14.20

Sent To Mr. Bob Shelton

Street and Apt. No., or PO Box No. 2925 Country Club Rd., Ste. 105

City, State, ZIP+4® Denton, TX 76210-8603

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions



U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

Dallas, TX 75205

Certified Mail Fee \$4.40

Extra Services & Fees (check box, add fee as appropriate)

| | |
|--|--------|
| <input type="checkbox"/> Return Receipt (hardcopy) | \$0.00 |
| <input type="checkbox"/> Return Receipt (electronic) | \$0.00 |
| <input type="checkbox"/> Certified Mail Restricted Delivery | \$0.00 |
| <input type="checkbox"/> Adult Signature Required | \$0.00 |
| <input type="checkbox"/> Adult Signature Restricted Delivery | \$0.00 |

Postage \$9.60

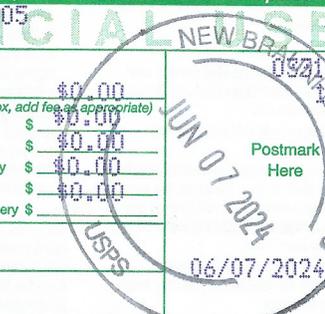
Total Postage and Fees \$14.00

Sent To Mr. Chad Vose

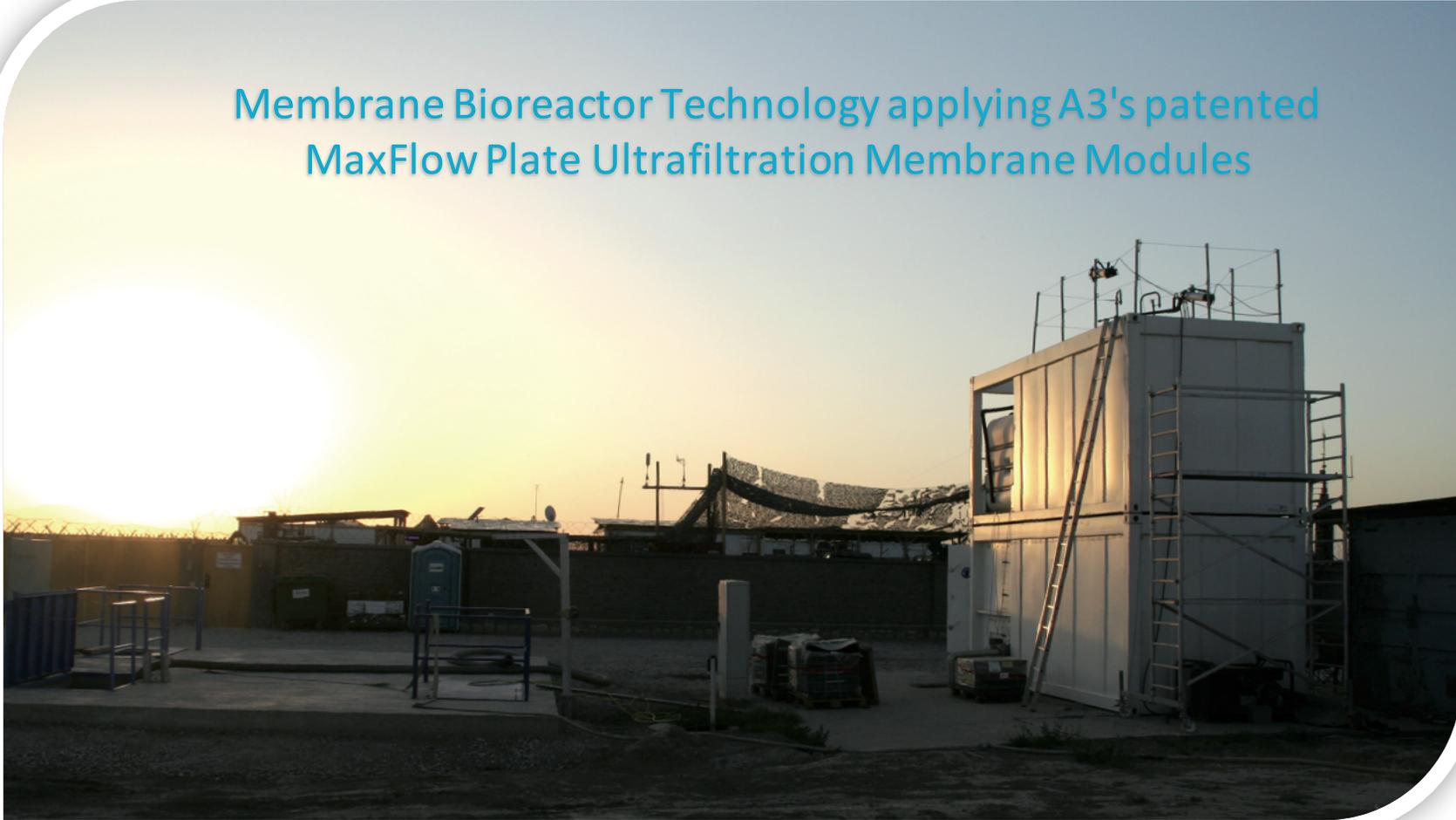
Street and Apt. No., or PO Box No. 4514 Cole Ave., Ste. 1650

City, State, ZIP+4® Dallas, TX 75205

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

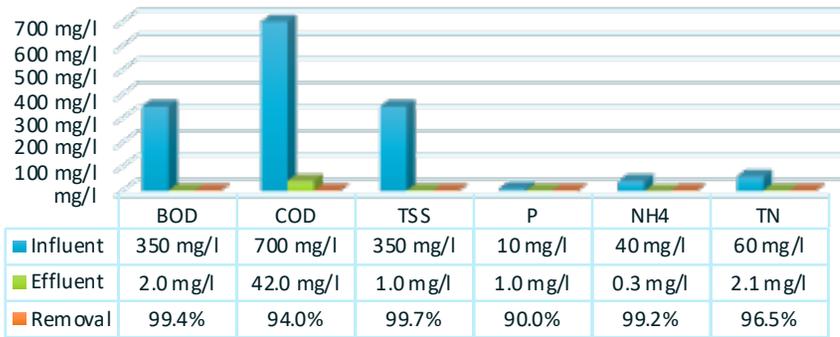


Membrane Bioreactor Technology applying A3's patented
MaxFlow Plate Ultrafiltration Membrane Modules



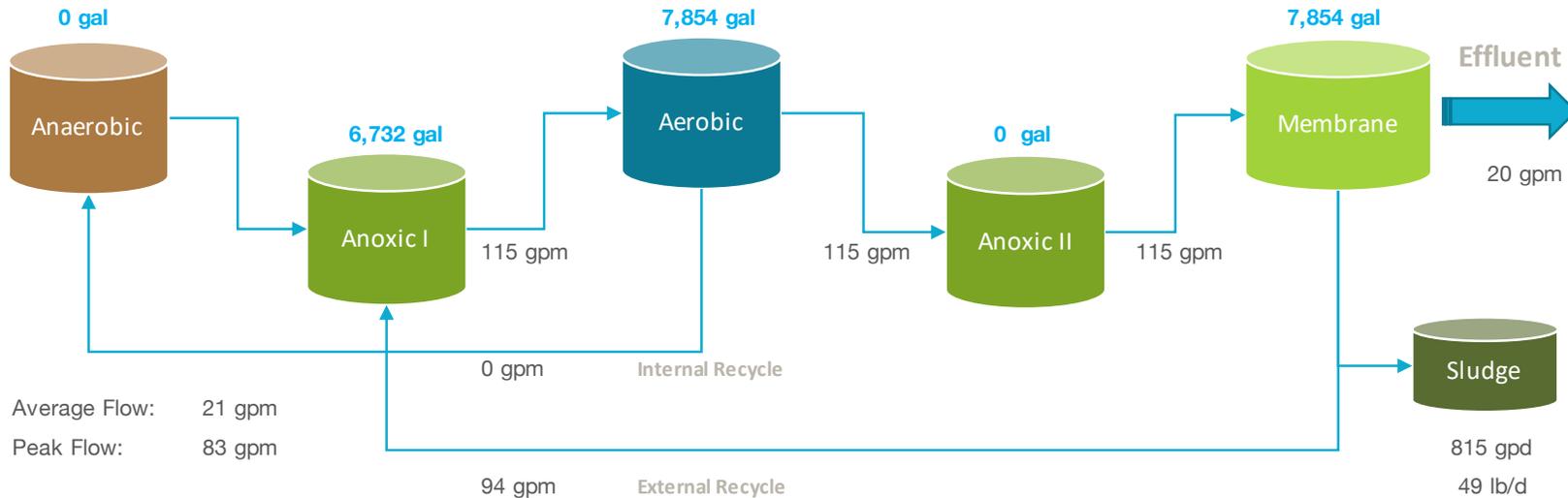
Process Summary

Influent & Effluent Parameters



PROCESS PARAMETERS

| | |
|-------------------------------|------------|
| Sludge Age | 25 d |
| Total Reactor Volume | 22,440 gal |
| Total SOR | 191 kgO2/d |
| MLSS in Anoxic / Aerobic Tank | 7,034 mg/l |
| MLSS in Membrane Tank | 8,808 mg/l |
| HRT | 18 h |
| F/M RATIO (BOD) | 0.071 |
| F/M RATIO (COD) | 0.142 |
| Total Membrane Surface | 9,042 sf |



| Aeration | Flow | Pressure |
|----------|----------|----------|
| EQ | 0 scfm | 0.0 psi |
| Sludge | 0 scfm | 0.0 psi |
| Aerobic | 99 scfm | 6.5 psi |
| Membrane | 161 scfm | 6.0 psi |

Applied Options:



9/28/22

Biological Process Calculation

| Influent Characteristics | Symbol | Value | Units | Influent Characteristics | Symbol | Value | Units |
|---|-----------------------|--------|---------------------------|--|----------------------|--------------|----------------------|
| Type of wastewater | | | municipal | NO ₃ | N _{NO3,i} | 0 | mg/l |
| Temperature | T | 15 | °C | NH ₄ | N _{a,i} | 40.0 | mg/l |
| pH | - | 7.0 | - | TKN | N _{TKN,i} | 60.0 | mg/l |
| H ₂ CO ₃ alkalinity | Alk _i | 250 | mg/l as CaCO ₃ | TP | P _i | 10.0 | mg/l |
| Site pressure / elevation | p _{a,i} | 14.2 | psi | Dissolved Oxygen | S _{O2,i} | 0.0 | mg/l |
| Average daily flow | Q _i | 30,000 | gpd | FSA fraction | f _{a/TKN,i} | 0.7 | - |
| Peak daily flow | Q _{i, max,d} | 60,000 | gpd | Fixed (inorganic) suspended solids | X _{FSS,i} | 47.5 | mgSS/l |
| Hourly peak flow | Q _{i, max,p} | 83 | gpm | TSS concentration | S _{TSS,i} | 350.0 | mgTSS/l |
| Peak factor | - | 4.0 | - | Total BOD mass | FS _{BOD,i} | 39.7 | kgBOD/d |
| Average daily flow | Q _i | 114 | m ³ /d | Total COD mass | FS _{COD,i} | 79.5 | kgCOD/d |
| Max. monthly average daily flow | Q _{i, max,d} | 227 | m ³ /d | Total NH ₄ mass | FS _{a,i} | 4.5 | kgNH ₄ /d |
| Hourly peak flow | Q _{i, max,h} | 18.9 | m ³ /h | Total TKN mass | FS _{TKN,i} | 6.8 | kgTKN/d |
| Total BOD | S _{BOD,i} | 350 | mgBOD/l | Total P mass | FS _{P,i} | 1.1 | kgP/d |
| Total COD | S _{COD,i} | 700 | mgCOD/l | | | | |
| COD/BOD ratio | - | 2.00 | - | | | | |
| Rapidly biodegradable COD | S _{s,i} | 175 | mgCOD/l | Effluent Characteristics | Symbol | Value | Units |
| Volatile fatty acids (VFA) | S _{VFA,i} | 26 | mgCOD/l | Waste Sludge | FX _t | 49 | lb/d |
| Fermentable COD | S _{F,i} | 149 | mgCOD/l | Waste Sludge | Q _w | 815 | gpd |
| Slowly biodegradable COD | S _{ss,i} | 378 | mgCOD/l | Effluent BOD | S _{BOD,e} | < 3 | mgBOD/l |
| Biodegradable COD | S _{bio,i} | 553 | mgCOD/l | Effluent COD | S _{COD,e} | 42 | mgCOD/l |
| Soluble inert COD | S _{SIN,i} | 42 | mgCOD/l | Effluent TSS | S _{TSS,e} | 1.0 | mgTSS/l |
| Particulate inert COD | S _{PIN,i} | 105 | mgCOD/l | Effluent P | P _e | 1.0 | mgP/l |
| | | | | Effluent NH ₄ | N _{a,e} | 0.3 | mgN/l |
| | | | | Effluent NO ₃ | N _{NO3,e} | 0.0 | mgN/l |
| | | | | Effluent TN (N _{ne} + N _{te}) | N _{t,e} | 2.1 | mgN/l |

| Bioreactor Characteristics | Symbol | Value | Units | Biological Oxygen Demand | Symbol | Value | Units |
|--|------------------|--------|---------------------|---------------------------------------|------------|-------|---|
| Temperature | T_{bio} | 15 | °C | OD for synth & endo respiration (PAO) | FO_{PAO} | 0 | kgO ₂ /d |
| Sludge retention time / Sludge age | SRT | 25 | d | OD for synth & endo respiration (OHO) | FO_{OHO} | 50 | kgO ₂ /d |
| Reactor volume | $V_{P,chosen}$ | 22,440 | gallons | Mass carbonaceous oxygen demand | FO_C | 50 | kgO ₂ /d |
| Reactor volume | $V_{P,chosen}$ | 85 | m ³ | Carbonaceous oxygen utilization rate | O_c | 59% | - |
| Reactor volume | $V_{P,calc}$ | 20,384 | gallons | Nitrification oxygen demand | FO_n | 21 | kgO ₂ /d |
| Average MLSS concentration | X_{TSS} | 7,250 | mgTSS/l | Total oxygen demand | FO_t | 72 | kgO ₂ /d |
| Food to microorganism ratio | $F/M_{BOD,used}$ | 0.071 | kgBOD/kgMLSS | Oxygen recovered by denitrification | FO_d | 13 | kgO ₂ /d |
| Food to microorganism ratio | $F/M_{COD,used}$ | 0.142 | kgCOD/kgMLSS | Net total oxygen demand (AOR) | FO_{td} | 58 | kgO ₂ /d |
| Membrane tank MLSS concentration | X_M | 8,808 | mgTSS/l | Oxygen saturation @ operating temp. | c_s | 10.2 | mg/l |
| Aerobic/Anoxic tank MLSS concentration | X_{Bio} | 7,034 | mgTSS/l | Desired oxygen level | c_x | 2.0 | mg/l |
| Number of anaerobic zones | $\#_{AN}$ | 0 | - | Transfer coefficient | α | 0.40 | - |
| Number of anoxic zones | $\#_{AO}$ | 1 | - | Diffuser water depth | DWD | 9.5 | feet |
| Number of aerobic zones | $\#_{AE}$ | 1 | - | Oxygen transfer efficiency | OTE | 1.87 | % |
| External recycle ratio | m | 4.5 | - | Standard total oxygen demand (SOR) | SOR | 191 | kgO ₂ /d |
| Internal recycle ratio | a | 0 | - | Required air flow | Q_{air} | 97 | scfm |
| DO in m recycle | O_m | 0 | mgO ₂ /l | Oxygen requir. per volume & depth | OS | 16.7 | gO ₂ /(Nm ₃ *m _D) |
| DO in a recycle | O_a | 0 | mgO ₂ /l | | | | |
| Recycle ratio to anaerobic tank (PAO) | s | 0 | - | | | | |
| DO in s recycle | $S_{O2,s}$ | 0 | mgO ₂ /l | | | | |
| Nitrate on s recycle | $S_{NO3,s}$ | 0 | mg/l | | | | |
| TKN/COD ratio | $f_{TKN/COD}$ | 0.086 | mgTKN/mgCOD | | | | |
| Carbon source addition (Micro C) | B_{MicroC} | 0.0 | lb/d | | | | |
| Carbon source addition (Micro C) | S_{MicroC} | 0.00 | gpd | | | | |
| Nominal hydraulic retention time | HRT_n | 18.0 | h | | | | |
| Actual hydraulic retention time | HRT_a | 3.3 | h | | | | |

Membrane Module Design

| | Symbol | Value | Units |
|---|--------------------|-------|-------------------------|
| Permeate on cycle | T_o | 8 | minute |
| Permeate off cycle (relaxation) | T_s | 2 | minute |
| Effective membrane module surface | $A_{m,eff}$ | 84.0 | m^2 |
| Effective membrane module surface | $A_{m,eff}$ | 904 | ft^2 |
| Total number of membrane modules | N_M | 10 | - |
| Total membrane module surface | A_{total} | 840 | m^2 |
| Total membrane module surface | A_{total} | 9,042 | ft^2 |
| Nominal average daily flux | $Q_{ave,n}$ | 7.0 | lmh |
| Nominal max. daily flux | $Q_{ave,n,max,mo}$ | 14.1 | lmh |
| Nominal peak hourly flux | $Q_{peak,n}$ | 28.2 | lmh |
| Average daily flux (excluding rest cycle) | $Q_{ave,n}$ | 3.3 | gfd |
| Max. Daily flux (ex. rest cycle) | $Q_{ave,n,max,mo}$ | 6.6 | gfd |
| Peak hourly flux (ex. rest cycle) | $Q_{peak,n}$ | 13.3 | gfd |
| Total membrane module displacement vol. | $V_{modules}$ | 110 | ft^3 |
| Total membrane module displacement vol. | $V_{modules}$ | 823 | gallons |
| Aeration modules | A# | 5 | - |
| Membrane module aeration requirement | Q_{am} | 28.5 | acfm |
| Total membrane modules aeration | $Q_{am,total}$ | 143 | acfm |
| Membrane diffuser water depth | DWD _m | 9.00 | feet |
| Oxygen requirement per volume & depth | OS | 13 | $gO_2/(Nm_3 \cdot m_D)$ |
| Standard oxygen rate, membrane aeration | SOR _m | 436 | lbO_2/d |
| Standard oxygen rate, membrane aeration | SOR _m | 200 | kgO_2/d |



- ✓ Patented, innovative A3's MaxFlow™ membrane filtration modules manufactured in USA.
- ✓ The MaxFlow™ module "open channel design" provides optimal biofilm control, minimizes the quantity of chemical cleaning procedures and avoids module clogging.
- ✓ The compact module design enables dual-stack and triple-stack installations. It allows for a high membrane packing density resulting in a small footprint and high energy efficiency.
- ✓ Most existing conventional treatment plants can be retrofitted with MaxFlow™ membranes due to the

Kinetic Constants

| | Symbol | Value | Units |
|---------------------------------------|------------------|-------|-------------|
| Yield coefficient OHO | Y_{OHO} | 0.40 | mgVSS/mgCOD |
| Yield coefficient OHO,OBS | $Y_{OHO,obs}$ | 0.06 | mgVSS/mgCOD |
| Fermentation rate at 20°C | $k_{F,20}$ | 0.06 | m3/gVSSd |
| Temperature coefficient for $k_{F,T}$ | Θ_{kF} | 1.029 | - |
| Fermentation rate at T | $k_{F,T}$ | 0.05 | m3/gVSSd |
| Endogenous respiration rate (decay) | $b_{OHO,20}$ | 0.24 | gVSS/gVSSd |
| Endogenous respiration rate T | $b_{OHO,T}$ | 0.21 | gVSS/gVSSd |
| Yield coefficient FSA | Y_A | 0.10 | mgVSS/mgFSA |
| Nitri. pH sensitivity coefficient | K_I | 1.13 | - |
| Nitri. pH sensitivity coefficient | K_{max} | 9.50 | - |
| Nitri. pH sensitivity coefficient | K_{II} | 0.30 | - |
| Max. specific growth rate at 20°C | μ_{Am} | 0.45 | 1/d |
| Max. spec. growth rate - Temp/pH | μ_{AmTpH} | 0.21 | 1/d |
| Half saturation coefficient | K_n | 0.75 | mgFSA/l |
| Half saturation coefficient - Temp | K_{nT} | 0.42 | mgFSA/l |
| Endogenous respiration rate (decay) | b_A | 0.04 | 1/d |
| Temperature coefficient for $k_{F,T}$ | θ_n | 1.123 | - |
| Endogenous respiration rate T | b_{AT} | 0.022 | 1/d |
| Temperature sensitivity coefficient | Θ_{nk1} | 1.20 | - |
| Temperature sensitivity coefficient | Θ_{nk2} | 1.05 | - |
| Temperature sensitivity coefficient | Θ_{nk3} | 1.03 | - |
| Denitrification rates at 20°C | k_1 | 0.70 | - |
| Denitrification rates at 20°C | k_2 | 0.10 | - |
| Denitrification rates at 20°C | k_3 | 0.08 | - |
| Denitrification rates | k_{1T} | 0.281 | - |
| Denitrification rates | k_{2T} | 0.079 | - |
| Denitrification rates | k_{3T} | 0.069 | - |
| Yield coefficient PAO | Y_{PAO} | 0.45 | gAVSS/gCOD |
| Yield coefficient PAO | $Y_{PAO,obs}$ | 0.22 | gAVSS/gCOD |
| Endogenous respiration rate (decay) | $b_{PAO,20}$ | 0.04 | gEVSS/gCOD |
| Temperature coefficient for $k_{F,T}$ | $\Theta_{b,PAO}$ | 1.029 | - |
| Endogenous respiration rate T | $b_{PAO,T}$ | 0.03 | gEVSS/gVSSd |

Stoichiometric Constants

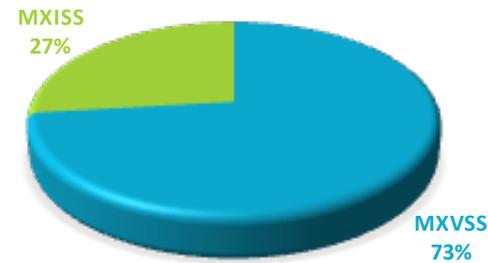
| | Symbol | Value | Units |
|---|----------------|-------|----------------------|
| COD/BOD ratio | - | 2.00 | - |
| Readily biodeg. org. fraction (RBCOD) | $f_{s,COD}$ | 0.25 | g/gTCOD |
| Non-biodegradable particulate COD | $f_{PNb,COD}$ | 0.15 | g/gTCOD |
| Non-biodegradable soluble COD | $f_{SNb,COD}$ | 0.06 | g/gTCOD |
| SVFA fraction of RBCOD | $f_{SVFA,SSI}$ | 0.15 | g/gCOD _{SS} |
| VSS/TSS of activated sludge | f_{VT} | 0.73 | mgVSS/mgTSS |
| COD/VSS of activated sludge | f_{cv} | 1.48 | kgCOD/kgVSS |
| True synthesis fraction | f_s^0 | 0.57 | - |
| Endogenous residue fraction | $f_{H/E,OHO}$ | 0.2 | - |
| ISS content of OHOs | $f_{ISS,OHO}$ | 0.15 | - |
| Active fraction - VSS | f_{avOHO} | 25% | - |
| Active fraction - TSS | f_{at} | 18% | - |
| Influent FSA fraction | $f_{FSA,i}$ | 0.67 | - |
| Non-bio. soluble orgN fraction (inerts) | $f_{SNb,N}$ | 0.03 | - |
| Non-bio. particulate orgN fraction | f_n | 0.12 | - |
| Permissible unaer. sludge mass fraction | f_{xm} | 0.65 | - |
| Design unaerated sludge mass fraction | f_{xt} | 0.30 | - |
| Minimum primary anoxic mass fraction | f_{x1min} | 0.08 | - |
| Primary anoxic mass fraction | f_{x1} | 0.30 | - |
| Secondary anoxic mass fraction | f_{x2} | 0.00 | - |
| Anaerobic mass fraction | f_{AN} | 0.00 | - |
| Non-bio. particulate orgP fraction | $f_{P,XE,OHO}$ | 0.05 | mgP/mgVSS |
| Endogenous residue fraction | $f_{XE,PAO}$ | 0.25 | gEVSS/gAVSS |
| P fraction in active PAO mass | $f_{P,PAO}$ | 0.38 | gP/gAVSS |
| VSS/TSS ratio for PAO active mass | $f_{VT,PAO}$ | 0.46 | gVSS/gTSS |
| Ratio of P release /VFA uptake | $f_{PO4,REL}$ | 0.5 | gP/gCOD |
| Frac. of fixed inorganic s. solids of PAO | $f_{FSS,PAO}$ | 1.3 | gFSS/gAVSS |
| P content of TSS | $f_{P,TSS}$ | 0.041 | gP/gTSS |
| P content of VSS | $f_{P,FSS,i}$ | 0.02 | gP/gVSS |
| TKN/COD ratio | f_{ns} | 0.09 | mgTKN/mgCOD |
| Nitrogen content of active biomass | $f_{N,VSS}$ | 0.10 | gN/gAVSS |

Biological Mass Balance

| | Symbol | Value | Units |
|---|----------------|---------------|-------|
| Sludge age | SRT | 25 d | |
| Mixed liquor suspended solids | X_{TSS} | 7,250 mgTSS/l | |
| Readiable biodegradabe COD flux | $FS_{S,i}$ | 20 kgCOD/d | |
| Daily flux of VFAs | $FS_{VFA,i}$ | 3 kgCOD/d | |
| Daily flux of fermentable COD | $FS_{F,i}$ | 17 kgCOD/d | |
| Daily flux of biodegradable COD | $FS_{bio,i}$ | 63 kgCOD/d | |
| Daily flux of particulate inert COD | $FS_{PIN,i}$ | 12 kgCOD/d | |
| Daily flux of fixed inorganic sus. solids | $FS_{ISS,i}$ | 5 kgISS/d | |
| Influent particulate non-bio. COD | $FX_{VSS,i}$ | 8 kgVSS/d | |
| Mass nitrogen into sludge prod. | FN_{Sludge} | 2 kgN/d | |
| Mass of nitrate generated per day | FN_{NO_3} | 5 kgN/d | |
| VFAs stored by PAOs | $FS_{S,PAO}$ | 0 kgCOD/d | |
| Remaining biodegradable COD | $FCOD_{b,OHO}$ | 63 kgCOD/d | |
| Mass nitrifiers | MX_A | 7 kgVSS | |
| Active biomass PAO | MX_{PAO} | 0 KgAVSS | |
| Endogenous active biomass PAO | $MX_{E,PAO}$ | 0 kgEVSS | |
| Bio mass | MX_{bio} | 102 kgVSS | |
| Active organism mass | MX_{OHO} | 102 kgVSS | |
| Endogenous residue mass | $MX_{E,OHO}$ | 106 kgVSS | |
| Non-biodegradable particulate mass | MX_{IV} | 201 kgVSS | |
| Volatile suspended solids mass | MX_{VSS} | 409 kgVSS | |
| Inorganic suspended solid mass | MX_{ISS} | 150 kgISS | |
| Total suspended solids mass | MX_{TSS} | 559 kgTSS | |
| Mass/Sludge TSS wasted | FX_t | 22 KgTSS/d | |
| Mass/Sludge VSS wasted | FX_V | 16 kgVSS/d | |
| Effluent COD | $S_{COD,e}$ | 42 mgCOD/l | |
| COD mass out (effluent and waste) | $FS_{COD,e}$ | 5 kgCOD/d | |
| Mass/Sludge COD wasted | $FX_{COD,s}$ | 24 kgCOD/d | |

Alkalinity

| | Symbol | Value | Units |
|---|-------------------|-------------------------------|-------|
| Alkalinity Nitrification as CaCO ₃ (consumed) | Alk_{Nitri} | 290 mg/l as CaCO ₃ | |
| Alkalinity Denitrification as CaCO ₃ (recovered) | $Alk_{Denitri}$ | 146 mg/l as CaCO ₃ | |
| Alkalinity ef | Alk_e | 100 mg/l as CaCO ₃ | |
| Alkalinity inf | Alk_i | 250 mg/l as CaCO ₃ | |
| Alkalinity Alum (consumed) | Alk_{Alum} | 0.0 mg/l as CaCO ₃ | |
| Alkalinity Total | Alk_{total} | 106 mg/l as CaCO ₃ | |
| Alkalinity Added | Alk_{added} | -6 mg/l as CaCO ₃ | |
| Alkalinity Added | $XAlk_{added}$ | 0 lb/d | |
| Density caustic solution (50%) | - | 12.76 lb/gal | |
| Alkalinity recovered | $Alk_{recovered}$ | 0.4 lbCaCO ₃ /lb | |
| Caustic needed | - | 0.0 lb/d | |
| Caustic needed | - | 0.0 gpd | |



$$V_p = \frac{MX_{TSS}}{X_{TSS}}$$

$$FX_t = \frac{MX_{TSS}}{SRT}$$

$$MX_{TSS} = MX_{ISS} + MX_{VSS}$$

N Removal

| | Symbol | Value | Units |
|--|-----------------|-------|------------------------|
| Factor of safety | S_f | 1.2 | - |
| Nitrogen requirements | FN_{synth} | 2 | kgN/d |
| Nitrogen requirements | $TKN_{i,synth}$ | 14.42 | gN/m ³ |
| Influent non-bio. soluble organic N | $N_{nbios,i}$ | 1.8 | mgN/l |
| Influent non-bio. particulate org. N | $N_{nbio,p,i}$ | 8.5 | mgN/l |
| Influent biodegradable organic N | $N_{bio,i}$ | 18.2 | mgN/l |
| Effluent non-bio. soluble organic N | $N_{nbios,e}$ | 1.8 | mgN/l |
| NH ₄ concentration avail. for nitri. | N_{an} | 40.9 | mgN/l |
| Effluent ammonia | $N_{a,e}$ | 0.3 | mgN/l |
| Effluent TKN | $N_{TKN,e}$ | 2.1 | mgN/l |
| N concentration into sludge prod. | N_s | 17.3 | mgN/l |
| Nitrification capacity | N_c | 40.6 | mgN/l |
| Denitrification potential RBCOD | $D_{p1RBCOD}$ | 24.7 | mgNO ₃ -N/l |
| Denitrification potential SBCOD | $D_{p1SBCOD}$ | 21.3 | mgNO ₃ -N/l |
| Denitrification potential RBCOD | $D_{p3RBCOD}$ | 0.0 | mgNO ₃ -N/l |
| Denitrification potential SBCOD | $D_{p3SBCOD}$ | 0.0 | mgNO ₃ -N/l |
| Minimum sludge age for nitri. | SRT_m | 7.9 | d |
| Denitrification potential primary tank | D_{p1} | 46.0 | mgN/l |
| Denitrification potential secondary tank | D_{p3} | 0.0 | mgN/l |
| Denitri. potential recycle rate ($f_{xm} = f_{xdm}$) | D_{p^*} | 33.2 | mgN/l |
| Effluent nitrate | $N_{NO3,e}$ | 0.0 | mgN/l |
| Effluent nitrate @ f_{xdm} & recycle rate | N_{NO3,e^*} | 7.4 | mgN/l |

P Removal

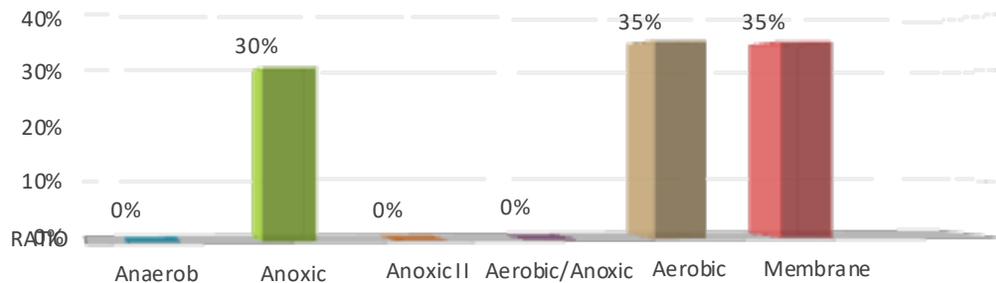
| | Symbol | Value | Units |
|------------------------------------|----------------------|-------|--|
| COD lost in anaerobic reator | $S_{F,ANn}$ | 0.0 | gCOD/m ³ |
| COD lost in anaerobic reator | S_{F,ANn^*} | 0.0 | gCOD/m ³ |
| Fermentable COD for AN reactor | $S_{F,i,conv}$ | 0.0 | gCOD/m ³ |
| DO in influent | $SO_{2,i}$ | 0.0 | mgO ₂ /l |
| PO ₄ release AN reactor | $S_{PO4,rel}$ | 0.0 | gP/m ³ |
| P removal by PAOs | ΔP_{PAO} | 0.0 | gP/m ³ |
| P removal by OHOs | ΔP_{OHO} | 1.1 | gP/m ³ |
| P removal by endgeneous biomass | ΔP_{XE} | 1.9 | gP/m ³ |
| P removal by influent inert mass | ΔP_{XI} | 3.5 | gP/m ³ |
| P into sludge production | P_s | 5.8 | gP/m ³ |
| Potential P removal by system | $\Delta P_{SYS,POT}$ | 12.3 | gP/m ³ |
| Actual P removal by system | $\Delta P_{SYS,ACT}$ | 10.0 | gP/m ³ |
| Effluent particulate P from TSS | $X_{P,e}$ | 0.0 | gP/m ³ |
| Influent total P | P_i | 10.0 | gP/m ³ |
| Effluent total P | P_{e^*} | 0.0 | gP/m ³ |
| P precipitated | P_{prec} | 0.0 | mgP/l |
| Precipitation chemical | B_{Alum} | 0.0 | lb/d |
| Precipitation chemical | Solution | 0.0 | gal/d |
| Density Alum | Z_{AL}^{3+} | 0.100 | lb _{AL} /lb _{P_{prec}} |
| Density Iron | Z_{FE}^{3+} | 0.077 | lb _{FE} /lb _{P_{prec}} |
| Alum efficiency | - | 40.0 | g/kg |
| Chemical precipitation sludge | - | 0.0 | lb/d |

Mechanical Process Calculation

| Tank Dimensions | Quantity / Trains | Length | Width | Dia. | Degree | Height | Liquid level | Volume per train | Volume Total | Volume Total |
|-----------------|-------------------|----------|----------|--------|--------|----------|--------------|------------------|--------------|--------------|
| Anaerob | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Anoxic I | 1 | 10.00 ft | 10.00 ft | .00 ft | 0.0 | 12.00 ft | 9.00 ft | 6,732 gal | 6,732 gal | 25.5 m3 |
| Aerobic | 1 | 10.00 ft | 10.00 ft | .00 ft | 0.0 | 12.00 ft | 10.50 ft | 7,854 gal | 7,854 gal | 29.7 m3 |
| Anoxic II | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Anoxic Buffer | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Membrane | 1 | 10.00 ft | 10.00 ft | .00 ft | 0.0 | 12.00 ft | 10.50 ft | 7,854 gal | 7,854 gal | 29.7 m3 |
| Sludge | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| EQ | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |

Tank Design

| | Symbol | Value | Units | | Units |
|---|--------|---------------|--------------|---------------|------------|
| Total process tank volume | | 22,440 | gallons | Weir level | 1.9 inches |
| Total process tank volume _{calc} | | 20,384 | gallons | Weir length | 1.0 ft |
| Unaerated tank percentage | | 30 % | | Velocity | 1.31 fps |
| Total tank volume | | 22,440 | gallons | Vertical tank | 0 |
| Membrane modules volume | | 823 | gallons | Horz. Tank | 0 |
| F/M _{used,BOD} | | 0.071 | kgBOD/kgMLSS | Diameter | 0 ft |
| F/M _{used,COD} | | 0.142 | kgCOD/kgMLSS | | |



Process Volume Distribution

■ Anaerob
 ■ Anoxic
 ■ AnoxicII
 ■ Aerobic/Anoxic
 ■ Aerobic
 ■ Membrane
 ■

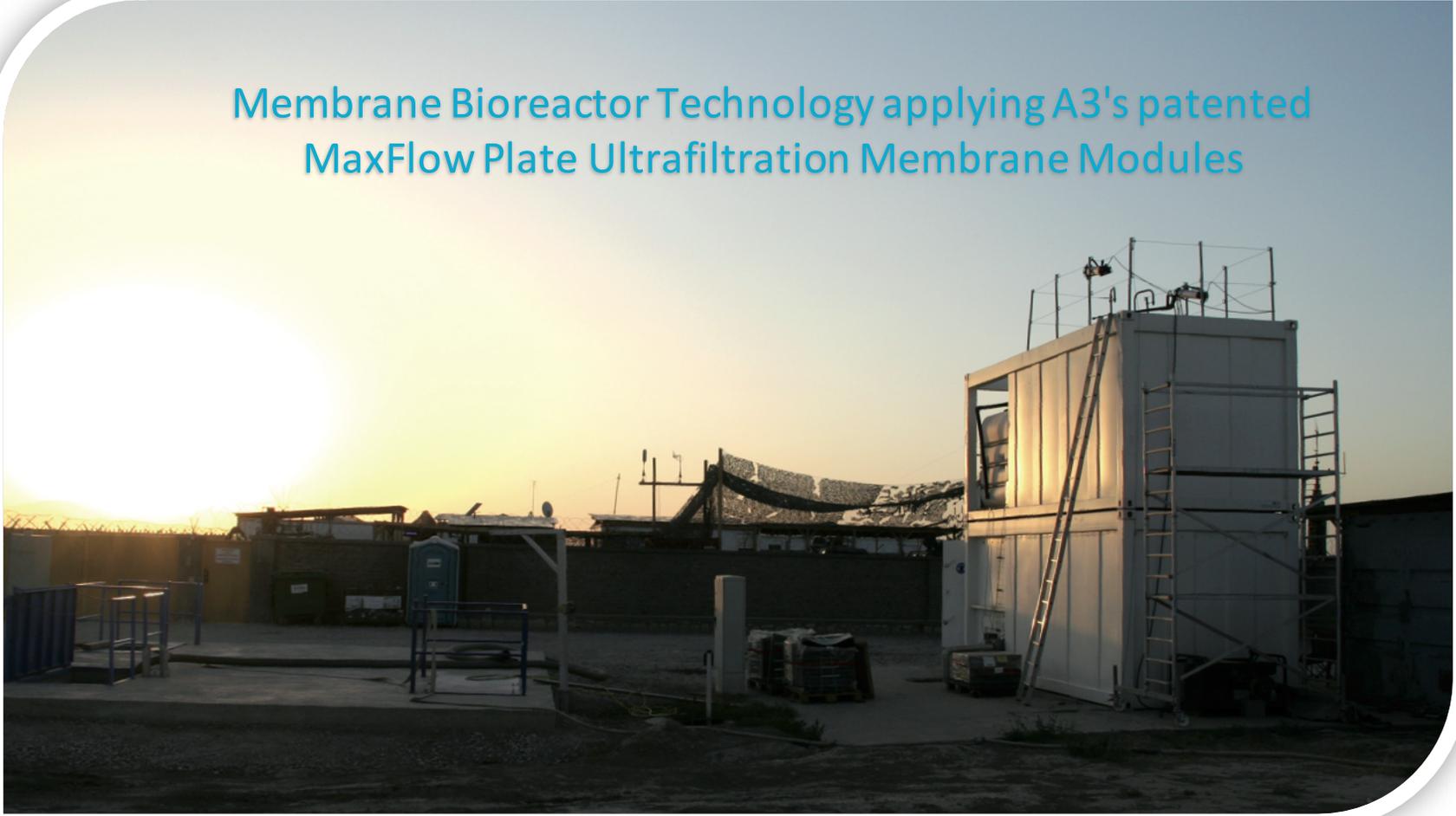
| Air Flow Design | Symbol | Membrane per train | Aerobic per train | Sludge | EQ | Unit |
|-------------------------------------|-----------------|--------------------|-------------------|----------|----------|-------------------|
| Minimum air flow | $Q_{A, re}$ | 143 | 97 | 0 | 0 | acfm / scfm |
| Chosen air flow - actual | $Q_{A, chosen}$ | 144 | 89 | 0 | 0 | acfm |
| Chosen air flow - inlet | $Q_{A, chosen}$ | 273 | 168 | 0 | 0 | m ³ /h |
| Chosen air flow - inlet | $Q_{A, chosen}$ | 161 | 99 | 0 | 0 | scfm |
| Chosen air flow - piping | $Q_{A, chosen}$ | 113 | 68 | 0 | 0 | acfm |
| Pipe pressure | p_b | 6.0 | 6.5 | 0.0 | 0.0 | psi |
| Pipe losses | H | 0.25 | 0.73 | 0.00 | 0.00 | psi |
| Equivalent length in pipe losses | L_p | 400 | 400 | 400 | 400 | feet |
| Pipe diameter | d | 3.0 | 2.0 | 3.0 | 3.0 | inches |
| Internal pipe diameter | d_i | 3.26 | 2.16 | 3.26 | 3.26 | inches |
| Standard temperature | T_1 | 293 | 293 | 293 | 293 | K |
| Pipe temperature | T_2 | 324 | 326 | 293 | 293 | K |
| Constant | f | 0.02 | 0.02 | 0.09 | 0.09 | - |
| Air velocity | v | 32.5 | 44.7 | 0.0 | 0.0 | fps |
| Atmospheric pressure | $p_{a,1}$ | 14.2 | 14.2 | 14.2 | 14.2 | psi |
| Absolute pressure | p_2 | 20.2 | 20.7 | 14.2 | 14.2 | psi |
| Pressure due to tank liquid level | $p_{DWD,m}$ | 3.9 | 4.4 | 0.0 | 0.0 | psi |
| Pressure due to aeration device | p_{DWD} | 0.7 | 0.5 | 0.5 | 0.5 | psi |
| Pressure due to pipe losses & elev. | $p_{DWD,s}$ | 0.8 | 1.3 | 0.6 | 0.6 | psi |
| Total pipe losses | p_t | 5.5 | 6.2 | 1.1 | 1.1 | psi |
| Total pipe losses | p_t | 376.8 | 426.7 | 75.8 | 75.8 | mbar |

$$H = 9.82 \cdot 10^{-8} \cdot \frac{(f \cdot L_p \cdot T_2 \cdot Q_{A, chosen})}{(p_2 d_i)^5}$$

$$f = \frac{(0.029 \cdot d_i^{0.027})}{Q_{A, chosen}^{0.148}} \quad T_2 = T_1 \left(\frac{p_2}{p_{a,1}} \right)^{0.283}$$

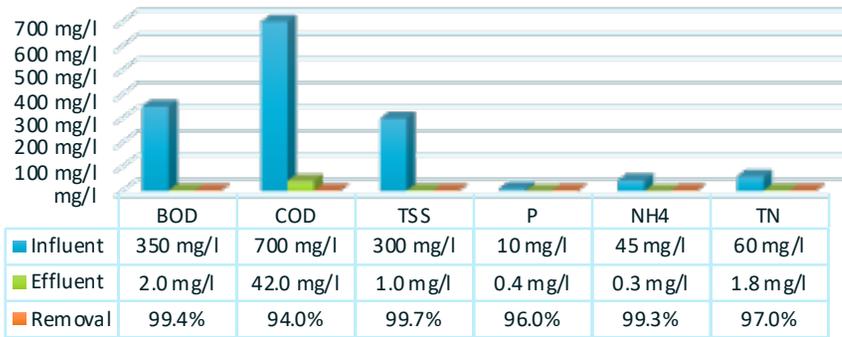


Membrane Bioreactor Technology applying A3's patented
MaxFlow Plate Ultrafiltration Membrane Modules



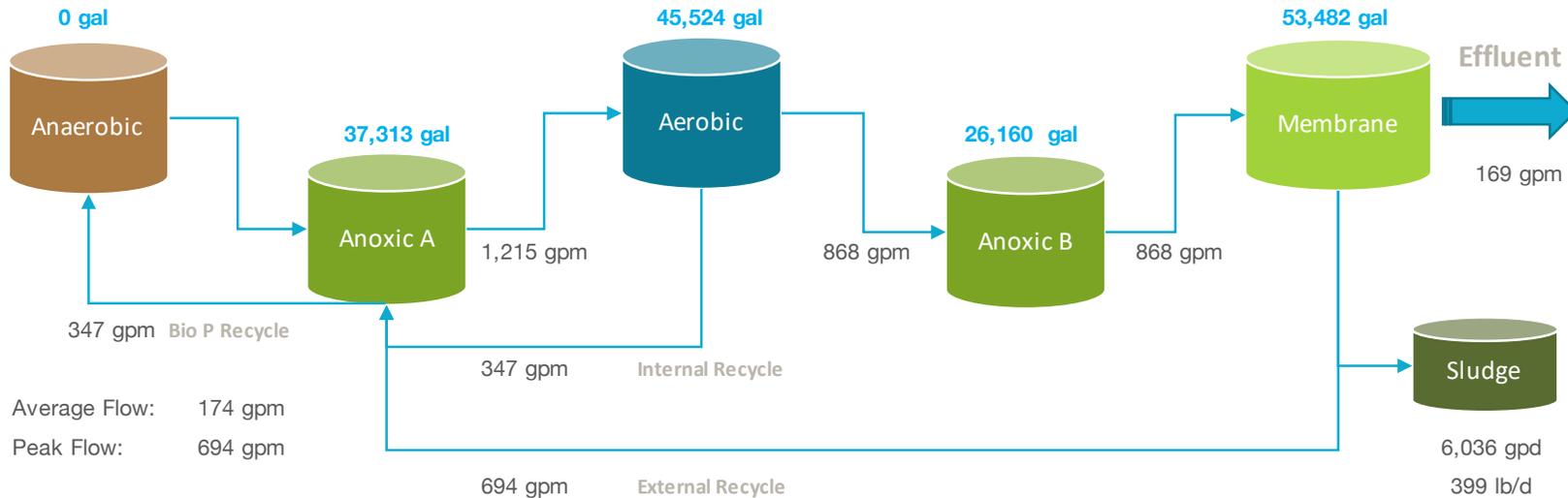
Process Summary

Influent & Effluent Parameters



PROCESS PARAMETERS

| | |
|-------------------------------|--------------|
| Sludge Age | 25 d |
| Total Reactor Volume | 162,480 gal |
| Total SOR | 1,616 kgO2/d |
| MLSS in Anoxic / Aerobic Tank | 7,733 mg/l |
| MLSS in Membrane Tank | 9,940 mg/l |
| HRT | 16 h |
| F/M RATIO (BOD) | 0.072 |
| F/M RATIO (COD) | 0.145 |
| Total Membrane Surface | 68,006 sf |



| Aeration | Flow | Pressure |
|----------|----------|----------|
| EQ | 0 scfm | 0.0 psi |
| Sludge | 0 scfm | 0.0 psi |
| Aerobic | 543 scfm | 8.0 psi |
| Membrane | 765 scfm | 8.0 psi |

Applied Options:



5/8/24

Biological Process Calculation

Influent Characteristics

| | Symbol | Value | Units |
|---|-----------------------|---------|---------------------------|
| Type of wastewater | | | municipal |
| Temperature | T | 20 | °C |
| pH | - | 7.5 | - |
| H ₂ CO ₃ alkalinity | Alk _i | 7 | mg/l as CaCO ₃ |
| Site pressure / elevation | p _{a,i} | 14.5 | psi |
| Average daily flow | Q _i | 250,000 | gpd |
| Peak daily flow | Q _{i, max,d} | 625,000 | gpd |
| Hourly peak flow | Q _{i, max,p} | 694 | gpm |
| Peak factor | - | 4.0 | - |
| Average daily flow | Q _i | 946 | m ³ /d |
| Max. monthly average daily flow | Q _{i, max,d} | 2,366 | m ³ /d |
| Hourly peak flow | Q _{i, max,h} | 157.7 | m ³ /h |
| Total BOD | S _{BOD,i} | 350 | mgBOD/l |
| Total COD | S _{COD,i} | 700 | mgCOD/l |
| COD/BOD ratio | - | 2.00 | - |
| Rapidly biodegradable COD | S _{s,i} | 175 | mgCOD/l |
| Volitale fatty acids (VFA) | S _{VFA,i} | 26 | mgCOD/l |
| Fermentable COD | S _{F,i} | 149 | mgCOD/l |
| Slowly biodegradable COD | S _{ss,i} | 378 | mgCOD/l |
| Biodegradable COD | S _{bio,i} | 553 | mgCOD/l |
| Soluble inert COD | S _{SIN,i} | 42 | mgCOD/l |
| Particulate inert COD | S _{PIN,i} | 105 | mgCOD/l |

Influent Characteristics

| | Symbol | Value | Units |
|------------------------------------|----------------------|-------|----------------------|
| NO ₃ | N _{NO3,i} | 0.0 | mg/l |
| NH ₄ | N _{a,i} | 45.0 | mg/l |
| TKN | N _{TKN,i} | 60.0 | mg/l |
| TP | P _i | 10.0 | mg/l |
| Dissolved Oxygen | S _{O2,i} | 0.0 | mg/l |
| FSA fraction | f _{a/TKN,i} | 0.8 | - |
| Fixed (inorganic) suspended solids | X _{FSS,i} | 47.5 | mgISS/l |
| TSS concentration | S _{TSS,i} | 300.0 | mgTSS/l |
| Total BOD mass | FS _{BOD,i} | 331.2 | kgBOD/d |
| Total COD mass | FS _{COD,i} | 662.4 | kgCOD/d |
| Total NH ₄ mass | FS _{a,i} | 42.6 | kgNH ₄ /d |
| Total TKN mass | FS _{TKN,i} | 56.8 | kgTKN/d |
| Total P mass | FS _{P,i} | 9.5 | kgP/d |

Effluent Characteristics

| | Symbol | Value | Units |
|--|--------------------|-------|---------|
| Waste Sludge | FX _t | 399 | lb/d |
| Waste Sludge | Q _w | 6,036 | gpd |
| Effluent BOD | S _{BOD,e} | < 3 | mgBOD/l |
| Effluent COD | S _{COD,e} | 42 | mgCOD/l |
| Effluent TSS | S _{TSS,e} | 1.0 | mgTSS/l |
| Effluent P | P _e | 0.4 | mgP/l |
| Effluent NH ₄ | N _{a,e} | 0.3 | mgN/l |
| Effluent NO ₃ | N _{NO3,e} | 0.0 | mgN/l |
| Effluent TN (N _{ne} + N _{te}) | N _{t,e} | 1.8 | mgN/l |

Bioreactor Characteristics

| | Symbol | Value | Units |
|--|------------------|---------|---------------------|
| Temperature | T_{bio} | 20 | °C |
| Sludge retention time / Sludge age | SRT | 25 | d |
| Reactor volume | $V_{P,chosen}$ | 162,480 | gallons |
| Reactor volume | $V_{P,chosen}$ | 615 | m ³ |
| Reactor volume | $V_{P,calc}$ | 150,903 | gallons |
| Average MLSS concentration | X_{TSS} | 8,000 | mgTSS/l |
| Food to microorganism ratio | $F/M_{BOD,used}$ | 0.072 | kgBOD/kgMLSS |
| Food to microorganism ratio | $F/M_{COD,used}$ | 0.145 | kgCOD/kgMLSS |
| Membrane tank MLSS concentration | X_M | 9,940 | mgTSS/l |
| Aerobic/Anoxic tank MLSS concentration | X_{Bio} | 7,733 | mgTSS/l |
| Number of anaerobic zones | $\#_{AN}$ | 0 | - |
| Number of anoxic zones | $\#_{AO}$ | 1 | - |
| Number of aerobic zones | $\#_{AE}$ | 1 | - |
| External recycle ratio | m | 4 | - |
| Internal recycle ratio | a | 2 | - |
| DO in m recycle | O_m | 1 | mgO ₂ /l |
| DO in a recycle | O_a | 0 | mgO ₂ /l |
| Recycle ratio to anaerobic tank (PAO) | s | 0 | - |
| DO in s recycle | $S_{O_2,s}$ | 0 | mgO ₂ /l |
| Nitrate on s recycle | $S_{NO_3,s}$ | 0 | mg/l |
| TKN/COD ratio | $f_{TKN/COD}$ | 0.086 | mgTKN/mgCOD |
| Carbon source addition (Micro C) | B_{MicroC} | 0.0 | lb/d |
| Carbon source addition (Micro C) | S_{MicroC} | 0.00 | gpd |
| Nominal hydraulic retention time | HRT_n | 15.6 | h |
| Actual hydraulic retention time | HRT_a | 2.2 | h |

Biological Oxygen Demand

| | Symbol | Value | Units |
|---------------------------------------|------------|-------|--|
| OD for synth & endo respiration (PAO) | FO_{PAO} | 0 | kgO ₂ /d |
| OD for synth & endo respiration (OHO) | FO_{OHO} | 425 | kgO ₂ /d |
| Mass carbonaceous oxygen demand | FO_C | 425 | kgO ₂ /d |
| Carbonaceous oxygen utilization rate | O_c | 69% | - |
| Nitrification oxygen demand | FO_n | 178 | kgO ₂ /d |
| Total oxygen demand | FO_t | 604 | kgO ₂ /d |
| Oxygen recovered by denitrification | FO_d | 112 | kgO ₂ /d |
| Net total oxygen demand (AOR) | FO_{td} | 492 | kgO ₂ /d |
| Oxygen saturation @ operating temp. | c_s | 9.2 | mg/l |
| Desired oxygen level | c_x | 2.0 | mg/l |
| Transfer coefficient | α | 0.40 | - |
| Diffuser water depth | DWD | 13.5 | feet |
| Oxygen transfer efficiency | OTE | 2 | % |
| Standard total oxygen demand (SOR) | SOR | 1,616 | kgO ₂ /d |
| Required air flow | Q_{air} | 537 | scfm |
| Oxygen requir. per volume & depth | OS | 17.9 | gO ₂ /(Nm ₃ *mD) |

Membrane Module Design

| | Symbol | Value | Units |
|---|--------------------|--------|---|
| Permeate on cycle | T_o | 8 | minute |
| Permeate off cycle (relaxation) | T_s | 2 | minute |
| Effective membrane module surface | $A_{m,eff}$ | 87.8 | m ² |
| Effective membrane module surface | $A_{m,eff}$ | 945 | ft ² |
| Total number of membrane modules | N_M | 72 | - |
| Total membrane module surface | A_{total} | 6,318 | m ² |
| Total membrane module surface | A_{total} | 68,006 | ft ² |
| Nominal average daily flux | $Q_{ave,n}$ | 7.8 | lmh |
| Nominal max. daily flux | $Q_{ave,n,max,mo}$ | 19.5 | lmh |
| Nominal peak hourly flux | $Q_{peak,n}$ | 31.2 | lmh |
| Average daily flux (excluding rest cycle) | $Q_{ave,n}$ | 3.7 | gfd |
| Max. Daily flux (ex. rest cycle) | $Q_{ave,n,max,mo}$ | 9.2 | gfd |
| Peak hourly flux (ex. rest cycle) | $Q_{peak,n}$ | 14.7 | gfd |
| Total membrane module displacement vol. | $V_{modules}$ | 792 | ft ³ |
| Total membrane module displacement vol. | $V_{modules}$ | 5,924 | gallons |
| Aeration modules | A# | 24 | - |
| Membrane module aeration requirement | Q_{am} | 28.5 | acfm |
| Total membrane modules aeration | $Q_{am,total}$ | 684 | acfm |
| Membrane diffuser water depth | DWD _m | 13.0 | feet |
| Oxygen requirement per volume & depth | OS | 13 | gO ₂ /(Nm ₃ *m _D) |
| Standard oxygen rate, membrane aeration | SOR _m | 3,248 | lbO ₂ /d |
| Standard oxygen rate, membrane aeration | SOR _m | 1,488 | kgO ₂ /d |



- ✓ Patented, innovative A3's MaxFlow™ membrane filtration modules manufactured in USA.
- ✓ The MaxFlow™ module "open channel design" provides optimal biofilm control, minimizes the quantity of chemical cleaning procedures and avoids module clogging.
- ✓ The compact module design enables dual-stack and triple-stack installations. It allows for a high membrane packing density resulting in a small footprint and high energy efficiency.
- ✓ Most existing conventional treatment plants can be retrofitted with MaxFlow™ membranes due to the

Kinetic Constants

| | Symbol | Value | Units |
|---------------------------------------|------------------|-------|-------------|
| Yield coefficient OHO | Y_{OHO} | 0.40 | mgVSS/mgCOD |
| Yield coefficient OHO,OBS | $Y_{OHO,obs}$ | 0.06 | mgVSS/mgCOD |
| Fermentation rate at 20°C | $k_{F,20}$ | 0.06 | m3/gVSSd |
| Temperature coefficient for $k_{F,T}$ | Θ_{kF} | 1.029 | - |
| Fermentation rate at T | $k_{F,T}$ | 0.06 | m3/gVSSd |
| Endogenous respiration rate (decay) | $b_{OHO,20}$ | 0.24 | gVSS/gVSSd |
| Endogenous respiration rate T | $b_{OHO,T}$ | 0.24 | gVSS/gVSSd |
| Yield coefficient FSA | Y_A | 0.10 | mgVSS/mgFSA |
| Nitri. pH sensitivity coefficient | K_I | 1.13 | - |
| Nitri. pH sensitivity coefficient | K_{max} | 9.50 | - |
| Nitri. pH sensitivity coefficient | K_{II} | 0.30 | - |
| Max. specific growth rate at 20°C | μ_{Am} | 0.45 | 1/d |
| Max. spec. growth rate - Temp/pH | μ_{AmTpH} | 0.44 | 1/d |
| Half saturation coefficient | K_n | 0.75 | mgFSA/l |
| Half saturation coefficient - Temp | K_{nT} | 0.75 | mgFSA/l |
| Endogenous respiration rate (decay) | b_A | 0.04 | 1/d |
| Temperature coefficient for $k_{F,T}$ | θ_n | 1.123 | - |
| Endogenous respiration rate T | b_{AT} | 0.040 | 1/d |
| Temperature sensitivity coefficient | Θ_{nk1} | 1.20 | - |
| Temperature sensitivity coefficient | Θ_{nk2} | 1.05 | - |
| Temperature sensitivity coefficient | Θ_{nk3} | 1.03 | - |
| Denitrification rates at 20°C | k_1 | 0.70 | - |
| Denitrification rates at 20°C | k_2 | 0.10 | - |
| Denitrification rates at 20°C | k_3 | 0.08 | - |
| Denitrification rates | k_{1T} | 0.700 | - |
| Denitrification rates | k_{2T} | 0.101 | - |
| Denitrification rates | k_{3T} | 0.080 | - |
| Yield coefficient PAO | Y_{PAO} | 0.45 | gAVSS/gCOD |
| Yield coefficient PAO | $Y_{PAO,obs}$ | 0.20 | gAVSS/gCOD |
| Endogenous respiration rate (decay) | $b_{PAO,20}$ | 0.04 | gEVSS/gCOD |
| Temperature coefficient for $k_{F,T}$ | $\Theta_{b,PAO}$ | 1.029 | - |
| Endogenous respiration rate T | $b_{PAO,T}$ | 0.04 | gEVSS/gVSSd |

Stoichiometric Constants

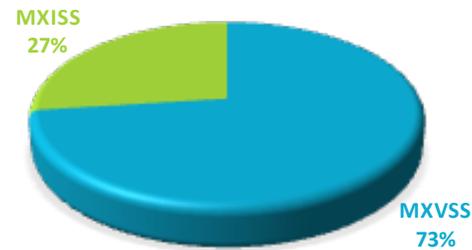
| | Symbol | Value | Units |
|---|----------------|-------|----------------------|
| COD/BOD ratio | - | 2.00 | - |
| Readily biodeg. org. fraction (RBCOD) | $f_{s,COD}$ | 0.25 | g/gTCOD |
| Non-biodegradable particulate COD | $f_{PNb,COD}$ | 0.15 | g/gTCOD |
| Non-biodegradable soluble COD | $f_{SNb,COD}$ | 0.06 | g/gTCOD |
| SVFA fraction of RBCOD | $f_{SVFA,SSI}$ | 0.15 | g/gCOD _{SS} |
| VSS/TSS of activated sludge | f_{VT} | 0.73 | mgVSS/mgTSS |
| COD/VSS of activated sludge | f_{cv} | 1.48 | kgCOD/kgVSS |
| True synthesis fraction | f_s^0 | 0.57 | - |
| Endogenous residue fraction | $f_{HE,OHO}$ | 0.2 | - |
| ISS content of OHOs | $f_{ISS,OHO}$ | 0.15 | - |
| Active fraction - VSS | f_{avOHO} | 23% | - |
| Active fraction - TSS | f_{at} | 16% | - |
| Influent FSA fraction | $f_{FSA,i}$ | 0.75 | - |
| Non-bio. soluble orgN fraction (inerts) | $f_{SNb,N}$ | 0.025 | - |
| Non-bio. particulate orgN fraction | f_n | 0.12 | - |
| Permissible unaer. sludge mass fraction | f_{xm} | 0.78 | - |
| Design unaerated sludge mass fraction | f_{xt} | 0.39 | - |
| Minimum primary anoxic mass fraction | f_{x1min} | 0.04 | - |
| Primary anoxic mass fraction | f_{x1} | 0.23 | - |
| Secondary anoxic mass fraction | f_{x2} | 0.16 | - |
| Anaerobic mass fraction | f_{AN} | 0.00 | - |
| Non-bio. particulate orgP fraction | $f_{P,XE,OHO}$ | 0.05 | mgP/mgVSS |
| Endogenous residue fraction | $f_{XE,PAO}$ | 0.25 | gEVSS/gAVSS |
| P fraction in active PAO mass | $f_{P,PAO}$ | 0.38 | gP/gAVSS |
| VSS/TSS ratio for PAO active mass | $f_{VT,PAO}$ | 0.46 | gVSS/gTSS |
| Ratio of P release /VFA uptake | $f_{PO4,REL}$ | 0.5 | gP/gCOD |
| Frac. of fixed inorganic s. solids of PAO | $f_{FSS,PAO}$ | 1.3 | gFSS/gAVSS |
| P content of TSS | $f_{P,TSS}$ | 0.037 | gP/gTSS |
| P content of VSS | $f_{P,FSS,i}$ | 0.02 | gP/gVSS |
| TKN/COD ratio | f_{ns} | 0.09 | mgTKN/mgCOD |
| Nitrogen content of active biomass | $f_{N,VSS}$ | 0.10 | gN/gAVSS |

Biological Mass Balance

| | Symbol | Value | Units |
|---|-----------------------|---------------|-------|
| Sludge age | SRT | 25 d | |
| Mixed liquor suspended solids | X _{TSS} | 8,000 mgTSS/l | |
| Readable biodegradable COD flux | FS _{S,i} | 166 kgCOD/d | |
| Daily flux of VFAs | FS _{VFA,i} | 25 kgCOD/d | |
| Daily flux of fermentable COD | FS _{F,i} | 141 kgCOD/d | |
| Daily flux of biodegradable COD | FS _{bio,i} | 523 kgCOD/d | |
| Daily flux of particulate inert COD | FS _{PIN,i} | 99 kgCOD/d | |
| Daily flux of fixed inorganic sus. solids | FS _{ISS,i} | 45 kgISS/d | |
| Influent particulate non-bio. COD | FX _{VSS,i} | 67 kgVSS/d | |
| Mass nitrogen into sludge prod. | FN _{Sludge} | 16 kgN/d | |
| Mass of nitrate generated per day | FN _{NO3} | 39 kgN/d | |
| VFAs stored by PAOs | FS _{S,PAO} | 0 kgCOD/d | |
| Remaining biodegradable COD | FCOD _{b,OHO} | 523 kgCOD/d | |
| Mass nitrifiers | MX _A | 49 kgVSS | |
| Active biomass PAO | MX _{PAO} | 0 kgAVSS | |
| Endogenous active biomass PAO | MX _{E,PAO} | 0 kgEVSS | |
| Bio mass | MX _{bio} | 752 kgVSS | |
| Active organism mass | MX _{OHO} | 752 kgVSS | |
| Endogenous residue mass | MX _{E,OHO} | 902 kgVSS | |
| Non-biodegradable particulate mass | MX _{Iv} | 1,678 kgVSS | |
| Volatile suspended solids mass | MX _{VSS} | 3,333 kgVSS | |
| Inorganic suspended solid mass | MX _{ISS} | 1,236 kgISS | |
| Total suspended solids mass | MX _{TSS} | 4,569 kgTSS | |
| Mass/Sludge TSS wasted | FX _t | 183 KgTSS/d | |
| Mass/Sludge VSS wasted | FX _v | 133 kgVSS/d | |
| Effluent COD | S _{COD,e} | 42 mgCOD/l | |
| COD mass out (effluent and waste) | FS _{COD,e} | 40 kgCOD/d | |
| Mass/Sludge COD wasted | FX _{COD,s} | 197 kgCOD/d | |

Alkalinity

| | Symbol | Value | Units |
|---|--------------------------|--------------------------------|-------|
| Alkalinity Nitrification as CaCO ₃ (consumed) | Alk _{Nitri} | 295 mg/l as CaCO ₃ | |
| Alkalinity Denitrification as CaCO ₃ (recovered) | Alk _{Denitri} | 148 mg/l as CaCO ₃ | |
| Alkalinity _{ef} | Alk _e | 100 mg/l as CaCO ₃ | |
| Alkalinity _{inf} | Alk _i | 7 mg/l as CaCO ₃ | |
| Alkalinity Alum (consumed) | Alk _{Alum} | 0.0 mg/l as CaCO ₃ | |
| Alkalinity _{Total} | Alk _{total} | -139 mg/l as CaCO ₃ | |
| Alkalinity _{Added} | Alk _{added} | 239 mg/l as CaCO ₃ | |
| Alkalinity _{Added} | XAlk _{added} | 494 lb/d | |
| Density caustic solution (50%) | - | 12.76 lb/gal | |
| Alkalinity _{recovered} | Alk _{recovered} | 0.4 lbCaCO ₃ /lb | |
| Caustic _{needed} | - | 197.7 lb/d | |
| Caustic _{needed} | - | 15.5 gpd | |



$$V_p = \frac{MX_{TSS}}{X_{TSS}}$$

$$FX_t = \frac{MX_{TSS}}{SRT}$$

$$MX_{TSS} = MX_{ISS} + MX_{VSS}$$

N Removal

| | Symbol | Value | Units |
|--|-----------------|-------|------------------------|
| Factor of safety | S_f | 1.2 | - |
| Nitrogen requirements | FN_{synth} | 13 | kgN/d |
| Nitrogen requirements | $TKN_{i,synth}$ | 14.09 | gN/m ³ |
| Influent non-bio. soluble organic N | $N_{nbios,i}$ | 1.5 | mgN/l |
| Influent non-bio. particulate org. N | $N_{nbio,p,i}$ | 8.5 | mgN/l |
| Influent biodegradable organic N | $N_{bio,i}$ | 13.5 | mgN/l |
| Effluent non-bio. soluble organic N | $N_{nbios,e}$ | 1.5 | mgN/l |
| NH ₄ concentration avail. for nitri. | N_{an} | 41.6 | mgN/l |
| Effluent ammonia | $N_{a,e}$ | 0.3 | mgN/l |
| Effluent TKN | $N_{TKN,e}$ | 1.8 | mgN/l |
| N concentration into sludge prod. | N_s | 16.9 | mgN/l |
| Nitrification capacity | N_c | 41.3 | mgN/l |
| Denitrification potential RBCOD | $D_{p1RBCOD}$ | 24.7 | mgNO ₃ -N/l |
| Denitrification potential SBCOD | $D_{p1SBCOD}$ | 18.4 | mgNO ₃ -N/l |
| Denitrification potential RBCOD | $D_{p3RBCOD}$ | 0.0 | mgNO ₃ -N/l |
| Denitrification potential SBCOD | $D_{p3SBCOD}$ | 10.2 | mgNO ₃ -N/l |
| Minimum sludge age for nitri. | SRT_m | 4.4 | d |
| Denitrification potential primary tank | D_{p1} | 43.2 | mgN/l |
| Denitrification potential secondary tank | D_{p3} | 10.2 | mgN/l |
| Denitri. potential recycle rate ($f_{xm} = f_{xdm}$) | D_{p^*} | 36.8 | mgN/l |
| Effluent nitrate | $N_{NO3,e}$ | 0.0 | mgN/l |
| Effluent nitrate @ f_{xdm} & recycle rate | N_{NO3,e^*} | 5.9 | mgN/l |

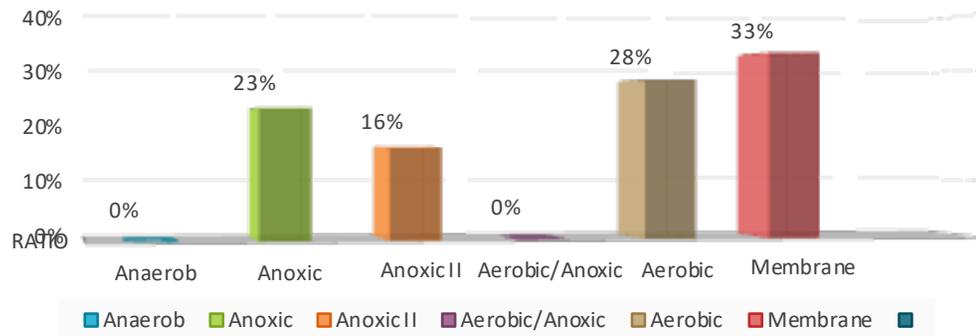
P Removal

| | Symbol | Value | Units |
|------------------------------------|----------------------|-------|--------------------------------------|
| COD lost in anaerobic reactor | $S_{F,ANh}$ | 0.0 | gCOD/m ³ |
| COD lost in anaerobic reactor | S_{F,ANh^*} | 0.0 | gCOD/m ³ |
| Fermentable COD for AN reactor | $S_{F,I,conv}$ | 0.0 | gCOD/m ³ |
| DO in influent | $S_{O2,i}$ | 0.0 | mgO ₂ /l |
| PO ₄ release AN reactor | $S_{PO4,rel}$ | 0.0 | gP/m ³ |
| P removal by PAOs | ΔP_{PAO} | 0.0 | gP/m ³ |
| P removal by OHOs | ΔP_{OHO} | 0.8 | gP/m ³ |
| P removal by endogeneous biomass | ΔP_{XE} | 1.9 | gP/m ³ |
| P removal by influent inert mass | ΔP_{XI} | 3.5 | gP/m ³ |
| P into sludge production | P_s | 5.2 | gP/m ³ |
| Potential P removal by system | $\Delta P_{SYS,POT}$ | 11.5 | gP/m ³ |
| Actual P removal by system | $\Delta P_{SYS,ACT}$ | 10.0 | gP/m ³ |
| Effluent particulate P from TSS | $X_{P,e}$ | 0.0 | gP/m ³ |
| Influent total P | P_i | 10.0 | gP/m ³ |
| Effluent total P | P_e | 0.0 | gP/m ³ |
| P precipitated | P_{prec} | 0.0 | mgP/l |
| Precipitation chemical | B_{Alum} | 0.0 | lb/d |
| Precipitation chemical | Solution | 0.0 | gal/d |
| Density Alum | Z_{AL}^{3+} | 0.100 | lb _{AL} /lb _{prec} |
| Density Iron | Z_{FE}^{3+} | 0.077 | lb _{FE} /lb _{prec} |
| Alum efficiency | - | 40.0 | g/kg |
| Chemical precipitation sludge | - | 0.0 | lb/d |

Mechanical Process Calculation

| Tank Dimensions | Trains | Length | Width | Dia. | Degree | Height | Liquid level | Volume per train | Volume Total | Volume Total |
|-----------------|--------|----------|----------|--------|--------|----------|--------------|------------------|--------------|--------------|
| Anaerobic | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Anoxic I | 1 | 33.00 ft | 10.00 ft | .00 ft | 0.0 | 17.50 ft | 15.12 ft | 37,313 gal | 37,313 gal | 141.2 m3 |
| Aerobic | 1 | 41.00 ft | 10.00 ft | .00 ft | 0.0 | 17.50 ft | 14.84 ft | 45,524 gal | 45,524 gal | 172.3 m3 |
| Anoxic II | 1 | 24.00 ft | 10.00 ft | .00 ft | 0.0 | 17.50 ft | 14.57 ft | 26,160 gal | 26,160 gal | 99.0 m3 |
| Anoxic Buffer | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Membrane | 1 | 50.00 ft | 10.00 ft | .00 ft | 0.0 | 17.50 ft | 14.30 ft | 53,482 gal | 53,482 gal | 202.4 m3 |
| Sludge | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| EQ | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |

| Tank Design | Symbol | Value | Units |
|---|--------|------------------------|---------------|
| Total process tank volume | | 162,480 gallons | Weir level |
| Total process tank volume _{calc} | | 150,903 gallons | Weir length |
| Unaerated tank percentage | | 39 % | Velocity |
| Total tank volume | | 162,480 gallons | Vertical tank |
| Membrane modules volume | | 5,924 gallons | Horz. Tank |
| F/M _{used,BOD} | | 0.072 kgBOD/kgMLSS | Diameter |
| F/M _{used,COD} | | 0.145 kgCOD/kgMLSS | |



Process Volume Distribution

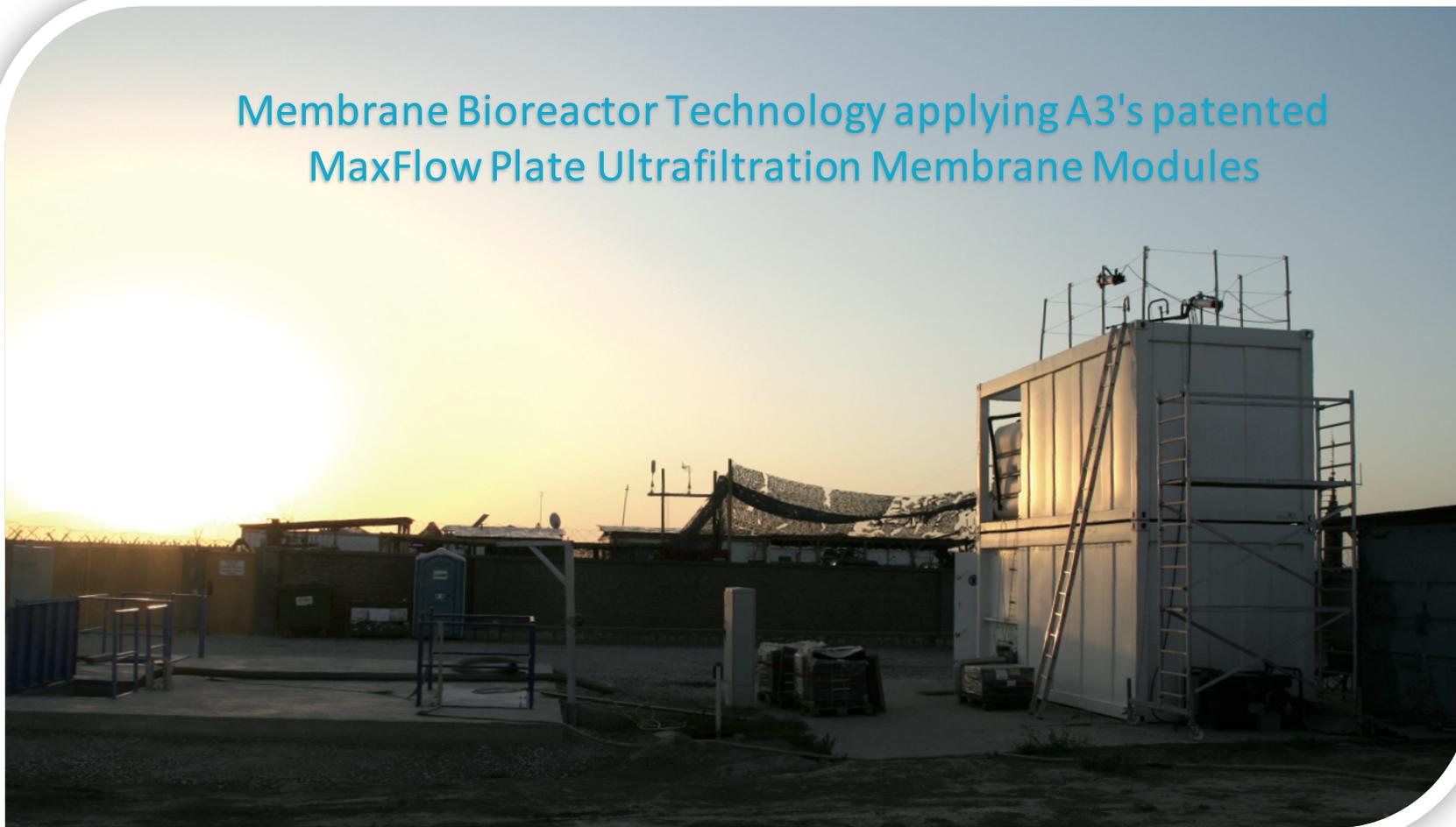
| Air Flow Design | Symbol | Membrane per train | Aerobic per train | Sludge | EQ | Unit |
|-------------------------------------|-----------------|--------------------|-------------------|-------------|-------------|-------------------|
| Minimum air flow | $Q_{A,re}$ | 684 | 537 | 0 | 0 | acfm / scfm |
| Chosen air flow - actual | $Q_{A, chosen}$ | 685 | 501 | 0 | 0 | acfm |
| Chosen air flow - inlet | $Q_{A,chosen}$ | 1,300 | 923 | 0 | 0 | m ³ /h |
| Chosen air flow - inlet | $Q_{A,chosen}$ | 765 | 543 | 0 | 0 | scfm |
| Chosen air flow - piping | $Q_{A,chosen}$ | 493 | 350 | 0 | 0 | acfm |
| Pipe pressure | p_b | 8.0 | 8.0 | 0.0 | 0.0 | psi |
| Pipe losses | H | 0.19 | 0.10 | 0.00 | 0.00 | psi |
| Equivalent length in pipe losses | L_p | 600 | 600 | 400 | 400 | feet |
| Pipe diameter | d | 6.0 | 6.0 | 4.0 | 3.0 | inches |
| Internal pipe diameter | d_i | 6.36 | 6.36 | 4.26 | 3.26 | inches |
| Standard temperature | T_1 | 293 | 293 | 293 | 293 | K |
| Pipe temperature | T_2 | 332 | 332 | 293 | 293 | K |
| Constant | f | 0.02 | 0.02 | 0.09 | 0.09 | - |
| Air velocity | v | 37.3 | 26.5 | 0.0 | 0.0 | fps |
| Atmospheric pressure | $p_{a,1}$ | 14.5 | 14.5 | 14.5 | 14.5 | psi |
| Absolute pressure | p_2 | 22.5 | 22.5 | 14.5 | 14.5 | psi |
| Pressure due to tank liquid level | $p_{DWD,m}$ | 5.7 | 6.2 | 0.0 | 0.0 | psi |
| Pressure due to aeration device | p_{DWD} | 0.7 | 0.5 | 0.5 | 0.5 | psi |
| Pressure due to pipe losses & elev. | $p_{DWD,s}$ | 0.6 | 0.5 | 0.4 | 0.4 | psi |
| Total pipe losses | p_t | 6.9 | 7.2 | 0.9 | 0.9 | psi |
| Total pipe losses | p_t | 479.0 | 499.5 | 62.1 | 62.1 | mbar |

$$H = 9.82 \cdot 10^{-8} \cdot \frac{(f \cdot L_p T_2 Q_{A,chosen})}{(p_2 d_i)^5}$$

$$f = \frac{(0.029 \cdot d_i^{0.027})}{Q_{A,chosen}^{0.148}} \quad T_2 = T_1 \left(\frac{p_2}{p_{a,1}} \right)^{0.283}$$

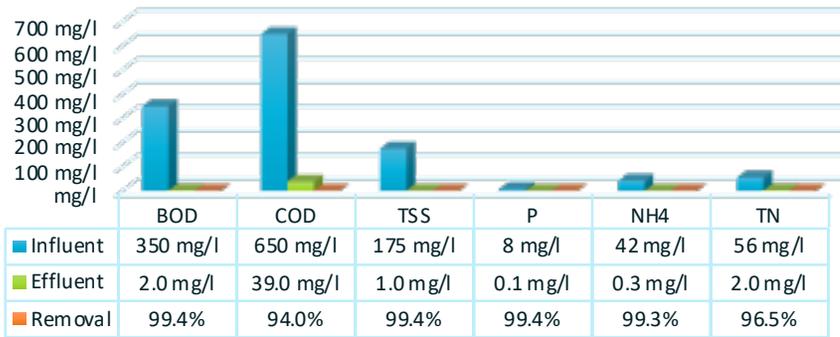


Membrane Bioreactor Technology applying A3's patented
MaxFlow Plate Ultrafiltration Membrane Modules



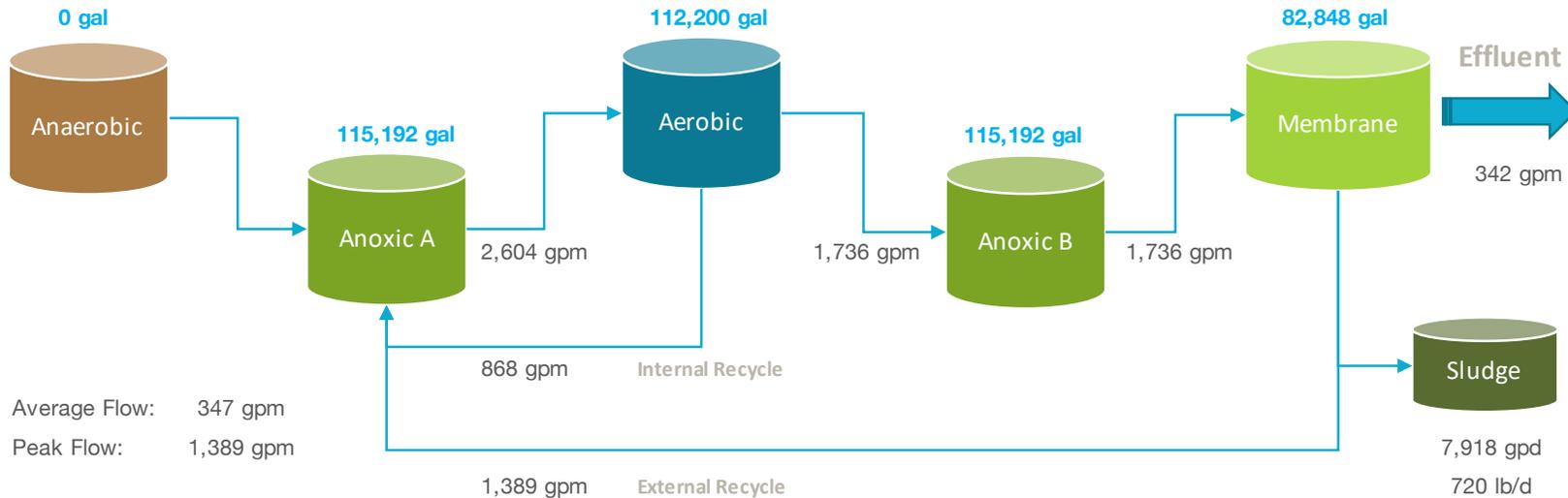
Process Summary

Influent & Effluent Parameters



PROCESS PARAMETERS

| | |
|-------------------------------|--------------|
| Sludge Age | 36 d |
| Total Reactor Volume | 310,240 gal |
| Total SOR | 3,062 kgO2/d |
| MLSS in Anoxic / Aerobic Tank | 10,696 mg/l |
| MLSS in Membrane Tank | 13,696 mg/l |
| HRT | 15 h |
| F/M RATIO (BOD) | 0.056 |
| F/M RATIO (COD) | 0.104 |
| Total Membrane Surface | 101,267 sf |



| Aeration | Flow | Pressure |
|----------|----------|----------|
| EQ | 0 scfm | 0.0 psi |
| Sludge | 0 scfm | 0.0 psi |
| Aerobic | 777 scfm | 10.0 psi |
| Membrane | 849 scfm | 8.5 psi |

Applied Options:

475



1/12/21

Biological Process Calculation

Influent Characteristics

| | Symbol | Value | Units |
|---|-----------------------|-----------|---------------------------|
| Type of wastewater | | municipal | |
| Temperature | T | 20 | °C |
| pH | - | 7.0 | - |
| H ₂ CO ₃ alkalinity | Alk _i | 250 | mg/l as CaCO ₃ |
| Site pressure / elevation | p _{a,i} | 14.5 | psi |
| Average daily flow | Q _i | 500,000 | gpd |
| Peak daily flow | Q _{i, max,d} | 1,250,000 | gpd |
| Hourly peak flow | Q _{i, max,p} | 1,389 | gpm |
| Peak factor | - | 4.0 | - |
| Average daily flow | Q _i | 1,893 | m ³ /d |
| Max. monthly average daily flow | Q _{i, max,d} | 4,731 | m ³ /d |
| Hourly peak flow | Q _{i, max,h} | 315.4 | m ³ /h |
| Total BOD | S _{BOD,i} | 350 | mgBOD/l |
| Total COD | S _{COD,i} | 650 | mgCOD/l |
| COD/BOD ratio | - | 1.86 | - |
| Rapidly biodegradable COD | S _{s,i} | 163 | mgCOD/l |
| Volatile fatty acids (VFA) | S _{VFA,i} | 25 | mgCOD/l |
| Fermentable COD | S _{F,i} | 138 | mgCOD/l |
| Slowly biodegradable COD | S _{ss,i} | 351 | mgCOD/l |
| Biodegradable COD | S _{bio,i} | 514 | mgCOD/l |
| Soluble inert COD | S _{SIN,i} | 39 | mgCOD/l |
| Particulate inert COD | S _{PIN,i} | 98 | mgCOD/l |

Influent Characteristics

| | Symbol | Value | Units |
|------------------------------------|----------------------|---------|----------------------|
| NO ₃ | N _{NO3,i} | 0 | mg/l |
| NH ₄ | N _{a,i} | 42.0 | mg/l |
| TKN | N _{TKN,i} | 56.0 | mg/l |
| TP | P _i | 8.0 | mg/l |
| Dissolved Oxygen | S _{O2,i} | 0.0 | mg/l |
| FSA fraction | f _{a/TKN,i} | 0.8 | - |
| Fixed (inorganic) suspended solids | X _{FSS,i} | 47.5 | mgTSS/l |
| TSS concentration | S _{TSS,i} | 175.0 | mgTSS/l |
| Total BOD mass | FS _{BOD,i} | 662.4 | kgBOD/d |
| Total COD mass | FS _{COD,i} | 1,230.1 | kgCOD/d |
| Total NH ₄ mass | FS _{a,i} | 79.5 | kgNH ₄ /d |
| Total TKN mass | FS _{TKN,i} | 106.0 | kgTKN/d |
| Total P mass | FS _{P,i} | 15.1 | kgP/d |

Effluent Characteristics

| | Symbol | Value | Units |
|--|--------------------|-------|---------|
| Waste Sludge | FX _t | 720 | lb/d |
| Waste Sludge | Q _w | 7,918 | gpd |
| Effluent BOD | S _{BOD,e} | < 3 | mgBOD/l |
| Effluent COD | S _{COD,e} | 39 | mgCOD/l |
| Effluent TSS | S _{TSS,e} | 1.0 | mgTSS/l |
| Effluent P | P _e | 0.05 | mgP/l |
| Effluent NH ₄ | N _{a,e} | 0.3 | mgN/l |
| Effluent NO ₃ | N _{NO3,e} | 0.0 | mgN/l |
| Effluent TN (N _{ne} + N _{te}) | N _{t,e} | 2.0 | mgN/l |

Bioreactor Characteristics

| | Symbol | Value | Units |
|--|------------------|---------|---------------------|
| Temperature | T_{bio} | 20 | °C |
| Sludge retention time / Sludge age | SRT | 36 | d |
| Reactor volume | $V_{P,chosen}$ | 310,240 | gallons |
| Reactor volume | $V_{P,chosen}$ | 1,174 | m ³ |
| Reactor volume | $V_{P,calc}$ | 285,043 | gallons |
| Average MLSS concentration | X_{TSS} | 11,000 | mgTSS/l |
| Food to microorganism ratio | $F/M_{BOD,used}$ | 0.056 | kgBOD/kgMLSS |
| Food to microorganism ratio | $F/M_{COD,used}$ | 0.104 | kgCOD/kgMLSS |
| Membrane tank MLSS concentration | X_M | 13,696 | mgTSS/l |
| Aerobic/Anoxic tank MLSS concentration | X_{Bio} | 10,696 | mgTSS/l |
| Number of anaerobic zones | $\#_{AN}$ | 0 | - |
| Number of anoxic zones | $\#_{AO}$ | 2 | - |
| Number of aerobic zones | $\#_{AE}$ | 1 | - |
| External recycle ratio | m | 4 | - |
| Internal recycle ratio | a | 2.5 | - |
| DO in m recycle | O_m | 2 | mgO ₂ /l |
| DO in a recycle | O_a | 1 | mgO ₂ /l |
| Recycle ratio to anaerobic tank (PAO) | s | 0 | - |
| DO in s recycle | $S_{O_2,s}$ | 0 | mgO ₂ /l |
| Nitrate on s recycle | $S_{NO_3,s}$ | 0 | mg/l |
| TKN/COD ratio | $f_{TKN/COD}$ | 0.086 | mgTKN/mgCOD |
| Carbon source addition (Micro C) | B_{MicroC} | 0.0 | lb/d |
| Carbon source addition (Micro C) | S_{MicroC} | 0.00 | gpd |
| Nominal hydraulic retention time | HRT _n | 14.9 | h |
| Actual hydraulic retention time | HRT _a | 2.0 | h |

Biological Oxygen Demand

| | Symbol | Value | Units |
|---------------------------------------|------------|-------|--|
| OD for synth & endo respiration (PAO) | FO_{PAO} | 0 | kgO ₂ /d |
| OD for synth & endo respiration (OHO) | FO_{OHO} | 806 | kgO ₂ /d |
| Mass carbonaceous oxygen demand | FO_C | 806 | kgO ₂ /d |
| Carbonaceous oxygen utilization rate | O_c | 69% | - |
| Nitrification oxygen demand | FO_n | 339 | kgO ₂ /d |
| Total oxygen demand | FO_t | 1,145 | kgO ₂ /d |
| Oxygen recovered by denitrification | FO_d | 213 | kgO ₂ /d |
| Net total oxygen demand (AOR) | FO_{td} | 932 | kgO ₂ /d |
| Oxygen saturation @ operating temp. | c_s | 9.2 | mg/l |
| Desired oxygen level | c_x | 2.0 | mg/l |
| Transfer coefficient | α | 0.40 | - |
| Diffuser water depth | DWD | 18 | feet |
| Oxygen transfer efficiency | OTE | 2 | % |
| Standard total oxygen demand (SOR) | SOR | 3,062 | kgO ₂ /d |
| Required air flow | Q_{air} | 763 | scfm |
| Oxygen requir. per volume & depth | OS | 17.9 | gO ₂ /(Nm ₃ *mD) |

Membrane Module Design

| | Symbol | Value | Units |
|--|--------------------|---------|---|
| Permeate on cycle | T_o | 8 | minute |
| Permeate off cycle (relaxation) | T_s | 2 | minute |
| Effective membrane module surface | $A_{m,eff}$ | 84.0 | m ² |
| Effective membrane module surface | $A_{m,eff}$ | 904 | ft ² |
| Total number of membrane modules | N_M | 112 | - |
| Total membrane module surface | A_{total} | 9,408 | m ² |
| Total membrane module surface | A_{total} | 101,267 | ft ² |
| Nominal average flux | $Q_{ave,n}$ | 10.5 | lmh |
| Nominal monthly max. average flux | $Q_{ave,n,max,mo}$ | 26.2 | lmh |
| Nominal peak flux (including duty cycles) | $Q_{peak,n}$ | 41.9 | lmh |
| Average flux (excluding rest cycle) | $Q_{ave,n}$ | 4.9 | gfd |
| Monthly max. average flux (ex. rest cycle) | $Q_{ave,n,max,mo}$ | 12.3 | gfd |
| Peak flux (including duty cycles) | $Q_{peak,n}$ | 19.7 | gfd |
| Total membrane module displacement vol. | $V_{modules}$ | 1,232 | ft ³ |
| Total membrane module displacement vol. | $V_{modules}$ | 9,215 | gallons |
| Aeration modules | $A\#$ | 28 | - |
| Membrane module aeration requirement | Q_{am} | 28.5 | acfm |
| Total membrane modules aeration | $Q_{am,total}$ | 798 | acfm |
| Membrane diffuser water depth | DWD_m | 16.5 | feet |
| Oxygen requirement per volume & depth | OS | 13 | gO ₂ /(Nm ₃ *m _D) |
| Standard oxygen rate, membrane aeration | SOR_m | 4,810 | lbO ₂ /d |
| Standard oxygen rate, membrane aeration | SOR_m | 2,203 | kgO ₂ /d |



- ✓ Patented, innovative A3's MaxFlow™ membrane filtration modules manufactured in USA.
- ✓ The MaxFlow™ module "open channel design" provides optimal biofilm control, minimizes the quantity of chemical cleaning procedures and avoids module clogging.
- ✓ The compact module design enables dual-stack and triple-stack installations. It allows for a high membrane packing density resulting in a small footprint and high energy efficiency.
- ✓ Most existing conventional treatment plants can be retrofitted with MaxFlow™ membranes due to the

Kinetic Constants

| | Symbol | Value | Units |
|---------------------------------------|------------------|-------|-------------|
| Yield coefficient OHO | Y_{OHO} | 0.40 | mgVSS/mgCOD |
| Yield coefficient OHO,OBS | $Y_{OHO,obs}$ | 0.04 | mgVSS/mgCOD |
| Fermentation rate at 20°C | $k_{F,20}$ | 0.06 | m3/gVSSd |
| Temperature coefficient for $k_{F,T}$ | θ_{kF} | 1.029 | - |
| Fermentation rate at T | $k_{F,T}$ | 0.06 | m3/gVSSd |
| Endogenous respiration rate (decay) | $b_{OHO,20}$ | 0.24 | gVSS/gVSSd |
| Endogenous respiration rate T | $b_{OHO,T}$ | 0.24 | gVSS/gVSSd |
| Yield coefficient FSA | Y_A | 0.10 | mgVSS/mgFSA |
| Nitri. pH sensitivity coefficient | K_I | 1.13 | - |
| Nitri. pH sensitivity coefficient | K_{max} | 9.50 | - |
| Nitri. pH sensitivity coefficient | K_{II} | 0.30 | - |
| Max. specific growth rate at 20°C | μ_{Am} | 0.45 | 1/d |
| Max. spec. growth rate - Temp/pH | μ_{AmTpH} | 0.38 | 1/d |
| Half saturation coefficient | K_n | 0.75 | mgFSA/l |
| Half saturation coefficient - Temp | K_{nT} | 0.75 | mgFSA/l |
| Endogenous respiration rate (decay) | b_A | 0.04 | 1/d |
| Temperature coefficient for $k_{F,T}$ | θ_n | 1.123 | - |
| Endogenous respiration rate T | b_{AT} | 0.040 | 1/d |
| Temperature sensitivity coefficient | θ_{nk1} | 1.20 | - |
| Temperature sensitivity coefficient | θ_{nk2} | 1.05 | - |
| Temperature sensitivity coefficient | θ_{nk3} | 1.03 | - |
| Denitrification rates at 20°C | k_1 | 0.70 | - |
| Denitrification rates at 20°C | k_2 | 0.10 | - |
| Denitrification rates at 20°C | k_3 | 0.08 | - |
| Denitrification rates | k_{1T} | 0.700 | - |
| Denitrification rates | k_{2T} | 0.101 | - |
| Denitrification rates | k_{3T} | 0.080 | - |
| Yield coefficient PAO | Y_{PAO} | 0.45 | gAVSS/gCOD |
| Yield coefficient PAO | $Y_{PAO,obs}$ | 0.16 | gAVSS/gCOD |
| Endogenous respiration rate (decay) | $b_{PAO,20}$ | 0.04 | gEVSS/gCOD |
| Temperature coefficient for $k_{F,T}$ | $\theta_{b,PAO}$ | 1.029 | - |
| Endogenous respiration rate T | $b_{PAO,T}$ | 0.04 | gEVSS/gVSSd |

Stoichiometric Constants

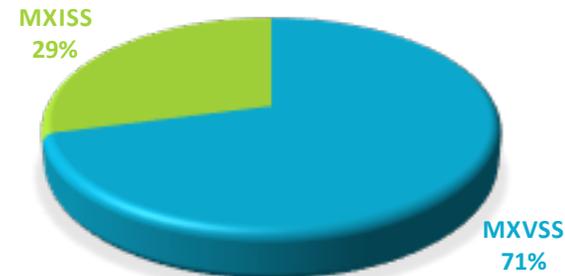
| | Symbol | Value | Units |
|---|----------------|-------|----------------------|
| COD/BOD ratio | - | 1.86 | - |
| Readily biodeg. org. fraction (RBCOD) | $f_{s,COD}$ | 0.25 | g/gTCOD |
| Non-biodegradable particulate COD | $f_{PNb,COD}$ | 0.15 | g/gTCOD |
| Non-biodegradable soluble COD | $f_{SNb,COD}$ | 0.06 | g/gTCOD |
| SVFA fraction of RBCOD | $f_{SVFA,SSi}$ | 0.15 | g/gCOD _{SS} |
| VSS/TSS of activated sludge | f_{VT} | 0.71 | mgVSS/mgTSS |
| COD/VSS of activated sludge | f_{cv} | 1.5 | kgCOD/kgVSS |
| True synthesis fraction | f_s^0 | 0.57 | - |
| Endogenous residue fraction | $f_{H/E,OHO}$ | 0.2 | - |
| ISS content of OHOs | $f_{ISS,OHO}$ | 0.15 | - |
| Active fraction - VSS | f_{avOHO} | 17% | - |
| Active fraction - TSS | f_{at} | 12% | - |
| Influent FSA fraction | $f_{FSA,i}$ | 0.75 | - |
| Non-bio. soluble orgN fraction (inerts) | $f_{SNb,N}$ | 0.03 | - |
| Non-bio. particulate orgN fraction | f_n | 0.12 | - |
| Permissible unaer. sludge mass fraction | f_{xm} | 0.79 | - |
| Design unaerated sludge mass fraction | f_{xt} | 0.37 | - |
| Minimum primary anoxic mass fraction | f_{x1min} | 0.03 | - |
| Primary anoxic mass fraction | f_{x1} | 0.37 | - |
| Secondary anoxic mass fraction | f_{x2} | 0.00 | - |
| Anaerobic mass fraction | f_{AN} | 0.00 | - |
| Non-bio. particulate orgP fraction | $f_{P,XE,OHO}$ | 0.05 | mgP/mgVSS |
| Endogenous residue fraction | $f_{XE,PAO}$ | 0.25 | gEVSS/gAVSS |
| P fraction in active PAO mass | $f_{P,PAO}$ | 0.38 | gP/gAVSS |
| VSS/TSS ratio for PAO active mass | $f_{VT,PAO}$ | 0.46 | gVSS/gTSS |
| Ratio of P release /VFA uptake | $f_{PO4,REL}$ | 0.5 | gP/gCOD |
| Frac. of fixed inorganic s. solids of PAO | $f_{FSS,PAO}$ | 1.3 | gFSS/gAVSS |
| P content of TSS | $f_{P,TSS}$ | 0.051 | gP/gTSS |
| P content of VSS | $f_{P,FSS,i}$ | 0.05 | gP/gVSS |
| TKN/COD ratio | f_{ns} | 0.09 | mgTKN/mgCOD |
| Nitrogen content of active biomass | $f_{N,VSS}$ | 0.10 | gN/gAVSS |

Biological Mass Balance

| | Symbol | Value | Units |
|---|-----------------------|----------------|-------|
| Sludge age | SRT | 36 d | |
| Mixed liquor suspended solids | X _{TSS} | 11,000 mgTSS/l | |
| Readable biodegradable COD flux | FS _{S,i} | 308 kgCOD/d | |
| Daily flux of VFAs | FS _{VFA,i} | 46 kgCOD/d | |
| Daily flux of fermentable COD | FS _{F,i} | 261 kgCOD/d | |
| Daily flux of biodegradable COD | FS _{bio,i} | 972 kgCOD/d | |
| Daily flux of particulate inert COD | FS _{PIN,i} | 185 kgCOD/d | |
| Daily flux of fixed inorganic sus. solids | FS _{ISS,i} | 90 kgISS/d | |
| Influent particulate non-bio. COD | FX _{VSS,i} | 123 kgVSS/d | |
| Mass nitrogen into sludge prod. | FN _{Sludge} | 28 kgN/d | |
| Mass of nitrate generated per day | FN _{NO3} | 74 kgN/d | |
| VFAs stored by PAOs | FS _{S,PAO} | 0 kgCOD/d | |
| Remaining biodegradable COD | FCOD _{b,OHO} | 972 kgCOD/d | |
| Mass nitrifiers | MX _A | 109 kgVSS | |
| Active biomass PAO | MX _{PAO} | 0 KgAVSS | |
| Endogenous active biomass PAO | MX _{E,PAO} | 0 kgEVSS | |
| Bio mass | MX _{bio} | 1,460 kgVSS | |
| Active organism mass | MX _{OHO} | 1,460 kgVSS | |
| Endogenous residue mass | MX _{E,OHO} | 2,524 kgVSS | |
| Non-biodegradable particulate mass | MX _{IV} | 4,428 kgVSS | |
| Volatile suspended solids mass | MX _{VSS} | 8,413 kgVSS | |
| Inorganic suspended solid mass | MX _{ISS} | 3,455 kgISS | |
| Total suspended solids mass | MX _{TSS} | 11,868 kgTSS | |
| Mass/Sludge TSS wasted | FX _t | 330 KgTSS/d | |
| Mass/Sludge VSS wasted | FX _V | 234 kgVSS/d | |
| Effluent COD | S _{cod,e} | 39 mgCOD/l | |
| COD mass out (effluent and waste) | FS _{COD,e} | 74 kgCOD/d | |
| Mass/Sludge COD wasted | FX _{COD,s} | 351 kgCOD/d | |

Alkalinity

| | Symbol | Value | Units |
|---|--------------------------|-------------------------------|-------|
| Alkalinity Nitrification as CaCO ₃ (consumed) | Alk _{Nitri} | 280 mg/l as CaCO ₃ | |
| Alkalinity Denitrification as CaCO ₃ (recovered) | Alk _{Denitri} | 141 mg/l as CaCO ₃ | |
| Alkalinity _{ef} | Alk _e | 100 mg/l as CaCO ₃ | |
| Alkalinity _{inf} | Alk _i | 250 mg/l as CaCO ₃ | |
| Alkalinity Alum (consumed) | Alk _{Alum} | 0.0 mg/l as CaCO ₃ | |
| Alkalinity _{Total} | Alk _{total} | 111 mg/l as CaCO ₃ | |
| Alkalinity _{Added} | Alk _{added} | -11 mg/l as CaCO ₃ | |
| Alkalinity _{Added} | XAlk _{added} | 0 lb/d | |
| Density caustic solution (50%) | - | 12.76 lb/gal | |
| Alkalinity _{recovered} | Alk _{recovered} | 0.4 lbCaCO ₃ /lb | |
| Caustic _{needed} | - | 0.0 lb/d | |
| Caustic _{needed} | - | 0.0 gpd | |



$$MX_{TSS} = MX_{ISS} + MX_{VSS}$$

$$V_P = \frac{MX_{TSS}}{X_{TSS}}$$

$$FX_t = \frac{MX_{TSS}}{SRT}$$

N Removal

| | Symbol | Value | Units |
|--|-----------------|-------|------------------------|
| Factor of safety | S_f | 1.2 | - |
| Nitrogen requirements | FN_{synth} | 23 | kgN/d |
| Nitrogen requirements | $TKN_{i,synth}$ | 12.35 | gN/m ³ |
| Influent non-bio. soluble organic N | $N_{nbios,i}$ | 1.68 | mgN/l |
| Influent non-bio. particulate org. N | $N_{nbio,p,i}$ | 7.8 | mgN/l |
| Influent biodegradable organic N | $N_{bio,i}$ | 12.3 | mgN/l |
| Effluent non-bio. soluble organic N | $N_{nbios,e}$ | 1.68 | mgN/l |
| NH ₄ concentration avail. for nitri. | N_{an} | 39.5 | mgN/l |
| Effluent ammonia | $N_{a,e}$ | 0.3 | mgN/l |
| Effluent TKN | $N_{TKN,e}$ | 2.0 | mgN/l |
| N concentration into sludge prod. | N_s | 14.8 | mgN/l |
| Nitrification capacity | N_c | 39.2 | mgN/l |
| Denitrification potential RBCOD | $D_{p1RBCOD}$ | 22.5 | mgNO ₃ -N/l |
| Denitrification potential SBCOD | $D_{p1SBCOD}$ | 28.9 | mgNO ₃ -N/l |
| Denitrification potential RBCOD | $D_{p3RBCOD}$ | 0.0 | mgNO ₃ -N/l |
| Denitrification potential SBCOD | $D_{p3SBCOD}$ | 0.0 | mgNO ₃ -N/l |
| Minimum sludge age for nitri. | SRT_m | 5.0 | d |
| Denitrification potential primary tank | D_{p1} | 51.5 | mgN/l |
| Denitrification potential secondary tank | D_{p3} | 0.0 | mgN/l |
| Denitri. potential recycle rate ($f_{xm} = f_{xdm}$) | D_{p^*} | 37.6 | mgN/l |
| Effluent nitrate | $N_{NO3,e}$ | 0.0 | mgN/l |
| Effluent nitrate @ f_{xdm} & recycle rate | N_{NO3,e^*} | 5.2 | mgN/l |

P Removal

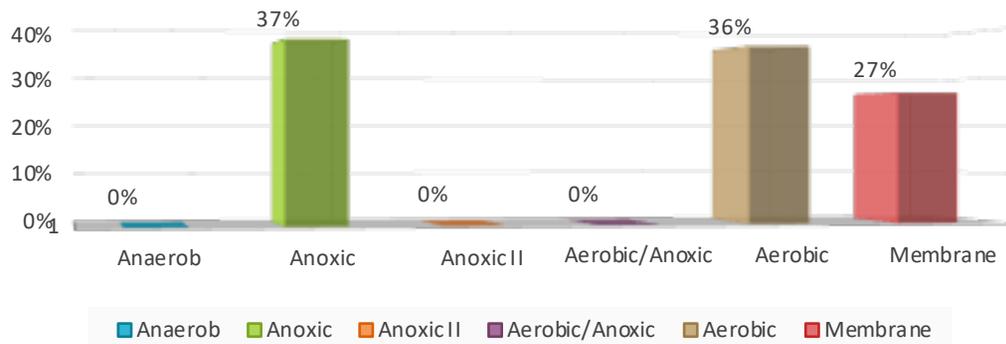
| | Symbol | Value | Units |
|------------------------------------|----------------------|-------|--------------------------------------|
| COD lost in anaerobic reactor | $S_{F,ANn}$ | 0.0 | gCOD/m ³ |
| COD lost in anaerobic reactor | S_{F,ANn^*} | 0.0 | gCOD/m ³ |
| Fermentable COD for AN reactor | $S_{F,I,conv}$ | 0.0 | gCOD/m ³ |
| DO in influent | $S_{O2,i}$ | 0.0 | mgO ₂ /l |
| PO ₄ release AN reactor | $S_{PO4,rel}$ | 0.0 | gP/m ³ |
| P removal by PAOs | ΔP_{PAO} | 0.0 | gP/m ³ |
| P removal by OHOs | ΔP_{OHO} | 0.6 | gP/m ³ |
| P removal by endogeneous biomass | ΔP_{XE} | 1.9 | gP/m ³ |
| P removal by influent inert mass | ΔP_{XI} | 3.3 | gP/m ³ |
| P into sludge production | P_s | 6.2 | gP/m ³ |
| Potential P removal by system | $\Delta P_{SYS,POT}$ | 12.0 | gP/m ³ |
| Actual P removal by system | $\Delta P_{SYS,ACT}$ | 8.0 | gP/m ³ |
| Effluent particulate P from TSS | $X_{P,e}$ | 0.1 | gP/m ³ |
| Influent total P | P_i | 8.0 | gP/m ³ |
| Effluent total P | P_{e^*} | 0.1 | gP/m ³ |
| P precipitated | P_{prec} | 0.0 | mgP/l |
| Precipitation chemical | B_{Alum} | 0.0 | lb/d |
| Precipitation chemical | Solution | 0.0 | gal/d |
| Density Alum | Z_{AL}^{3+} | 0.100 | lb _{AL} /lb _{prec} |
| Density Iron | Z_{FE}^{3+} | 0.077 | lb _{FE} /lb _{prec} |
| Alum efficiency | - | 40.0 | g/kg |
| Chemical precipitation sludge | - | 0.0 | lb/d |

Mechanical Process Calculation

| Tank Dimensions | Quantity / Trains | Length | Width | Dia. | Degree | Height | Liquid level | Volume per train | Volume Total | Volume Total |
|-----------------|-------------------|----------|----------|--------|--------|----------|--------------|------------------|--------------|--------------|
| Anaerob | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Anoxic I | 1 | 20.00 ft | 40.00 ft | .00 ft | 0.0 | 21.00 ft | 19.25 ft | 115,192 gal | 115,192 gal | 436.0 m3 |
| Aerobic | 1 | 20.00 ft | 40.00 ft | .00 ft | 0.0 | 21.00 ft | 18.75 ft | 112,200 gal | 112,200 gal | 424.7 m3 |
| Anoxic II | 1 | 20.00 ft | 40.00 ft | .00 ft | 0.0 | 21.00 ft | 19.25 ft | 115,192 gal | 115,192 gal | 436.0 m3 |
| Anoxic Buffer | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| Membrane | 2 | 16.00 ft | 19.50 ft | .00 ft | 0.0 | 21.00 ft | 17.75 ft | 41,424 gal | 82,848 gal | 313.6 m3 |
| Sludge | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |
| EQ | 0 | .00 ft | .00 ft | .00 ft | 0.0 | .00 ft | .00 ft | gal | gal | 0.0 m3 |

Tank Design

| | Symbol | Value | Units | | Value | Units |
|---|--------|------------------------|-------|---------------|-------|--------|
| Total process tank volume | | 310,240 gallons | | Weir level | 3.4 | inches |
| Total process tank volume _{calc} | | 285,043 gallons | | Weir length | 10.0 | ft |
| Unaerated tank percentage | | 37 % | | Velocity | 1.75 | fps |
| Total tank volume | | 310,240 gallons | | Vertical tank | 0 | |
| Membrane modules volume | | 9,215 gallons | | Horz. Tank | 0 | |
| F/M _{used,BOD} | | 0.056 kgBOD/kgMLSS | | Diameter | 0 | ft |
| F/M _{used,COD} | | 0.104 kgCOD/kgMLSS | | | | |



Process Volume Distribution

| Air Flow Design | Symbol | Membrane | Aerobic | Sludge | EQ | Unit |
|-------------------------------------|-----------------|-------------|-------------|-------------|-------------|-------------------|
| Minimum air flow | $Q_{A, re}$ | 798 | 763 | 0 | 0 | acfm / scfm |
| Chosen air flow - actual | $Q_{A, chosen}$ | 800 | 712 | 0 | 0 | acfm |
| Chosen air flow - inlet | $Q_{A, chosen}$ | 1,442 | 1,321 | 0 | 0 | m ³ /h |
| Chosen air flow - inlet | $Q_{A, chosen}$ | 849 | 777 | 0 | 0 | scfm |
| Chosen air flow - piping | $Q_{A, chosen}$ | 535 | 460 | 0 | 0 | acfm |
| Pipe pressure | p_b | 8.5 | 10.0 | 0.0 | 0.0 | psi |
| Pipe losses | H | 0.18 | 0.13 | 0.00 | 0.00 | psi |
| Equivalent length in pipe losses | L_p | 500 | 500 | 250 | 250 | feet |
| Pipe diameter | d | 6.0 | 6.0 | 3.0 | 2.0 | inches |
| Internal pipe diameter | d_i | 6.36 | 6.36 | 3.26 | 2.16 | inches |
| Standard temperature | T_1 | 293 | 293 | 293 | 293 | K |
| Pipe temperature | T_2 | 334 | 340 | 293 | 293 | K |
| Constant | f | 0.02 | 0.02 | 0.09 | 0.09 | - |
| Air velocity | v | 40.5 | 34.8 | 0.0 | 0.0 | fps |
| Atmospheric pressure | $p_{a,1}$ | 14.5 | 14.5 | 14.5 | 14.5 | psi |
| Absolute pressure | p_2 | 23.0 | 24.5 | 14.5 | 14.5 | psi |
| Pressure due to tank liquid level | $p_{DWD, m}$ | 7.2 | 7.9 | 0.0 | 0.0 | psi |
| Pressure due to aeration device | p_{DWD} | 0.8 | 0.7 | 0.5 | 0.5 | psi |
| Pressure due to pipe losses & elev. | $p_{DWD, s}$ | 0.5 | 0.4 | 0.3 | 0.3 | psi |
| Total pipe losses | p_t | 8.5 | 9.1 | 0.8 | 0.8 | psi |
| Total pipe losses | p_t | 583.5 | 625.8 | 55.2 | 55.2 | mbar |

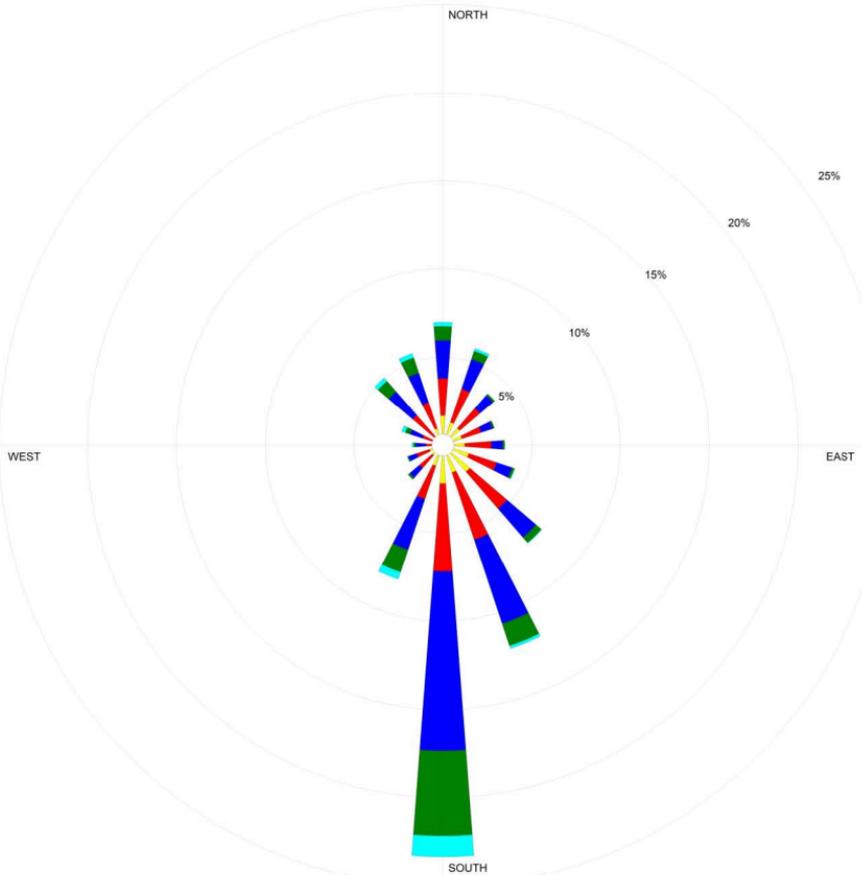
$$H = 9.82 \cdot 10^{-8} \cdot \frac{(f \cdot L_p \cdot T_2 \cdot Q_{A, chosen})}{(p_2 d_i)^5}$$

$$f = \frac{(0.029 \cdot d_i^{0.027})}{Q_{A, chosen}^{0.148}} \quad T_2 = T_1 \left(\frac{p_2}{p_{a,1}} \right)^{0.283}$$



WIND ROSE PLOT

Station #03927 - DALLAS/FORT WORTH/REGIONAL AR, TX



Wind Speed (m/s)



MODELER
Sara West

DISPLAY
Wind Speed

AVG. WIND SPEED
5.76 m/s

ORIENTATION
**Direction
(blowing from)**

DATE
8/29/2002

UNIT
m/s

CALM WINDS
2.32%

PLOT YEAR-DATE-TIME
**1961
Apr 1 - Apr 30
Midnight - 11 PM**

COMPANY NAME
USDA-ARS

COMMENTS

SOLIDS MANAGEMENT PLAN

TCCI SANCTUARY WWTP, LLC

WWTF Phase 1A

Influent Design Flow:

Phase 1A: 0.030 MGD, Total

Influent BOD Concentration: 350 mg/L

MBR Basin MLVSS: 8,808 mg/L

See **Attachment 1A - Process Flow Diagram** and **Attachment 5A - Design Calculations**. Attachment 5A shows calculations for one (1) 30,000 gpd (0.03 MGD) treatment train. In the final phase, there will be three (3) 250,000 gpd (0.25 MGD) treatment trains operating at full capacity for a total of 0.750 MGD in the final phase.

Table 1 – Sludge Production for 0.03 MGD Design Flow

| Solids Generated | 100% | 75% | 50% | 25% |
|----------------------------------|-------|------|------|------|
| Lbs./d Influent BOD ₅ | 87.62 | 65.7 | 43.8 | 21.9 |
| Lbs./d Dry Sludge Produced | 49.0 | 36.8 | 24.5 | 12.3 |

Sludge will be sent from the Recycled Activated Sludge flow stream to the Sludge Screw Press. Calculations are based on 815 gpd of waste sludge, which equates to 49 lb/d (Table 1). The sludge will be pressed in the Sludge Screw Press to remove liquids and produce a dry sludge cake. All liquid will be decanted from the Screw Press and returned to the headworks for treatment. No wet solids will be produced through the treatment process. Dry sludge will be removed from the screw press and deposited into an 1 cubic yard (CY) roll-off container for disposal on a regular basis (Table 2).

Table 2 – Sludge Removal Schedule

| Removal Schedule | 100% | 75% | 50% | 25% | Unit |
|--------------------------|----------|-------------------------------------|----------|-----------|-------------|
| Dry Waste Sludge | 49.0 | 36.8 | 24.5 | 12.3 | lb/d |
| Wet Waste Sludge | 815 | 611 | 408 | 204 | gpd |
| Wet Sludge | 109.0 | 81.7 | 54.5 | 27.2 | CF/d |
| Wet Sludge | 4.0 | 3.0 | 2.0 | 1.0 | CY/d |
| Reduction Factor | 18.0 | (provided by MBR WWTP manufacturer) | | | |
| Dry Sludge | 0.2 | 0.2 | 0.1 | 0.1 | CY/d |
| Dumpster Volume | 1 | 1 | 1 | 1 | CY |
| Recurring Sludge Removal | 4 | 6 | 9 | 18 | days |

The Sludge Age (Solids Retention Time) for a Total Reactor Volume of approximately 22,440 gallons is 25 days, with an annual average sludge production of 17,885 lbs. dry sludge produced at 100% capacity. The dewatered sludge will be transported by a registered hauler, Texas Rural Waste/Integrity Septic Services (TCEQ Sludge Registration ID #25759) to the City of Denton Landfill (TCEQ Sludge Registration ID #1590B) in Denton County, Texas.

SOLIDS MANAGEMENT PLAN

TCCI SANCTUARY WWTP, LLC

WWTF Phase 1B

Influent Design Flow:

Phase 1B: 0.250 MGD, Total

Influent BOD Concentration: 350 mg/L

MBR Basin MLVSS: 9,940 mg/L

See **Attachment 1 - Process Flow Diagram** and **Attachment 5 - Design Calculations**. Attachment 5 shows calculations for one (1) 250,000 gpd (0.250 MGD) treatment train. In the final phase, there will be one (1) 250,000 gpd treatment train operating with two subsequent phases, each at 500,000 gpd.

Table 1 – Sludge Production for 0.250 MGD Design Flow

| Solids Generated | 100% | 75% | 50% | 25% |
|----------------------------------|-------|-------|-------|-------|
| Lbs./d Influent BOD ₅ | 730.2 | 547.7 | 365.1 | 182.6 |
| Lbs./d Dry Sludge Produced | 399.0 | 299.3 | 199.5 | 99.8 |

Sludge will be sent from the Recycled Activated Sludge flow stream to the Sludge Screw Press. Calculations are based on 6,036 gpd of waste sludge, which equates to 399 lb./d (Table 1). The sludge will be pressed in the Sludge Screw Press to remove liquids and produce a dry sludge cake. All liquid will be decanted from the Screw Press and returned to the headworks for treatment. No wet solids will be produced through the treatment process. Dry sludge will be removed from the screw press and deposited into an 8 cubic yard (CY) roll-off container for disposal on a regular basis (Table 2).

Table 2 – Sludge Removal Schedule

| Removal Schedule | 100% | 75% | 50% | 25% | Unit |
|--------------------------|----------|-------------------------------------|-----------|-----------|------|
| Dry Waste Sludge | 399.0 | 299.3 | 199.5 | 99.8 | lb/d |
| Wet Waste Sludge | 6,036 | 4,527 | 3,018 | 1,509 | gpd |
| Wet Sludge | 807.0 | 605.2 | 403.5 | 201.7 | CF/d |
| Wet Sludge | 29.9 | 22.4 | 14.9 | 7.5 | CY/d |
| Reduction Factor | 18.0 | (provided by MBR WWTP manufacturer) | | | |
| Dry Sludge | 1.7 | 1.2 | 0.8 | 0.4 | CY/d |
| Dumpster Volume | 8.0 | 8.0 | 8.0 | 8.0 | CY |
| Recurring Sludge Removal | 5 | 6 | 10 | 19 | days |

The Sludge Age (Solids Retention Time) for a Total Reactor Volume of approximately 162,480 gallons is 25 days, with an annual average sludge production of 145,635 lbs. dry sludge produced at 100% capacity. The dewatered sludge will be transported by a registered hauler, Texas Rural Waste/Integrity Septic Services (TCEQ Sludge Registration ID #25759) to the City of Denton Landfill (TCEQ Sludge Registration ID #1590B) in Denton County, Texas.

SOLIDS MANAGEMENT PLAN

TCCI CARRELL RANCH WWTP, LLC

WWTF Phase 2 & 3

Influent Design Flow:

Phase 2: 0.500 MGD

Phase 3: 0.500 MGD , Total 1.25 MGD

Influent BOD Concentration: 350 mg/L

MBR Basin MLVSS: 13,696 mg/L

See **Attachment 1 - Process Flow Diagram** and **Attachment 5 - Design Calculations**. Attachment 5 shows calculations for one (1) 500,000 gpd (0.500 MGD) treatment train. In the final phase, there will be one (1) 250,000 gpd treatment train and two (2) 500,000 gpd treatment trains operating at full capacity for a total of 1.25 MGD.

Table 1 – Sludge Production for 0.250 MGD Design Flow

| Solids Generated | 100% | 75% | 50% | 25% |
|----------------------------------|-------------|------------|------------|------------|
| Lbs./d Influent BOD ₅ | 1,460.4 | 1,095.3 | 730.2 | 365.1 |
| Lbs./d Dry Sludge Produced | 720.0 | 540.0 | 360.0 | 180.0 |

Sludge will be sent from the Recycled Activated Sludge flow stream to the Sludge Screw Press. Calculations are based on 7,918 gpd of waste sludge, which equates to 720 lb./d (Table 1). The sludge will be pressed in the Sludge Screw Press to remove liquids and produce a dry sludge cake. All liquid will be decanted from the Screw Press and returned to the headworks for treatment. No wet solids will be produced through the treatment process. Dry sludge will be removed from the screw press and deposited into an 8 cubic yard (CY) roll-off container for disposal on a regular basis (Table 2).

Table 2 – Sludge Removal Schedule

| Removal Schedule | 100% | 75% | 50% | 25% | Unit |
|--------------------------|-------------|-------------------------------------|------------|------------|-------------|
| Dry Waste Sludge | 720.0 | 540.0 | 360.0 | 180.0 | lb/d |
| Wet Waste Sludge | 7,918 | 5,939 | 3,959 | 1,980 | gpd |
| Wet Sludge | 1,058.6 | 793.9 | 529.3 | 264.6 | CF/d |
| Wet Sludge | 39.2 | 29.4 | 19.6 | 9.8 | CY/d |
| Reduction Factor | 18.0 | (provided by MBR WWTP manufacturer) | | | |
| Dry Sludge | 2.2 | 1.6 | 1.1 | 0.5 | CY/d |
| Dumpster Volume | 8.0 | 8.0 | 8.0 | 8.0 | CY |
| Recurring Sludge Removal | 4 | 5 | 7 | 15 | days |

The Sludge Age (Solids Retention Time) for a Total Reactor Volume of approximately 310,240 gallons is 25 days, with an annual average sludge production of 262,800 lbs. dry sludge produced at 100% capacity. The dewatered sludge will be transported by a registered hauler, Texas Rural Waste/Integrity Septic Services (TCEQ Sludge Registration ID #25759) to the City of Denton Landfill (TCEQ Sludge Registration ID #1590B) in Denton County, Texas.

Item N/A to this application.

Leah Whallon

From: Hilary Bond <hilary@reuseeng.com>
Sent: Wednesday, July 31, 2024 2:06 PM
To: Leah Whallon
Cc: Rane Wilson
Subject: Re: Application for Proposed Permit No. WQ0016572001; TCCI Sanctuary WWTP LLC; Sanctuary WWTP

Follow Up Flag: Follow up
Flag Status: Flagged

Ms. Whallon,

Please see below for our NOD reply letter and relevant attachments. Since our emails with attachments are not being received by TCEQ at the moment, I have included links instead. If you have any trouble opening them, please let me know.

NOD Reply Letter:  [WQ0016572001 NOD Reply Packet.pdf](#)
Attachment 1:  [Attachment 1 - WQ0016572001 PLS REV7.30.2024.docx](#)
Attachment 2:  [Attachment 2 - WQ0016572001 Signature Pg.pdf](#)
Attachment 3:  [Attachment 3 - WQ0016572001 Spanish NORI.docx](#)

Have a wonderful afternoon!

Best,
Hilary



Hilary Bond

Director, Permitting & Entitlements



Office 737-275-2271 **Mobile** 512-285-0302

Address 4411 South IH-35 Suite 100, Georgetown, TX 78626

From: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Sent: Wednesday, July 24, 2024 2:39 PM

To: Hilary Bond <hilary@reuseeng.com>

Cc: Rane Wilson <rane@reuseeng.com>

Subject: RE: Application for Proposed Permit No. WQ0016572001; TCCI Sanctuary WWTP LLC; Sanctuary WWTP

Hi Hilary,

Because all applications and plain language summaries are now being published on our public webpage, we have been asked to be more detailed in ensuring the summaries are accurately completed.

There are instructions and examples for completing the summary beginning on page 115 of the application instructions - [Completing the Domestic Wastewater Permit Application](#).

The pollutants that need to be listed are the ones that will appear in the effluent discharge limitations and monitoring requirements section of the permit, generally CBOD, TSS, Ecoli, etc.

Please let me know if you have any questions.

Thanks,



Leah Whallon

Texas Commission on Environmental Quality

Water Quality Division

512-239-0084

leah.whallon@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at

https://link.edgepilot.com/s/5e158da1/90FEYnu_I0OrF1w1YpnWVw?u=http://www.tceq.texas.gov/customersurvey

From: Hilary Bond <hilary@reuseeng.com>

Sent: Wednesday, July 24, 2024 12:49 PM

To: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>

Cc: Rane Wilson <rane@reuseeng.com>

Subject: Re: Application for Proposed Permit No. WQ0016572001; TCCI Sanctuary WWTP LLC; Sanctuary WWTP

Leah,

Good afternoon! I hope you are well.

Thank you for getting this to us so promptly! I have a question about Item 1 in the NOD letter regarding the "will contain no contaminants" phrase being insufficient. We have not run into this issue before, so I would like to make sure we provide the appropriate information. Our effluent meets or exceeds the strict criteria for Type 1 Reclaimed Water per 30 TAC §210.33. Does specifying these parameters suffice?

Thank you,
Hilary



Hilary Bond

Director, Permitting & Entitlements



Office 737-275-2271 **Mobile** 512-285-0302

Address 4411 South IH-35 Suite 100, Georgetown, TX 78626

From: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>

Sent: Monday, July 22, 2024 5:07 PM

To: Hilary Bond <hilary@reuseeng.com>

Cc: Rane Wilson <rane@reuseeng.com>; 111tcci@att.net <111tcci@att.net>

Subject: Application for Proposed Permit No. WQ0016572001; TCCI Sanctuary WWTP LLC; Sanctuary WWTP

Good Afternoon,

Please see the attached Notice of Deficiency letter dated July 22, 2024 requesting additional information needed to declare the application administratively complete. Please send the complete response by August 5, 2024.

Please let me know if you have any questions.

Thank you,



Leah Whallon

Texas Commission on Environmental Quality

Water Quality Division

512-239-0084

leah.whallon@tceq.texas.gov

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<https://link.edgepilot.com/s/b70b6ad1/08dzPI2sV0iauLseLgTQsg?u=http://www.tceq.texas.gov/customersurvey>

Links contained in this email have been replaced. If you click on a link in the email above, the link will be analyzed for known threats. If a known threat is found, you will not be able to proceed to the destination. If suspicious content is detected, you will see a warning.

Links contained in this email have been replaced. If you click on a link in the email above, the link will be analyzed for known threats. If a known threat is found, you will not be able to proceed to the destination. If suspicious content is detected, you will see a warning.

July 30, 2024

Ms. Leah Whallon
Applications Review and Processing Team (MC148)
Water Quality Division
Texas Commission of Environmental Quality

RE: Notice of Deficiency Letter
Application for Proposed Permit No.: WQ0016572001 (EPA I.D. No. TX0146315)
Applicant Name: TCCI Sanctuary WWTP LLC (CN606283398)
Site Name: Sanctuary WWTP (RN112007737)
Type of Application: New

Dear Ms. Whallon,

Thank you for your prompt review of the submitted application and the follow-up NOD letter. Please see below for the requested responses:

1. The Plain Language Summary has been updated to reflect the expected pollutants as shown in the examples on pages 115-116 of the 10053 instruction document. Both the English and Spanish summaries have been updated with this language and the RN and CN numbers. See Attachment 1.
2. Please see Attachment 2 for the signed and notarized signature page signed by Mr. Tommy Cansler.
3. Please see the change to the NORI as reflected in red:

APPLICATION. TCCI Sanctuary WWTP LLC, 14675 Dallas Parkway, Suite 575, Dallas, Texas 75254, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0016572001 (EPA I.D. No. TX0146315) to authorize the discharge of treated wastewater at a volume not to exceed an annual average flow of ~~1,125,000~~ 1,250,000 gallons per day. The domestic wastewater treatment facility will be located approximately 1.1 miles southwest of the intersection of Farm-to-Market Road 156 and U.S. Highway 380, near the city of Ponder, in Denton County, Texas 76259. The discharge route will be from the plant site to an unnamed tributary, thence to South

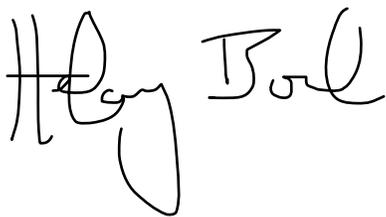
Hickory Creek, thence to Hickory Creek, thence to Lewisville Lake. TCEQ received this application on July 12, 2024. The permit application will be available for viewing and copying at Pilot Point Community Library, 324 South Washington Street, Pilot Point, in Denton County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: <https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. <https://gisweb.tceq.texas.gov/LocationMapper/?marker=-97.267777,33.227777&level=18>

Further information may also be obtained from TCCI Sanctuary WWTP LLC at the address stated above or by calling Mr. Rane Wilson, P.G., reUse Engineering Inc., at 570-567-4297

4. Please see Attachment 3 for the Spanish NORI, which includes the change reflected in Item 3.

Thank you for your assistance with the application and for your prompt review! Please let me know if there are any questions about the responses or documents provided.

Respectfully,



Hilary Bond
Director of Permitting and Entitlements
reUse Engineering, Inc.

Enclosure(s)
Attachment 1- Plain Language Summary
Attachment 2 – Signature Page
Attachment 3 – Spanish NORI

cc: Mr. Rane Wilson, P.G., reUse Engineering, Inc.



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by [Title 30, Texas Administrative Code \(30 TAC\), Chapter 39, Subchapter H](#). Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

If you are subject to the alternative language notice requirements in [30 TAC Section 39.426](#), **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS DOMESTIC WASTEWATER/STORMWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

TCCI Sanctuary WWTP LLC (CN606283398) proposes to operate Sanctuary WWTP (RN112007737), a Domestic Wastewater Treatment Plant. The facility will be located at approximately 1.1 miles southwest of the intersection of US Highway 380 and FM 156, in Ponder, Denton County, Texas 76259. The Applicant is currently applying to the Texas Commission on Environmental Quality for a Texas Pollutant Removal System (TPDES) Permit to discharge approximately 1,250,000 gallons per day of treated domestic wastewater from the proposed Wastewater Treatment Facility to be installed at the site.

Discharges from the facility are expected to contain trace amounts of five-day carbonaceous biochemical oxygen demand (CBOD₅), total suspended solids (TSS), phosphorus (P), and ammonia nitrogen (NH₃-N). Removal of bacteria and pathogens through the MBR process is 96% or greater, and E. Coli concentration is reduced to zero through the use of U.V. The effluent will meet the criteria for Type I reclaimed water per 30 TAC §210.33. Domestic wastewater will be treated by Membrane Biological Reactor (MBR) treatment technology. The

facility will be constructed in phases with the first phase being a temporary plant capable of treating 30,000 gpd, a second phase treating 250,000 gpd, and a third phase with two (2) 500,000 gpd treatment facilities. The permanent facility will consist of an influent pumping station, equalization basin, fine screen, two anoxic tanks, aerobic tank, membrane cells, ultraviolet disinfection, a sludge press, and an effluent pumping station.

PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES Introduzca 'INDUSTRIALES' o 'DOMÉSTICAS' aquí /**AGUAS PLUVIALES**

El siguiente resumen se proporciona para esta solicitud de permiso de calidad del agua pendiente que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo requerido por el Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

TCCI Sanctuary WWTP LLC (CN606283398) propone operar Sanctuary WWTP RN112007737, un Planta de tratamiento de aguas residuales domesticas. La instalación estará ubicada en aproximadamente 1.1 millas al suroeste de la interseccion de la autopista US 380 y FM 156, en Ponder, Condado de Denton, Texas 76259. El Solicitante actualmente está solicitando a la Comisión de Calidad Ambiental de Texas un Permiso del Sistema de Eliminación de Contaminantes de Texas (TPDES) para descargar aproximadamente 1.250.000 galones por día de aguas residuales domésticas tratadas de la Instalación de **Tratamiento** de Aguas **Residuales** propuesta que se instalará en el sitio.

Se espera que las descargas de la instalación contengan trazas de demanda bioquímica de oxígeno carbonoso (CBOD₅) de cinco días, sólidos suspendidos totales (SST), fósforo (P) y nitrógeno amoniacal (NH₃-N). La eliminación de bacterias y patógenos mediante el proceso MBR es del 96% o más, y la concentración de E. Coli se reduce a cero mediante el uso de rayos UV. El efluente cumplirá con los criterios para agua recuperada Tipo I según 30 TAC §210.33. **Aguas residuales domésticas** . estará tratado por Tecnología de tratamiento de reactor biológico de membrana (MBR). La instalación se construirá en fases: la primera fase será una planta temporal capaz de tratar 30.000 gpd, una segunda fase tratará 250.000 gpd y una tercera fase con dos (2) instalaciones de tratamiento de 500.000 gpd. La instalación permanente constará de una estación de bombeo de afluentes, estanque de eualización, criba fina, dos tanques anóxicos, tanque aeróbico, celdas de membrana, desinfección ultravioleta, prensa de lodos y estación de bombeo de efluentes.

INSTRUCTIONS

1. Enter the name of applicant in this section. The applicant name should match the name associated with the customer number.
2. Enter the Customer Number in this section. Each Individual or Organization is issued a unique 11-digit identification number called a CN (e.g. CN123456789).
3. Choose “operates” in this section for existing facility applications or choose “proposes to operate” for new facility applications.
4. Enter the name of the facility in this section. The facility name should match the name associated with the regulated entity number.
5. Enter the Regulated Entity number in this section. Each site location is issued a unique 11-digit identification number called an RN (e.g. RN123456789).
6. Choose the appropriate article (a or an) to complete the sentence.
7. Enter a description of the facility in this section. For example: steam electric generating facility, nitrogenous fertilizer manufacturing facility, etc.
8. Choose “is” for an existing facility or “will be” for a new facility.
9. Enter the location of the facility in this section.
10. Enter the City nearest the facility in this section.
11. Enter the County nearest the facility in this section.
12. Enter the zip code for the facility address in this section.
13. Enter a summary of the application request in this section. For example: renewal to discharge 25,000 gallons per day of treated domestic wastewater, new application to discharge process wastewater and stormwater on an intermittent and flow-variable basis, or major amendment to reduce monitoring frequency for pH, etc. If more than one outfall is included in the application, provide applicable information for each individual outfall.
14. List all pollutants expected in the discharge from this facility in this section. If applicable, refer to the pollutants from any federal numeric effluent limitations that apply to your facility.
15. Enter the discharge types from your facility in this section (e.g., stormwater, process wastewater, once through cooling water, etc.)
16. Choose the appropriate verb tense to complete the sentence.
17. Enter a description of the wastewater treatment used at your facility. Include a description of each process, starting with initial treatment and finishing with the outfall/point of disposal. Use additional lines for individual discharge types if necessary.

Questions or comments concerning this form may be directed to the Water Quality Division’s Application Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by phone at (512) 239-4671.

Example

Individual Industrial Wastewater Application

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and are not federal enforceable representations of the permit application.

ABC Corporation (CN600000000) operates the Starr Power Station (RN10000000000), a two-unit gas-fired electric generating facility. Unit 1 has a generating capacity of 393 megawatts (MWs) and Unit 2 has a generating capacity of 528 MWs. The facility is located at 1356 Starr Street, near the City of Austin, Travis County, Texas 78753.

This application is for a renewal to discharge 870,000,000 gallons per day of once through cooling water, auxiliary cooling water, and also authorizes the following waste streams monitored inside the facility (internal outfalls) before it is mixed with the other wastewaters authorized for discharge via main Outfall 001, referred to as “previously monitored effluents” (low-volume wastewater, metal-cleaning waste, and stormwater (from diked oil storage area yards and storm drains)) via Outfall 001. Low-volume waste sources, metal-cleaning waste, and stormwater drains on a continuous and flow-variable basis via internal Outfall 101.

The discharge of once through cooling water via Outfall 001 and low-volume waste and metal-cleaning waste via Outfall 101 from this facility is subject to federal effluent limitation guidelines at 40 CFR Part 423. The pollutants expected from these discharges based on 40 CFR Part 423 are: free available chlorine, total residual chlorine, total suspended solids, oil and grease, total iron, total copper, and pH. Temperature is also expected from these discharges. Additional potential pollutants are included in the Industrial Wastewater Application Technical Report, Worksheet 2.0.

Cooling water and boiler make-up water are supplied by Lake Starr Reservoir. The City of Austin municipal water plant (CN600000000, PWS 00000) supplies the facility’s potable water and serves as an alternate source of boiler make-up water. Water from the Lake Starr Reservoir is withdrawn at the intake structure and treated with sodium hypochlorite to prevent biofouling and sodium bromide as a chlorine enhancer to improve efficacy and then passed through condensers and auxiliary equipment on a once-through basis to cool equipment and condense exhaust steam.

Low-volume wastewater from blowdown of boiler Units 1 and 2 and metal-cleaning wastes receive no treatment prior to discharge via Outfall 101. Plant floor and equipment drains and stormwater runoff from diked oil storage areas, yards, and storm drains are routed through an oil and water separator prior to discharge via Outfall 101. Domestic wastewater, blowdown, and backwash water from the service water filter, clarifier, and sand filter are routed to the Starr Creek Domestic Sewage Treatment Plant, TPDES Permit No. WQ0010000001, for treatment and disposal. Metal-cleaning waste from equipment cleaning is generally disposed of off-site.

Section 14. Signature Page (Instructions Page 34)

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

Permit Number: Click to enter text.

Applicant: TCCI Sanctuary WWTP LLC

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.

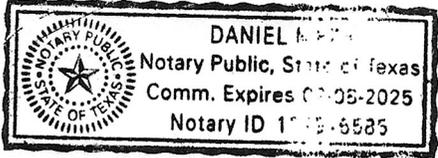
Signatory name (typed or printed): Tommy Cansler

Signatory title: President

Signature:  Date: 06/04/2024
(Use blue ink)

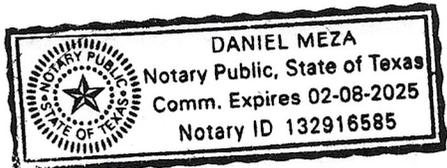
Subscribed and Sworn to before me by the said _____
on this 4th day of JUNE, 2024.
My commission expires on the 8th day of FEBRUARY, 2025.


Notary Public



[SEAL]

DALLAS
County, Texas



Comisión de Calidad Ambiental del Estado de Texas



AVISO DE RECIBO DE LA SOLICITUD Y EL INTENTO DE OBTENER PERMISO PARA LA CALIDAD DEL AGUA

PERMISO PROPUESTO NO. WQ00_____

SOLICITUD. TCCI Sanctuary WWTP LLC ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para el propuesto Permiso No. WQ0016572001 (EPA I.D. No. TX 0146315) del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas residuales tratadas en un volumen que no sobrepasa un flujo promedio diario de 1.250.000 galones por día. La planta está ubicada aproximadamente 1,1 millas al suroeste de la intersección de Farm-to-Market Road 156 y U.S. Highway 380 en Ponder en el Condado de Denton, Texas. La ruta de descarga es del sitio de la planta a un afluente sin nombre, de allí a South Hickory Creek, de allí a Hickory Creek, de allí a Lewisville Lake . La TCEQ recibió esta solicitud el 12 de Julio de 2024. La solicitud para el permiso estará disponible para leerla y copiarla Pilot Point Community Library, 324 South Washington Street, Pilot Point, Texas antes de la fecha de publicación de este aviso en el periódico. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud.

<https://gisweb.tceq.texas.gov/LocationMapper/?marker=-97.267777,33.227777&level=18>

[Include the following non-italicized sentence if the facility is located in the Coastal Management Program boundary. The Coastal Management Program boundary is the area along the Texas Coast of the Gulf of México as depicted on the map in 31 TAC §503.1 and includes part or all of the following counties: Cameron, Willacy, Kenedy, Kleberg, Nueces, San Patricio, Aransas, Refugio, Calhoun, Victoria, Jackson, Matagorda, Brazoria, Galveston, Harris, Chambers, Jefferson y Orange.] El Director Ejecutivo de la TCEQ ha revisado esta medida para ver si está de acuerdo con los objetivos y las regulaciones del Programa de Administración Costero de Texas (CMP) de acuerdo con las regulaciones del Consejo Coordinador de la Costa (CCC) y ha determinado que la acción es conforme con las metas y regulaciones pertinentes del CMP.

AVISO ADICIONAL. El Director Ejecutivo de la TCEQ ha determinado que la solicitud es administrativamente completa y conducirá una revisión técnica de la solicitud. Después de completar la revisión técnica, el Director Ejecutivo puede preparar un borrador del permiso y emitirá una Decisión Preliminar sobre la solicitud. **El aviso de la solicitud y la decisión preliminar serán publicados y enviado a los que están en la lista de correo de las personas a lo largo del condado que desean recibir los avisos y los que están en la lista de correo que desean recibir avisos de esta solicitud. El aviso dará la fecha**

límite para someter comentarios públicos.

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

OPORTUNIDAD DE UNA AUDIENCIA ADMINISTRATIVA DE LO CONTENCIOSO. Después del plazo para presentar comentarios públicos, el Director Ejecutivo considerará todos los comentarios apropiados y preparará una respuesta a todos los comentarios públicos esenciales, pertinentes, o significativos. **A menos que la solicitud haya sido referida directamente a una audiencia administrativa de lo contencioso, la respuesta a los comentarios y la decisión del Director Ejecutivo sobre la solicitud serán enviados por correo a todos los que presentaron un comentario público y a las personas que están en la lista para recibir avisos sobre esta solicitud. Si se reciben comentarios, el aviso también proveerá instrucciones para pedir una reconsideración de la decisión del Director Ejecutivo y para pedir una audiencia administrativa de lo contencioso.** Una audiencia administrativa de lo contencioso es un procedimiento legal similar a un procedimiento legal civil en un tribunal de distrito del estado.

PARA SOLICITAR UNA AUDIENCIA DE CASO IMPUGNADO, USTED DEBE INCLUIR EN SU SOLICITUD LOS SIGUIENTES DATOS: su nombre, dirección, y número de teléfono; el nombre del solicitante y número del permiso; la ubicación y distancia de su propiedad/actividad con respecto a la instalación; una descripción específica de la forma cómo usted sería afectado adversamente por el sitio de una manera no común al público en general; una lista de todas las cuestiones de hecho en disputa que usted presente durante el período de comentarios; y la declaración "[Yo/nosotros] solicito/solicitamos una audiencia de caso impugnado". Si presenta la petición para una audiencia de caso impugnado de parte de un grupo o asociación, debe identificar una persona que representa al grupo para recibir correspondencia en el futuro; identificar el nombre y la dirección de un miembro del grupo que sería afectado adversamente por la planta o la actividad propuesta; proveer la información indicada anteriormente con respecto a la ubicación del miembro afectado y su distancia de la planta o actividad propuesta; explicar cómo y por qué el miembro sería afectado; y explicar cómo los intereses que el grupo desea proteger son pertinentes al propósito del grupo.

Después del cierre de todos los períodos de comentarios y de petición que aplican, el Director Ejecutivo enviará la solicitud y cualquier petición para reconsideración o para una audiencia de caso impugnado a los Comisionados de la TCEQ para su consideración durante una reunión programada de la Comisión. La Comisión sólo puede conceder una solicitud de una audiencia de caso impugnado sobre los temas que el solicitante haya presentado en sus comentarios oportunos que no fueron retirados posteriormente. Si se concede una audiencia, el tema de la audiencia estará limitado a cuestiones de hecho en disputa o cuestiones mixtas de hecho y de derecho relacionadas a intereses pertinentes y materiales de calidad del agua que se hayan presentado durante el período de comentarios.

LISTA DE CORREO. Si somete comentarios públicos, un pedido para una audiencia

administrativa de lo contencioso o una reconsideración de la decisión del Director Ejecutivo, la Oficina del Secretario Principal enviará por correo los avisos públicos en relación con la solicitud. Además, puede pedir que la TCEQ ponga su nombre en una o más de las listas de correos siguientes (1) la lista de correo permanente para recibir los avisos de el solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las solicitudes en un condado específico. Si desea que se agregue su nombre en una de las listas designe cual lista(s) y envía por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

CONTACTOS E INFORMACIÓN A LA AGENCIA. Todos los comentarios públicos y solicitudes deben ser presentadas electrónicamente vía

<http://www14.tceq.texas.gov/epic/eComment/> o por escrito dirigidos a la Comisión de Texas de Calidad Ambiental, Oficial de la Secretaría (Office of Chief Clerk), MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Tenga en cuenta que cualquier información personal que usted proporcione, incluyendo su nombre, número de teléfono, dirección de correo electrónico y dirección física pasarán a formar parte del registro público de la Agencia. Para obtener más información acerca de esta solicitud de permiso o el proceso de permisos, llame al programa de educación pública de la TCEQ, gratis, al 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040.

También se puede obtener información adicional TCCI Sanctuary WWTP LLC a la dirección indicada arriba o llamando a Sr. Rane Wilson, P.G., reUse Engineering, Inc. al 570-567-4297.

Fecha de emisión _____ *[Date notice issued]*

Leah Whallon

From: Hilary Bond <hilary@reuseeng.com>
Sent: Friday, July 12, 2024 9:15 PM
To: STEERS
Subject: Re: STEERS New Domestic or Industrial Individual Permit application submitted
Attachments: 10054 X7 Solids Management Plan (Sanctuary 30K & 1.25MGD).docx; 10054 Technical RPT Sanctuary (sludge hauler pages).pdf

Happy Friday!

We submitted the application, but have decided to change one minor piece (sludge hauler). Please see attached for the corrected relevant pages for the application.

The Permit Number for this submittal is WQ0016572001.

The RN for this submittal is RN112007737.

The CN for this submittal is CN606283398.

The confirmation number for this submittal is 550790.

The hash code for this submittal is

4F4EDFAFBE48924B2D1D3AD437336D791867EC5E4252162946F9A770221D55B3.

Thank you so much!

Hilary



Hilary Bond

Director, Permitting & Entitlements



Office 737-275-2271 **Mobile** 512-285-0302

Address 4411 South IH-35 Suite 100, Georgetown, TX 78626

From: steers@tceq.texas.gov <steers@tceq.texas.gov>
Sent: Friday, July 12, 2024 10:07 PM
To: Hilary Bond <hilary@reuseeng.com>
Subject: STEERS New Domestic or Industrial Individual Permit application submitted

This confirms the submittal of your New Domestic or Industrial Individual Permit to the TCEQ. Your submittal was received at 07/12/2024 09:07 PM.

The Permit Number for this submittal is WQ0016572001.

The RN for this submittal is RN112007737.

The CN for this submittal is CN606283398.

The confirmation number for this submittal is 550790.

The hash code for this submittal is

4F4EDFAFBE48924B2D1D3AD437336D791867EC5E4252162946F9A770221D55B3.

You may access the copy of record (submitted application) and approval letter from the submit log which is available by selecting Submissions from the Home page of STEERS

<https://link.edgepilot.com/s/d0acdcaa/QvZrBFHP6k2Vjti17kOaZQ?u=https://www3.tceq.texas.gov/steers/>

If you have any questions, please contact the STEERS Help Line at 512-239-6925 or by e-mail at steers@tceq.texas.gov.

Links contained in this email have been replaced. If you click on a link in the email above, the link will be analyzed for known threats. If a known threat is found, you will not be able to proceed to the destination. If suspicious content is detected, you will see a warning.

- Heat Drying
- Thermophilic Aerobic Digestion
- Beta Ray Irradiation
- Gamma Ray Irradiation
- Pasteurization
- Preliminary Operation (e.g. grinding, de-gritting, blending)
- Thickening (e.g. gravity thickening, centrifugation, filter press, vacuum filter)
- Sludge Lagoon
- Temporary Storage (< 2 years)
- Long Term Storage (>= 2 years)
- Methane or Biogas Recovery
- Other Treatment Process: Dewatering using screw press will produce dry sludge cakes.

C. Biosolids Management

Provide information on the *intended* biosolids management practice. Do not enter every management practice that you want authorized in the permit, as the permit will authorize all biosolids management practices listed in the instructions. Rather indicate the management practice the facility plans to use.

Biosolids Management

| Management Practice | Handler or Preparer Type | Bulk or Bag Container | Amount (dry metric tons) | Pathogen Reduction Options | Vector Attraction Reduction Option |
|----------------------|---------------------------|-----------------------|--------------------------|----------------------------|---|
| Disposal in Landfill | On-Site Owner or Operator | Bulk | 371 | Class B: PSRP Air Drying | Option 11: Biosolids covered at end of each day |
| Choose an item. | Choose an item. | Choose an item. | | Choose an item. | Choose an item. |
| Choose an item. | Choose an item. | Choose an item. | | Choose an item. | Choose an item. |

If “Other” is selected for Management Practice, please explain (e.g. monofill or transport to another WWTP): [Click to enter text.](#)

D. Disposal site

Disposal site name: City of Denton Landfill
 TCEQ permit or registration number: 1590B
 County where disposal site is located: Denton

E. Transportation method

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

Name of the hauler: The Cleaning Guys

Hauler registration number: 25218

Sludge is transported as a:

Liquid semi-liquid semi-solid solid

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 53)

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 53)

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.

SOLIDS MANAGEMENT PLAN

TCCI SANCTUARY WWTP, LLC

WWTF Phase 1A

Influent Design Flow:

Phase 1A: 0.030 MGD, Total

Influent BOD Concentration: 350 mg/L

MBR Basin MLVSS: 8,808 mg/L

See **Attachment 1A - Process Flow Diagram** and **Attachment 5A - Design Calculations**. Attachment 5A shows calculations for one (1) 30,000 gpd (0.03 MGD) treatment train. In the final phase, there will be three (3) 250,000 gpd (0.25 MGD) treatment trains operating at full capacity for a total of 0.750 MGD in the final phase.

Table 1 – Sludge Production for 0.03 MGD Design Flow

| Solids Generated | 100% | 75% | 50% | 25% |
|----------------------------------|-------|------|------|------|
| Lbs./d Influent BOD ₅ | 87.62 | 65.7 | 43.8 | 21.9 |
| Lbs./d Dry Sludge Produced | 49.0 | 36.8 | 24.5 | 12.3 |

Sludge will be sent from the Recycled Activated Sludge flow stream to the Sludge Screw Press. Calculations are based on 815 gpd of waste sludge, which equates to 49 lb/d (Table 1). The sludge will be pressed in the Sludge Screw Press to remove liquids and produce a dry sludge cake. All liquid will be decanted from the Screw Press and returned to the headworks for treatment. No wet solids will be produced through the treatment process. Dry sludge will be removed from the screw press and deposited into an 1 cubic yard (CY) roll-off container for disposal on a regular basis (Table 2).

Table 2 – Sludge Removal Schedule

| Removal Schedule | 100% | 75% | 50% | 25% | Unit |
|--------------------------|----------|-------------------------------------|----------|-----------|-------------|
| Dry Waste Sludge | 49.0 | 36.8 | 24.5 | 12.3 | lb/d |
| Wet Waste Sludge | 815 | 611 | 408 | 204 | gpd |
| Wet Sludge | 109.0 | 81.7 | 54.5 | 27.2 | CF/d |
| Wet Sludge | 4.0 | 3.0 | 2.0 | 1.0 | CY/d |
| Reduction Factor | 18.0 | (provided by MBR WWTP manufacturer) | | | |
| Dry Sludge | 0.2 | 0.2 | 0.1 | 0.1 | CY/d |
| Dumpster Volume | 1 | 1 | 1 | 1 | CY |
| Recurring Sludge Removal | 4 | 6 | 9 | 18 | days |

The Sludge Age (Solids Retention Time) for a Total Reactor Volume of approximately 22,440 gallons is 25 days, with an annual average sludge production of 17,885 lbs. dry sludge produced at 100% capacity. The dewatered sludge will be transported by a registered hauler, The Cleaning Guys (TCEQ Sludge Registration ID #25218) to the City of Denton Landfill (TCEQ Sludge Registration ID #1590B) in Denton County, Texas.

SOLIDS MANAGEMENT PLAN

TCCI SANCTUARY WWTP, LLC

WWTF Phase 1B

Influent Design Flow:

Phase 1B: 0.250 MGD, Total

Influent BOD Concentration: 350 mg/L

MBR Basin MLVSS: 9,940 mg/L

See **Attachment 1 - Process Flow Diagram** and **Attachment 5 - Design Calculations**. Attachment 5 shows calculations for one (1) 250,000 gpd (0.250 MGD) treatment train. In the final phase, there will be one (1) 250,000 gpd treatment train operating with two subsequent phases, each at 500,000 gpd.

Table 1 – Sludge Production for 0.250 MGD Design Flow

| Solids Generated | 100% | 75% | 50% | 25% |
|----------------------------------|-------|-------|-------|-------|
| Lbs./d Influent BOD ₅ | 730.2 | 547.7 | 365.1 | 182.6 |
| Lbs./d Dry Sludge Produced | 399.0 | 299.3 | 199.5 | 99.8 |

Sludge will be sent from the Recycled Activated Sludge flow stream to the Sludge Screw Press. Calculations are based on 6,036 gpd of waste sludge, which equates to 399 lb./d (Table 1). The sludge will be pressed in the Sludge Screw Press to remove liquids and produce a dry sludge cake. All liquid will be decanted from the Screw Press and returned to the headworks for treatment. No wet solids will be produced through the treatment process. Dry sludge will be removed from the screw press and deposited into an 8 cubic yard (CY) roll-off container for disposal on a regular basis (Table 2).

Table 2 – Sludge Removal Schedule

| Removal Schedule | 100% | 75% | 50% | 25% | Unit |
|--------------------------|----------|-------------------------------------|-----------|-----------|------|
| Dry Waste Sludge | 399.0 | 299.3 | 199.5 | 99.8 | lb/d |
| Wet Waste Sludge | 6,036 | 4,527 | 3,018 | 1,509 | gpd |
| Wet Sludge | 807.0 | 605.2 | 403.5 | 201.7 | CF/d |
| Wet Sludge | 29.9 | 22.4 | 14.9 | 7.5 | CY/d |
| Reduction Factor | 18.0 | (provided by MBR WWTP manufacturer) | | | |
| Dry Sludge | 1.7 | 1.2 | 0.8 | 0.4 | CY/d |
| Dumpster Volume | 8.0 | 8.0 | 8.0 | 8.0 | CY |
| Recurring Sludge Removal | 5 | 6 | 10 | 19 | days |

The Sludge Age (Solids Retention Time) for a Total Reactor Volume of approximately 162,480 gallons is 25 days, with an annual average sludge production of 145,635 lbs. dry sludge produced at 100% capacity. The dewatered sludge will be transported by a registered hauler, The Cleaning Guys (TCEQ Sludge Registration ID #25218) to the City of Denton Landfill (TCEQ Sludge Registration ID #1590B) in Denton County, Texas.

SOLIDS MANAGEMENT PLAN

TCCI CARRELL RANCH WWTP, LLC

WWTF Phase 2 & 3

Influent Design Flow:

Phase 2: 0.500 MGD

Phase 3: 0.500 MGD , Total 1.25 MGD

Influent BOD Concentration: 350 mg/L

MBR Basin MLVSS: 13,696 mg/L

See **Attachment 1 - Process Flow Diagram** and **Attachment 5 - Design Calculations**. Attachment 5 shows calculations for one (1) 500,000 gpd (0.500 MGD) treatment train. In the final phase, there will be one (1) 250,000 gpd treatment train and two (2) 500,000 gpd treatment trains operating at full capacity for a total of 1.25 MGD.

Table 1 – Sludge Production for 0.250 MGD Design Flow

| Solids Generated | 100% | 75% | 50% | 25% |
|----------------------------------|-------------|------------|------------|------------|
| Lbs./d Influent BOD ₅ | 1,460.4 | 1,095.3 | 730.2 | 365.1 |
| Lbs./d Dry Sludge Produced | 720.0 | 540.0 | 360.0 | 180.0 |

Sludge will be sent from the Recycled Activated Sludge flow stream to the Sludge Screw Press. Calculations are based on 7,918 gpd of waste sludge, which equates to 720 lb./d (Table 1). The sludge will be pressed in the Sludge Screw Press to remove liquids and produce a dry sludge cake. All liquid will be decanted from the Screw Press and returned to the headworks for treatment. No wet solids will be produced through the treatment process. Dry sludge will be removed from the screw press and deposited into an 8 cubic yard (CY) roll-off container for disposal on a regular basis (Table 2).

Table 2 – Sludge Removal Schedule

| Removal Schedule | 100% | 75% | 50% | 25% | Unit |
|--------------------------|-------------|-------------------------------------|------------|------------|-------------|
| Dry Waste Sludge | 720.0 | 540.0 | 360.0 | 180.0 | lb/d |
| Wet Waste Sludge | 7,918 | 5,939 | 3,959 | 1,980 | gpd |
| Wet Sludge | 1,058.6 | 793.9 | 529.3 | 264.6 | CF/d |
| Wet Sludge | 39.2 | 29.4 | 19.6 | 9.8 | CY/d |
| Reduction Factor | 18.0 | (provided by MBR WWTP manufacturer) | | | |
| Dry Sludge | 2.2 | 1.6 | 1.1 | 0.5 | CY/d |
| Dumpster Volume | 8.0 | 8.0 | 8.0 | 8.0 | CY |
| Recurring Sludge Removal | 4 | 5 | 7 | 15 | days |

The Sludge Age (Solids Retention Time) for a Total Reactor Volume of approximately 310,240 gallons is 25 days, with an annual average sludge production of 262,800 lbs. dry sludge produced at 100% capacity. The dewatered sludge will be transported by a registered hauler, The Cleaning Guys (TCEQ Sludge Registration ID #25218) to the City of Denton Landfill (TCEQ Sludge Registration ID #1590B) in Denton County, Texas.